

Experiencing the Inclusive STEM Teaching Project through BioQUEST Learning Communities

Abstract

The Inclusive STEM Teaching Project is an online, six-week, intensive course for STEM doctoral students, postdoctoral scientists, and faculty, hosted on edX by Boston University. The course helps participants develop themselves as reflective, inclusive practitioners of science and STEM education. Each course cohort typically has around 9,000 - 10,000 registrants, who commit two hours of individual work per week, along with one to two hours of learning community participation. Here, the authors reflect on the experiences of participating in the course without a Learning Community (LC), facilitating and participating in the Fall 2022 BioQUEST LC, and facilitating the Spring 2023 BioQUEST LC.

Introduction

- Practicing inclusive STEM instruction requires an understanding of the challenges learners face and developing strategies that actively support their success. Inclusive instructors also must be aware of their own identities and impacts to enhance their connection, awareness, and sensitivity to student experiences.
- The Inclusive STEM Teaching Project has developed and implemented a massive open online course to 5000+ registrants, developed content for and trained 135 facilitators who have led 60+ optional local learning communities, and is researching the impacts of our professional development and learning communities on instructors and their students.



Inclusive STEM Teaching Project

EdX Course Format

- ➤ Five Modules
 - Module 1: Diversity, Equity, and Inclusion in Learning and Teaching in Higher Education
 - Module 2: Instructor Identity and Authority in STEM Classrooms
 - Module 3: Student Identities and Experiences in the STEM Classroom
 - Module 4: Creating an Inclusive STEM Course
 - Module 5: Fostering an Inclusive Climate in the STEM Course
- ➤ Modules Include
 - Video and reading materials
 - MOOC-style forum spaces
 - Personal Reflection questions

Sarah Prescott (University of New Hampshire/BioQUEST) 🔃 Sharon Homer-Drummond (Tri-County Technical College) 🥃

Methods

ISTP General Methods

Addresses three research questions \succ RQ 1: What is the effect of the inclusive teaching

- professional development program on graduate students, postdocs, and faculty participants?
- RQ 2: What impact does our program have on project-related communities, and on their facilitators and learning community participants?
- > RQ 3: What effect do inclusive teaching practices implemented by teaching professional development program participants have on undergraduate students?

The BioQUEST Learning Community



BioQUEST Methods

BioQUEST Learning Communities

> Facilitated discussion opportunity that

- digs deeper into the course content
- connects participants to others in the community contextualizes applications
- Facilitators trained by ISTP and using an ISTP-created manual
- Usually consist of about 8-12 learners enrolled in the course > Meet weekly online
- > Asynchronous discussions and information hosted on QUBES platform
- \succ One of three, non-institutional, virtual LCs offered

Course Outcomes • 6589 learners enrolled • 40% engaged weekly • 51% completion rate* • 95 learning communities

• 770 learning community participants

Completion rate determined by calculating learners ho completed course requirements compared to al arners who engaged in at least one course activity.



- Prior ISTP participants stated they were able to successfully complete the course using the LC model. Added benefits for BioQUEST LC participants:
- > Participant outcomes
 - Higher numbers reported completing the course

 - Greater enjoyment of course work and weekly discussion Specific course implementation plans within the next
- semester Course/Student outcomes
 - Course learning outcomes geared toward inclusive spaces Greater student understanding of inclusive principles and

 - practice
- Historically underserved students were more comfortable expressing needs
- LC model fits well with BioQUEST mission and values \succ Organizational focus on inclusive pedagogy in STEM ➤ Values
 - Faculty as change agents
 - LC model matches the FMN model used in BioQUEST • 2022-2023 BIOMEs focused on IDEAS

 - Social justice, equity, diversity, and inclusion Science as interdisciplinary, applied, and socially integrated

"The Inclusive STEM Teaching Learning Community allowed me to discuss ideas and strategies for inclusive teaching with a small group of like-minded peers. Being a part of this community provided me with the necessary support and confidence to implement changes to my teaching practice and discuss the implications of those changes in real time. Additionally, I had the opportunity to meet individuals from different institutions and perspectives, which made the experience even more enriching."



We would like to thank the Inclusive STEM Teaching Project for their course, preparation of facilitation materials, and presentation at the 2022 BIOME Institute that started this work. The primary sponsor for the Inclusive STEM Teaching Project is the National Science Foundation (NSF), Directorate for Education and Human Resources (EHR), and Division of Undergraduate Education (DUE). This project is supported under DUE grants 1821684; 1821571; 1821528; 1821510; 1821574. We would also like to thank the entirety of the BioQUEST staff for their assistance with advertising, sharing, and QUBES Platform technical support.

Educational Resources. doi:10.25334/Q4H09D





Discussion

Melanie Lenahan, Fall 2022 LC

Future Work

BIOME Workshop 2023 Learning Community Fall 2023

- EdX course discussion

- > BQ LC Past Participants
 - Adapting materials
 - Improvements
 - Amended LC guide

Acknowledgements

Works Cited

The Inclusive STEM Teaching Project: https://www.inclusivestemteaching.org/ Donovan, S. S., Eaton, C., Gower, T., Jenkins, K., LaMar, D., Poli, D., Sheehy, B., Wojdak, J. M. (2018). QUBES: a community focused on supporting teaching and learning in quantitative biology. QUBES Leadership Team, QUBES