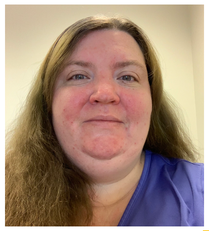


PRESENTER: **Annalisa Smith-Joyner**

INTRO:

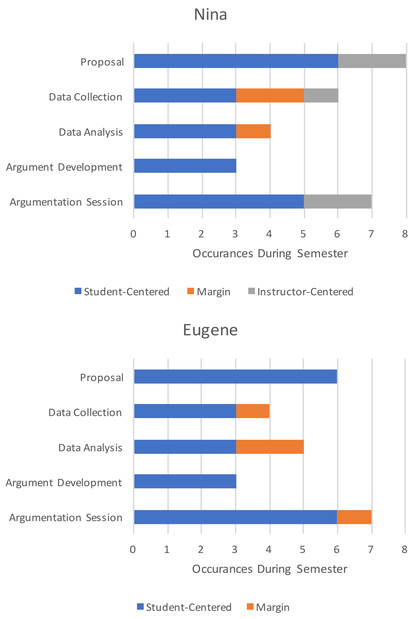
- Introductory physics laboratories are facilitated by GTAs. What are they doing and how does it impact the students in their sections?

METHODS

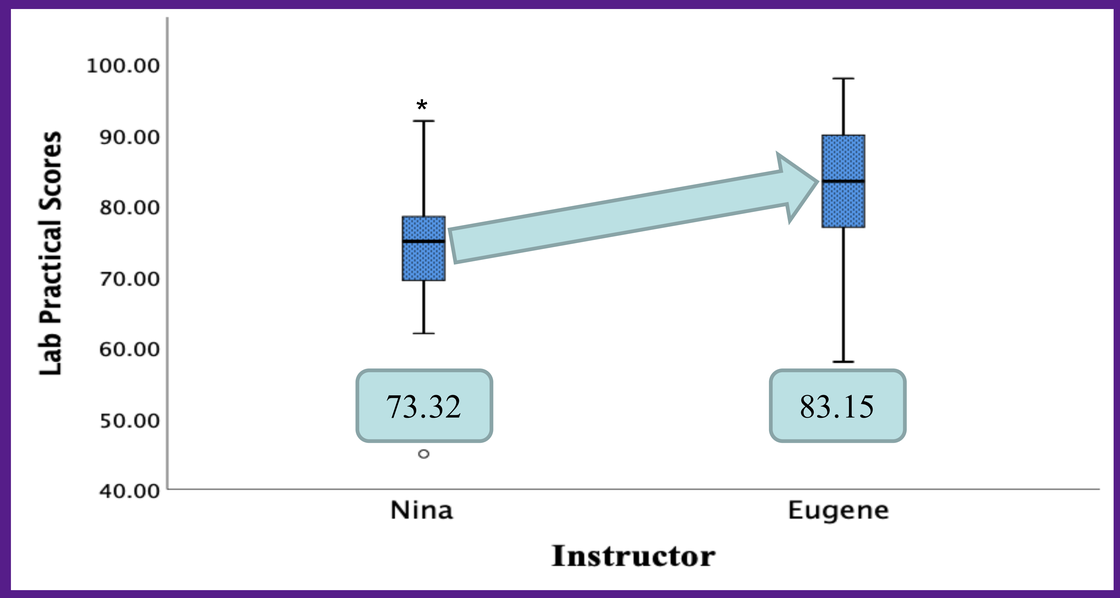
1. Developed and validated an Argument-Driven Inquiry specific observation protocol to observe GTA facilitation techniques.
2. Collected the amount of occurrences of student-centered to instructor-centered facilitation techniques from two GTAs during Fall 2018. Each section had about twenty students.
3. Compared the medians and distributions of the students performance on the lab practical to determine if there was a significant difference.

	Developing a Proposal	
SC	Instructor asks guiding questions	
	Instructor checks on whole class progress	
	Instructor explicitly answers all questions	
IC	Instructor outlines the procedure	
	Collection of Data	
SC	Instructor checks on whole class progress	
	Instructor checks on group progress	
	Instructor gives some aid and offers suggestions in data collection	
	Instructor interjects and directs data collection	
	Instructor demonstrates how to collect data specifically	
IC	Instructor helps assess validity of data	

RESULTS



Graduate Teaching Assistant (GTA) experience influences their **teaching styles**; which in turn **improves student performance** on the end-of-course practical.



Stage/GTA	Behavior
Proposal	
GTA-a	GTA told students to document what fan setting and how many weights they used.
GTA-b	GTA asked students what they were measuring when an issue was spotted with the proposal.
Data Collection	
GTA-a	GTA was disengaged, unavailable to the students, and was working on homework for another class.
GTA-b	GTA was observing the groups from the front of the room and was available if the students needed assistance.
Argumentation Session	
GTA-a	GTA asked the presenter about their data (acceleration & mass) and then stated that they analyzed the data wrong. GTA questioned a presenter about velocity, mass, trials, and error. The travelers listened to the GTA talk, but did not ask any questions until the GTA had gone to another group.
GTA-b	GTA mentioned how quiet the room was and then prompted the travelers to find errors on the whiteboard and have the presenter fix them. The GTA handed a 1 kg weight when the student stated the force was ~75 N. The GTA explained that the weight was ~10 N with gravity and then asked the presenter & travelers what units were in a N.

- Fall semester of 2018
  - 16 weeks
- Each investigation observed 3-weeks
- 26 sections with 22 students
- Graduate teaching assistants facilitate

Take a picture to download the full paper

Graduate teaching assistant fidelity of implementation in introductory physics laboratories

Annalisa Smith-Joyner, Joi P. Walker, Heather Hundley, Mark W. Sprague, Steven F. Wolf

ECU
STEM CORE
Collaborative FOR Research IN Education