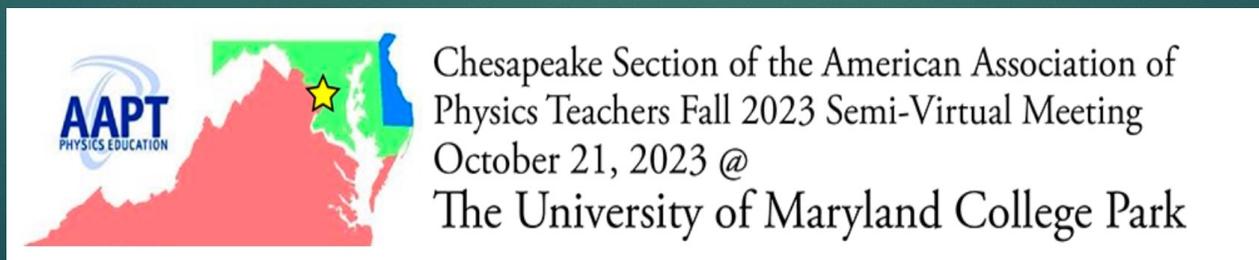


Transforming STEM Graduate Student Teaching: The Gateway2STEM Workshop

Nishchal Thapa Magar, Jessica L. Rosenberg, Jill K. Nelson, Derrick Wong, Marco Brizzolara



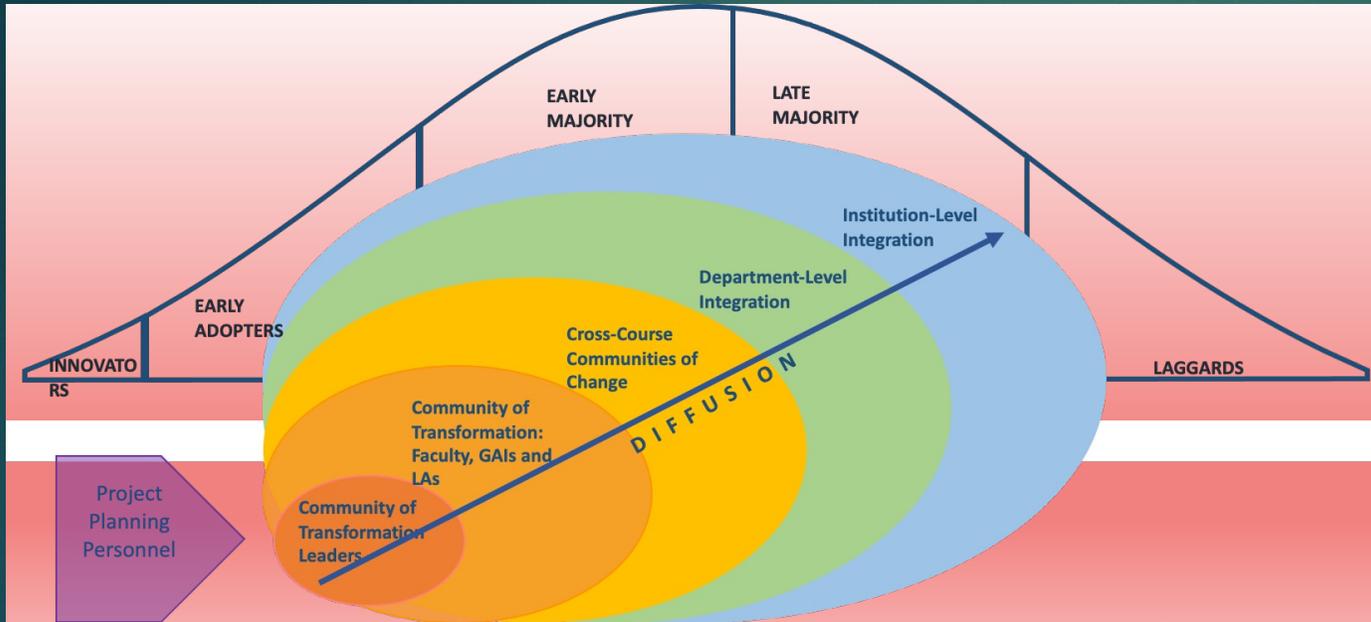
Outline of Presentation

- Brief overview of Gateway2STEM Project.
- Preparation for STEM GTAs.
- Preliminary results.

What is Gateway2STEM?

