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BOARD # 466: Using Institutional Data in S-STEM Proposals: A Summary of Capacity-Building Workshops

Dr. Amy B Chan Hilton, University of Southern Indiana

Amy B. Chan Hilton, Ph.D. is the Director of the Center for Excellence in Teaching and Learning and a Professor of Engineering at the University of Southern Indiana (USI). Her interests include faculty and organizational development to support both faculty and student success, learning analytics, teaching innovations, and systems thinking and storytelling for institutional change.

Dr. John Krupczak Jr, Hope College

Professor of Engineering, Hope College, Holland, Michigan. Former Chair of the ASEE Technological Literacy Division; Former Chair of the ASEE Liberal Education Division; Senior Fellow CASEE, National Academy of Engineering, 2008-2010; Program Officer, Nat

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The purpose of this paper and poster is to summarize the implementation and results of a workshop grant funded by the NSF S-STEM program (award no. 2203148). During January 2022 to February 2024, the project team developed, implemented, and refined capacity-building virtual workshops for three cohorts of participants for proposal due dates in 2022, 2023, and 2024 to gather, effectively understand, and use institutional data as they develop their S-STEM proposals. The intended workshop audience was individuals and teams preparing proposals for the NSF Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM) (S-STEM) program, such as faculty principal investigators (PIs), STEM administrators, and professionals in institutional research and sponsored projects roles. The workshop series focused on the institutional/student data components of the S-STEM proposal (e.g., the required data table "regarding the pool of potential scholars and current 1-year retention rates and graduation rates for the same pool of students in each S-STEM eligible discipline" [4]). This workshop grant was motivated by observations that PI teams often found these data aspects to be challenging to complete and that they undervalued how this data can inform their proposals. The workshops were not intended as comprehensive S-STEM proposal development support across all proposal components.

The virtual workshop series addressed challenges from both project development and practical perspectives, with the goal of enhancing participants' ability to effectively use institutional data in their S-STEM proposals. The intended outcomes for the workshop participants include:

1) articulating awareness of how institutional/student data can be used to inform their project plans and S-STEM program goals;
2) developing a plan for using institutional/student data in project development, including identifying relevant questions that the student data can help answer while also addressing the S-STEM solicitation requirements; and
3) drafting a plan for requesting student data from their Institutional Research and Financial Aid offices.

Details of the workshop motivation, design, and implementation are described in [1]. Evidence-based practices incorporated in the virtual workshops included strategically scaffolding participants' knowledge and skills to help build and strengthen knowledge connections [3], the Transparency in Learning and Teaching (TILT) framework [5], and fostering an inclusive learning environment for participants who are affiliated with a variety of institution types (e.g., two-year colleges, small colleges, primarily undergraduate institutions, and large universities).

Each workshop series included three virtual sessions (90-minutes each) for the 2023 and 2024 cohorts and two virtual sessions (120-minutes each) for the 2022 cohort with the goal of enhancing the participants' recognition of the value of institutional/student data to their S-STEM project goals and increase their confidence to request and use this data. A workbook was developed as a supporting resource to guide breakout room conversations during the workshops and project team proposal development activities outside of the workshop sessions. The topics across the workshop sessions included:

- Introduction to the workshop team and participants,

- Institutional context and project goals,
- S-STEM program overview and solicitation updates,
- Knowing your students,
- Exploring and analysis of institutional data (via sample data tables),
- Expert panel tips and lessons learned,
- Working with your Institutional Research and Financial Aid offices,
- Connecting data with your proposal plan and rationale, and
- Additional data elements (evaluation, workforce).

In addition, Participant Hour (Office Hour) sessions were held about a week after each workshop session to provide participants opportunities to ask questions and follow-up on their "homework" from the workbook. The slides and workbook from the 2024 workshop are available at [2].

A total of 178 participants from diverse institution types and experience levels were recruited to three workshop cohorts (2022, 2023, and 2024), including faculty and administrators with limited or no S-STEM experience (Table 1). Seven evaluation survey questions focused on participants' gain in their knowledge, skills, and confidence related to the development of the S-STEM proposal were addressed in the evaluation. Responses to the question on the "extent the knowledge and skills gained in the workshop have contributed to a strong S-STEM proposal product" indicated that 70% (n=20), 68% (n=24), and 80% (n=15) of participants in Cohorts 1, 2, and 3, respectively, rated "To a great extent" or "To a very great extent". The question "extent will you be able to transfer the knowledge and skills gained to uses beyond the S-STEM proposal" was rated "To a great extent" or "To a very great extent" for 60%, 55%, and 67% of the respondents in Cohorts 1, 2, and 3, respectively. The project PI is collaborating with external evaluators for the summative project evaluation to disaggregate the evaluation results based on participant and institutional contexts and explore longitudinal impacts of workshop participation.

Takeaways from the implementation and evaluation of these workshops provide suggestions for those who are interested in providing proposal development and capacity-building workshops with similar goals. While this workshop series is focused on the institutional/student data components of S-STEM proposal development, participants were interested in other components of the S-STEM proposal, such as developing the programmatic focus and scholar supports, establishing partnerships with colleagues across departments and offices, and general proposal development skills. The scaffolded approach, with multiple examples of institutional/student data and connecting the focus on the data to different contexts aspects of proposal development (such as knowing their students to identify students' strengths and challenges and using the data to identify appropriate academic programs to include and justify scholarship amounts), and building upon the questions and ideas from this data are effective ways to guide participants in making programmatic decisions and strategies. Participants also appreciated interacting with the workshop team, who have experience as current S-STEM PIs and former NSF S-STEM program officers, as well as other participants to learn from each another and share their experiences during the virtual workshop sessions/breakout rooms and Participant Hours (office hours).

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Table 1: Summary of the institutional contexts and prior NSF S-STEM experience of the workshop participants in each cohort

Cohort year	**2022**	**2023**	**2024**
Participants (total)	41	71	66
Institutions (total)	24	42	43
○ Two-Year College	11	5	11
○ Primarily Undergraduate Institution (PUI)	16	27	13
○ Minority Serving Institution (MSI) or Historically Black College or University (HBCU)	10	5	15
First S-STEM proposal	43%	60%	50%
Little or no interaction with Institutional Research office	47%	52%	43%
Little or no interaction with Financial Aid office	60%	76%	74%
Role of participant			
○ Faculty member	21	40	35
○ Grants, Sponsored Research, Research Development staff	7	21	10
○ Institutional Research/Assessment staff	1	4	2
○ Administrator	7	5	15
○ Other	1	1	4

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