

Enhancing STEM Graduate Student Teaching: Cultivating Teaching Skills and Identity Among Graduate Students

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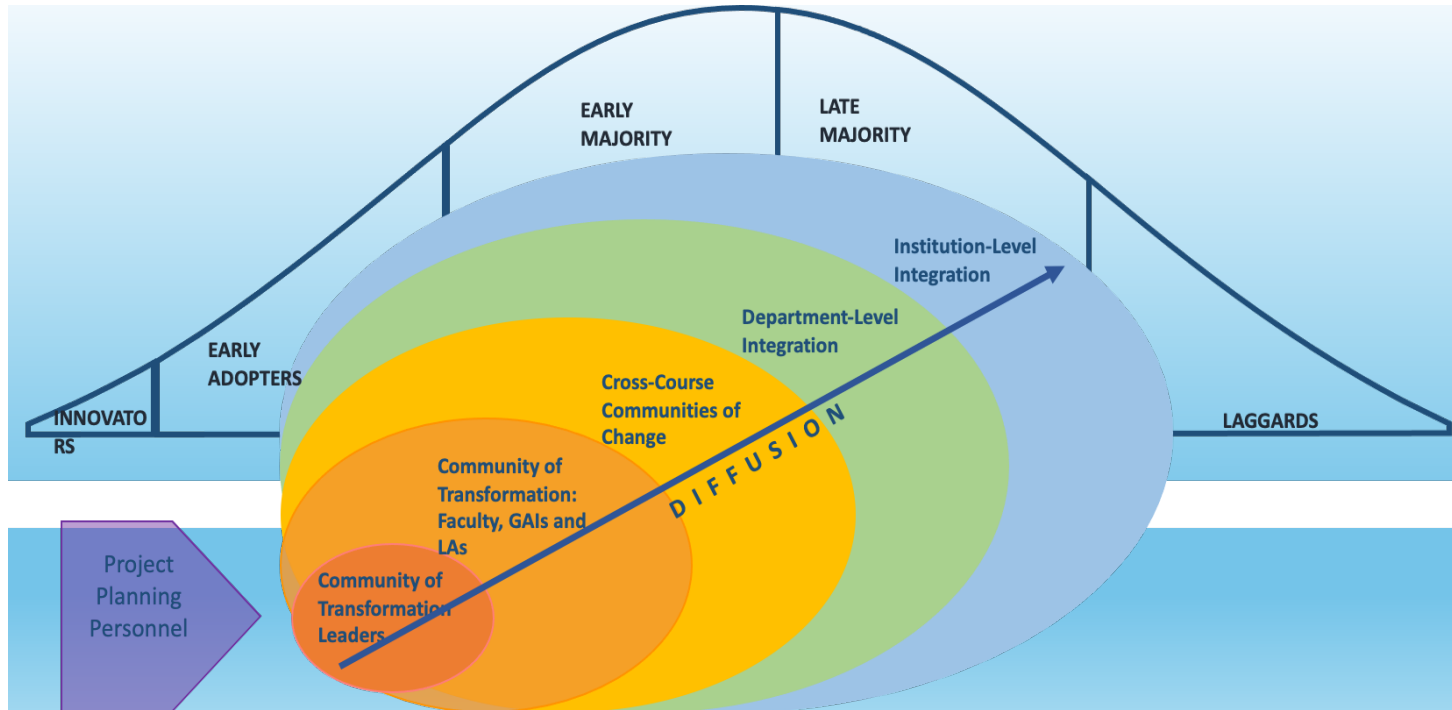


Chesapeake Section of the
American Association of Physics Teachers
Spring 2024 Semi-Virtual Meeting
March 16, 2024 @ **DelawareState**University



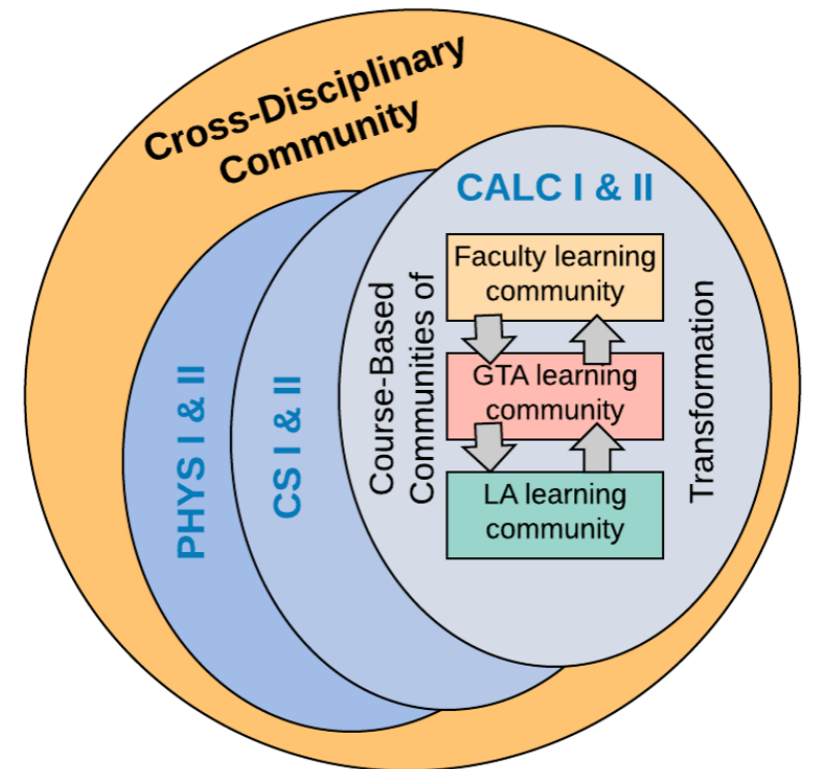
The Gateway2STEM

Goal: Make large undergraduate courses more active



The Idea

Implementation:
Active learning across
Math, Physics, and CS



Why GTAs are Important Focus to Project

- Play important role in large enrollment introductory courses
- Engage with and instruct many undergraduates
- Can help change teaching pedagogies and impact many students
- Are future faculty