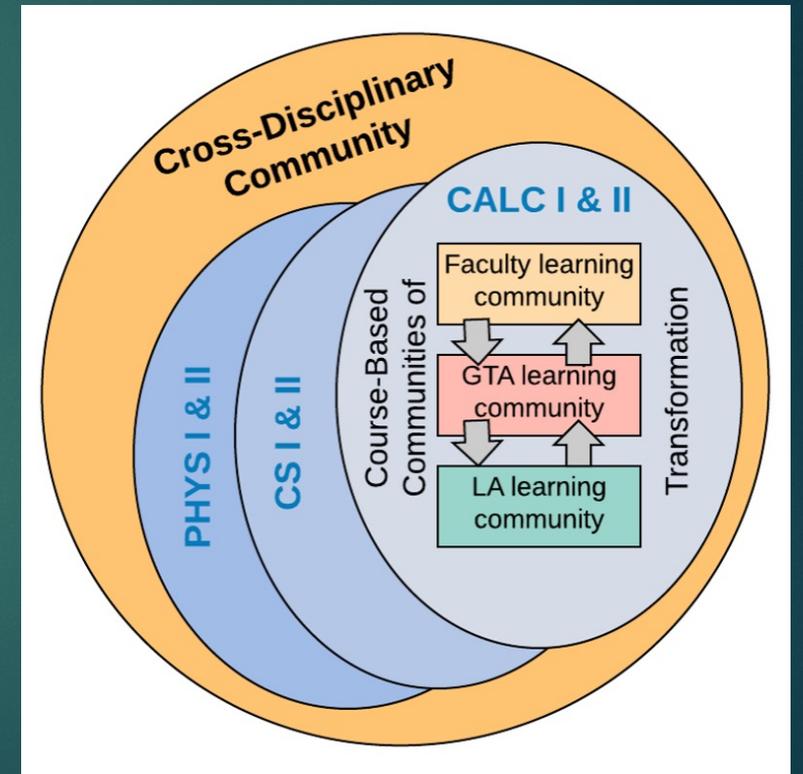
- Gateway2STEM is an NSF-funded project.
- The goal is to establish active and collaborative learning as the primary instructional approach in large undergraduate courses.
- We support faculty, GTAs, and learning assistants in actively engaging students.

The Gateway2STEM Model for Change



The Idea

The Implementation



Active Learning across three department:

- PHYS 160/260 calculus-based introductory physics sequence
- CS 112, 211, 262, 310 courses with labs or recitations.
- Math 113/114 calculus sequence into active learning
- GTA preparation focus – creation of a new weekly GTA seminar.



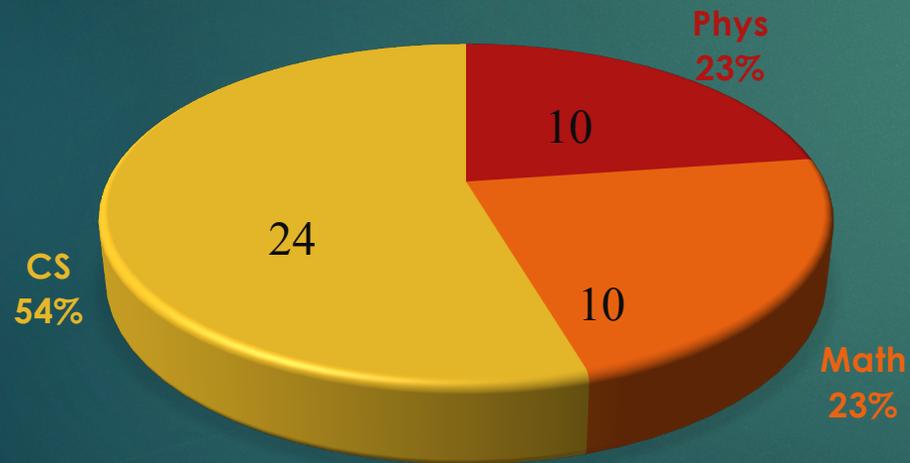
Why focus on GTAs?

- Future faculty are today's graduate students.
- GTAs engage with and instruct many undergraduates.
- GTAs play an important role in large enrollment introductory courses.
- GTAs can help change teaching pedagogies in ways that impact many students.

