

Institute for Quality Science Teaching

2017-2018 Our Place in Space

Research and Evaluation Executive Summary

Goal

To measure change in educators' attitudes and behaviors associated with science instruction and specifically practices aligned to the Next Generation Science Standards (NGSS).

Why

Change in educators' attitudes toward science education and classroom behaviors is a goal of the Institute for Quality Science Teaching's teacher professional development programs.

What

This year-long course helps educators investigate the universal laws of force and motion, Earth-Moon-Sun relationship, solar system, and electromagnetic energy in this inquiry-based, STEM-focused course.

Who

58 4th- through 8th-grade science teachers who chose to participate in the Our Place in Space course during the 2017-2018 academic year.

How

The survey consisted of the following sections:

- Section 1: Six questions about participants' feelings of nervousness/anxiety/confidence around teaching science¹.
- Section 2: Six questions that elicit information about participants' behaviors related to teaching science¹.
- Section 3: 21 questions that generally ask participants how often they engage in instruction aligned with NGSS-specific science and engineering practices².
- Section 4: 11 questions that ask participants how often their students engage in NGSS-aligned science and engineering practices².

When

Pre-surveys were administered prior to the start of the course and the post-survey was completed after the final session.

Results

Overall we found that teachers were significantly more likely to self-report engaging in NGSS-aligned practices. Specific to how frequently teachers engage in NGSS-aligned practices, we find that they self-report applying four particular areas of instruction most often, including: supporting students through planning and carrying out investigations,

critique, explanation and argumentation, modeling, and making connections with students' prior knowledge and real-world applications.

However, we noticed no significant changes in their attitudes and behaviors related to science instruction, except for their likelihood to take students on field trips and feeling nervous teaching science in their classroom.

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¹Taken from The Dimensions of Attitudes of Science
(van Aalderen-Smeets & van der Molen, 2013)

²Taken from Measuring Science Instructional Practice
(Hayes et al., 2016)