

NOSB Longitudinal Study 1999-2011

The National Ocean Sciences Bowl, managed by the Consortium for Ocean Leadership, has been a successful competition for high ability secondary students implemented nationally. The NOSB is supported by U.S. federal agencies through NOPP, as well as by corporations, foundations and other non-governmental organizations. More than 2,000 students and 350 schools now actively take part in the competition each year, with more than 24,000 students having participated in NOSB.

Methodology—Dr. Howard Walters and Dr. Tina Bishop have been contracted to study the NOSB since 1999. The research has addressed content learning and has examined the program from a systems theory perspective, to ascertain its impact on the community of constituents, and how this competition impacts students' career decisions. The study incorporated complex methods including surveys, cognitive tests, interviews, focus groups, video biographies and self-authored narratives from multiple stakeholder groups.

Study Participants—A key task in this study has been the exploration of the link between the NOSB and the education and career paths of participating students as they migrated from high school into college and graduate school or the workforce. Working with Ocean Leadership and its university sponsors, the researchers identified and registered a sample of 440 student participants in the research.

Benefits—The many thousands of young adults, classroom teachers, scientists and volunteers associated with the NOSB over the years have—certainly—benefitted from this involvement. These benefits are multifaceted, and some of these can be easily overlooked. Summarizing the written reports from over the years suggests a set of clear benefits for each of the involved stakeholders, to include:

- For past participants who entered STEM careers: the research and evaluations have indicated that these individuals were provided meaningful support, mentoring, and career guidance by the coaches who oversaw their years of competition, and enhanced ocean science knowledge.
- For past participants in general: The research has been clear that all of the students who participated benefitted from leadership development, team development, and study skills support for detailed and deep science content learning. Additionally, many students reported an enhanced interest in ocean related hobbies and environmental stewardship.
- For Coaches: Many classroom teachers reported that working with these high ability students required them to engage in a high degree of self-directed learning in the ocean science fields, in order to prepare to engage with the students at the high content level required by the NOSB.
- For Second Tier Students: those high school teachers that were responsible for advising and guiding the individual NOSB team from a school—reported that the regularly infused ocean sciences content into the regular course instruction for all of the other students enrolled in their classes. In addition, a number of teachers reported that they eventually created new ocean science courses in their high schools because of NOSB involvement.
- For Scientists and Institutions: the program allowed for broader impacts work, highlighted institutional capability and education efforts, and supported student recruitment.
- For the STEM Workforce: by 2010 in the study process, it became clear that there were increasing numbers of past NOSB participants who had remained in the STEM pipeline and workforce.

In final analysis: the NOSB is much more than an academic competition. It is a social community which directly benefits multiple stakeholder groups. As an interactive hub for these stakeholders, it provides a platform for a complex cross-section of ocean-concerned agencies and individuals, allowing each to meet multiple levels and types of goals—in the immediate context of directly supporting secondary students. In this, it seems highly effective and beneficial, ultimately, to its host organization, the COL, to these students and their teachers, to the constellation of federal and state science agencies, and to the nation.