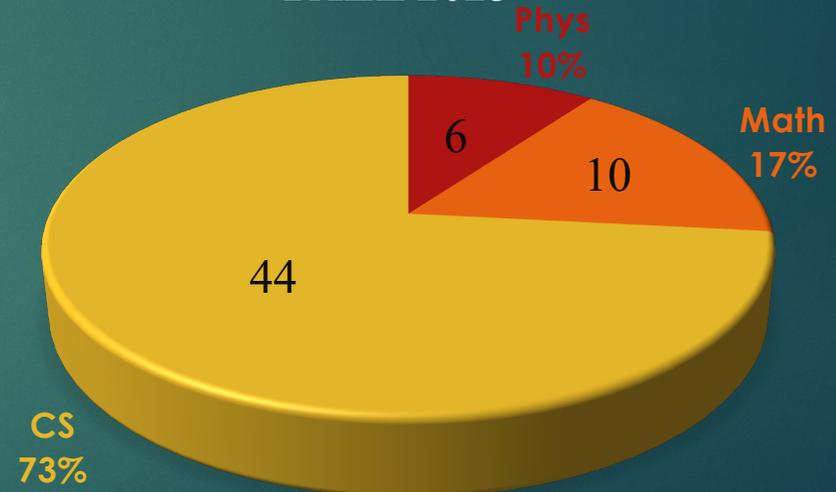
GTA Training Demographic

- A combined total of 104 GTAs have taken part in both the Fall 2022 and Fall 2023 sessions.

**GTA PARTICIPANTS BY DEPARTMENT
FALL 2022**



**GTA PARTICIPATION BY DEPARTMENT
FALL 2023**



GTA Reactions

“Active learning and communication is really important to keep students engaged.”

“I am prepared to implement active learning and first day.”

Fall 2022

“It was very informative and fun, takeaway is that GTA work is tough but fun and we are not alone.”



GTA Reactions

“For me, classroom teaching is a lab, so it blends itself quite well to active learning because the students are actively engaging in physics.”

Fall 2023

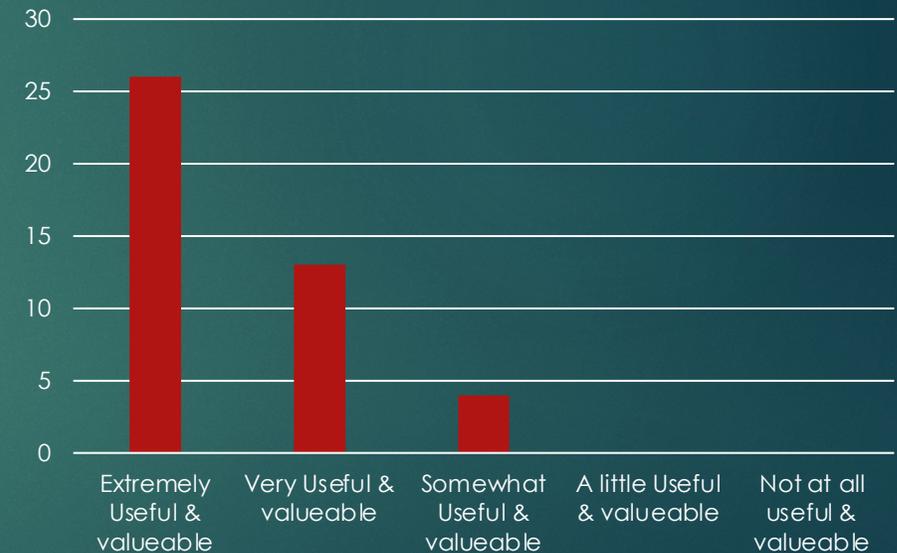
“In a flipped classroom, sometimes your students become the producers, and sometimes your producers do more than just consume.”

Major topics discussed during the Workshop



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

Program components and sessions usefulness



Fall 2023

Initial Summary / Findings :

- Starting teaching preparation is not enough for incoming graduate students.
- 2-day workshop helps GTAs transition into their graduate student role.
 - Helps for transition into graduate education as well as graduate teaching.
- International students/GTAs face additional challenges for which support will be important.

“From a cultural perspective, this might be the most challenging aspect for me.”

“The language barrier may be a challenge. Hopefully, it will be fine, but sometimes things may be lost.”

International GTAs

“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.”

“I have never taught before, and it's my first time abroad rather than in my home country. Everything is overwhelming.”

What's next?

- Explore how increased classroom experience changes GTAs.
 - How teaching practice evolves ?
 - How sense of role as an instructor evolves?
- Explore influences on changes in GTA teaching practice and understanding of their role as instructor.
 - Will examine both time in classroom and additional interventions.
- Explore whether there are differences in these experiences for international GTAs.

Thank you!

Gateway2STEM website:

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



Video about the Gateway2STEM project:

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