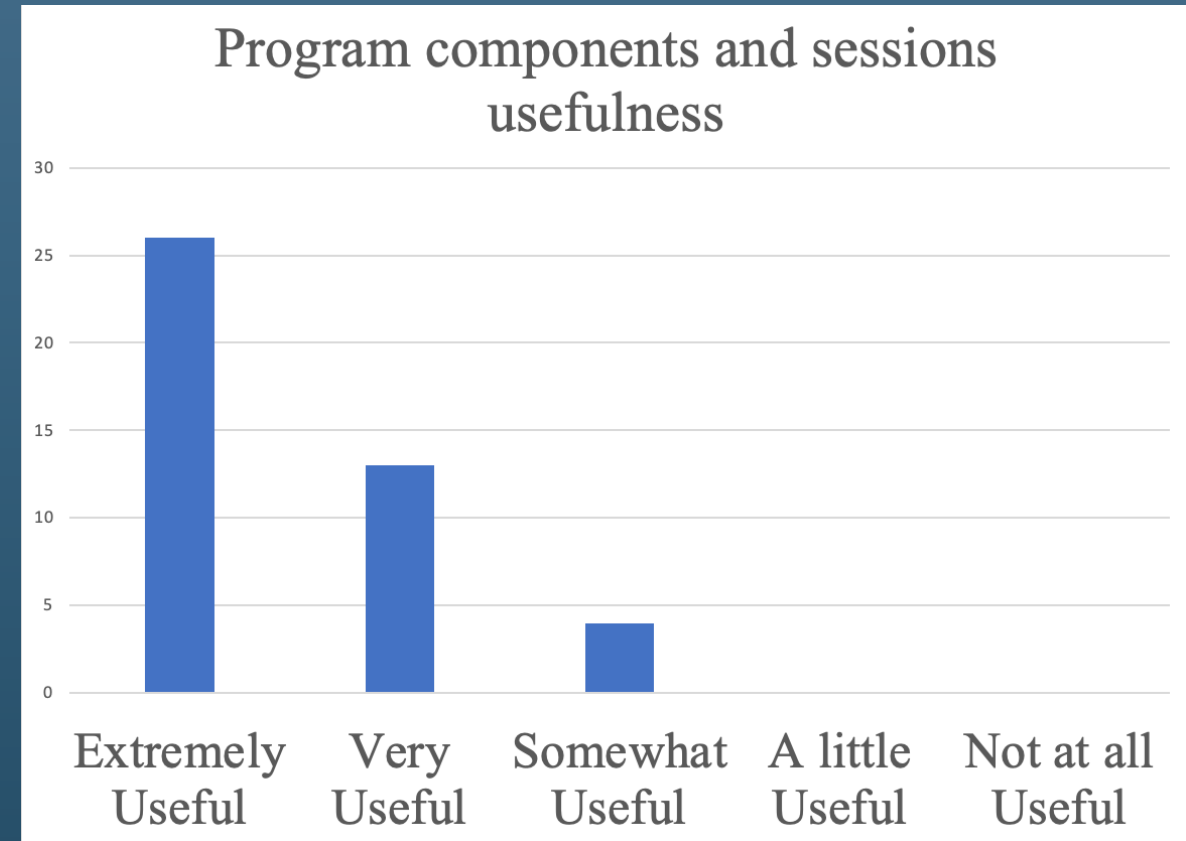


GTA Professional Development Overview

- 2 Day workshop for new GTAs before Fall semester
- Physics seminar series with first year GTAs
- Meetings of Math GTAs in calculus run by a lead GTA
- CS peer mentorship model – new GTAs work with returning GTA in the classroom

Major Workshop Topics

- What is Active Learning and how can you implement it?
- Building classroom community
- Planning for day one
- Campus resources
- Returning GTA discussion



Fall 2023

Findings:

Preliminary analysis examined :

- Use of active learning in the classroom
- GTA's perception of their role
- Experiences of international GTAs



Use Active Learning in the Classroom

- All interviewees used active learning in their classrooms
 - Group work at tables and on whiteboards
 - Practice problem solving and programming on their own
 - Engaging them by asking questions

- Students benefitted from extra practice, interacted more with GTAs

“I decided that a lot of hard work using the old-school method, checking 50-60 students at the top of the grading, is super hard. So, I implemented group work.”

GTAs Perception of their role in the Classroom

- Have significant autonomy in their classes and have mix of responsibilities
 - Grader
 - Instructor
 - Curriculum designer
- Struggle to find the balance between authority and connection with students in classroom

“I initially wanted to be friends with all the students, but within a few weeks, I realized that being too friendly could lead to unwanted questions and disruptions in the class.”

Differences in experiences of International GTAs

- Different educational structures in home country
- Different relationship between students and teacher
- Teaching in a second language poses a language barrier that may result in miscommunication

“From a cultural perspective this might be the most challenging aspect for me. In my home country, students are afraid of their teachers. So, I think it’s somewhat different here. They are not afraid and keep asking questions.”

Conclusions and Next Steps

- GTAs learned new teaching strategies from professional development
- GTAs incorporated active learning techniques into their teaching practice
- Continue follow-up interviews with GTAs
- Understand international GTAs challenges
 - Bridge the classroom culture gap for effective GTA PD

Thank you!

Gateway2STEM website:

<https://gstem.research.gmu.edu>



Video about the Gateway2STEM project:

<https://www.youtube.com/watch?v=n4gBld5GFhk>

