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Teaching assistant reflections on practice sessions in a mixed-reality classroom simulator

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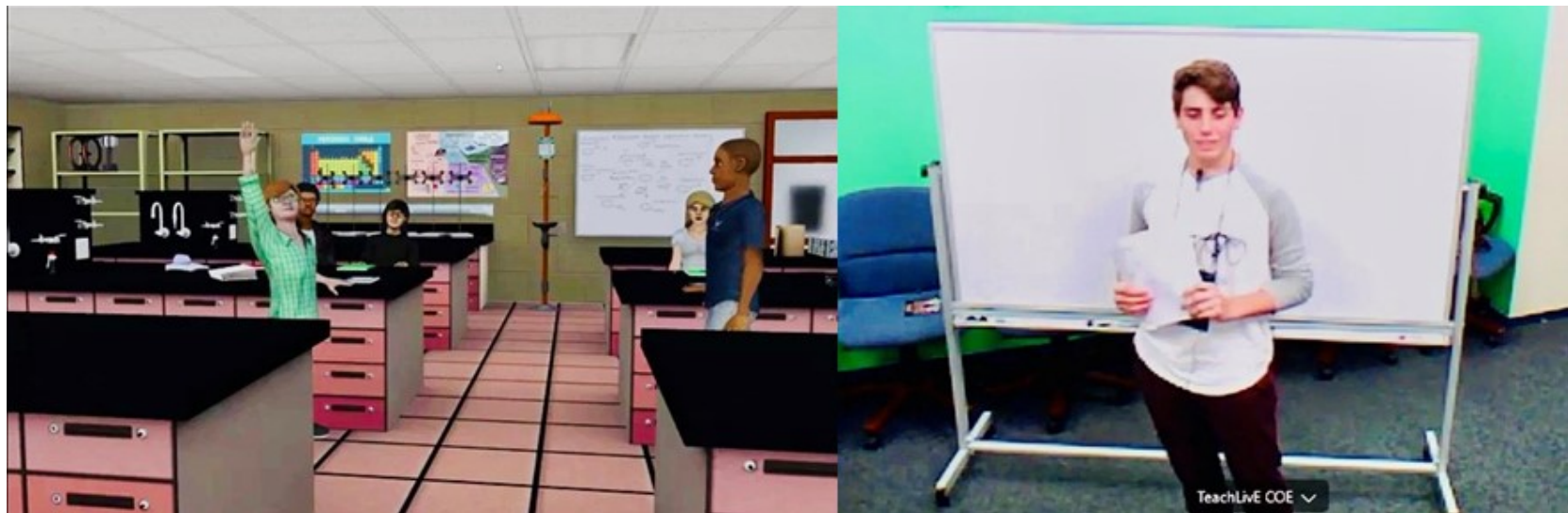


This work supported in part by NSF DUE Grant No. 1725554.

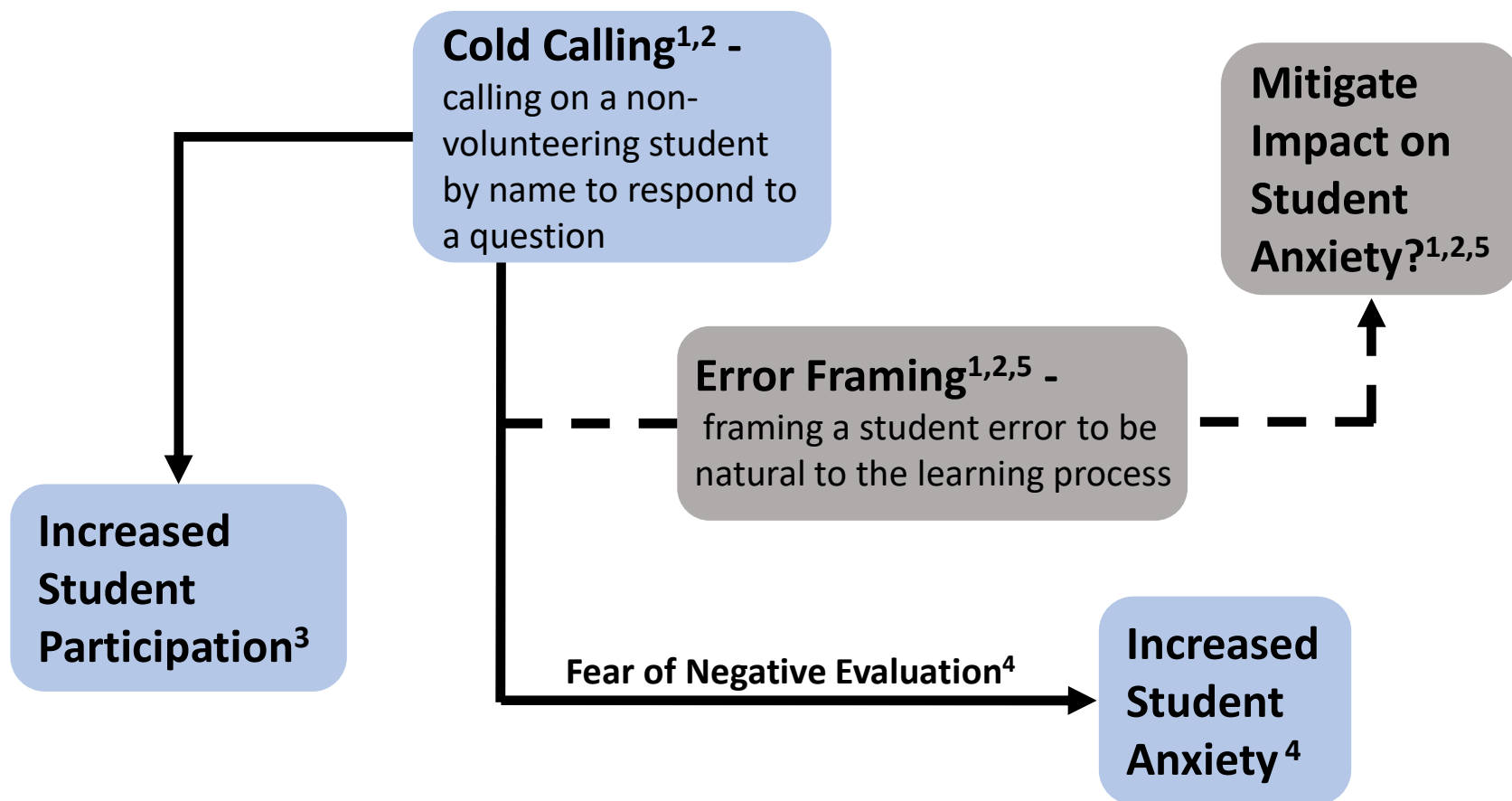
GTA Practice in a Mixed-Reality Simulator

One day GTA training bootcamp

- During first week of spring 2019 semester
- Groups of 3 GTAs took turns leading a whole class discussion with student-avatars
- GTAs prompted to practice using two different teaching skills
 - Details on next slide



Focused Teaching Skills



[1] Becker, et al., (2017).

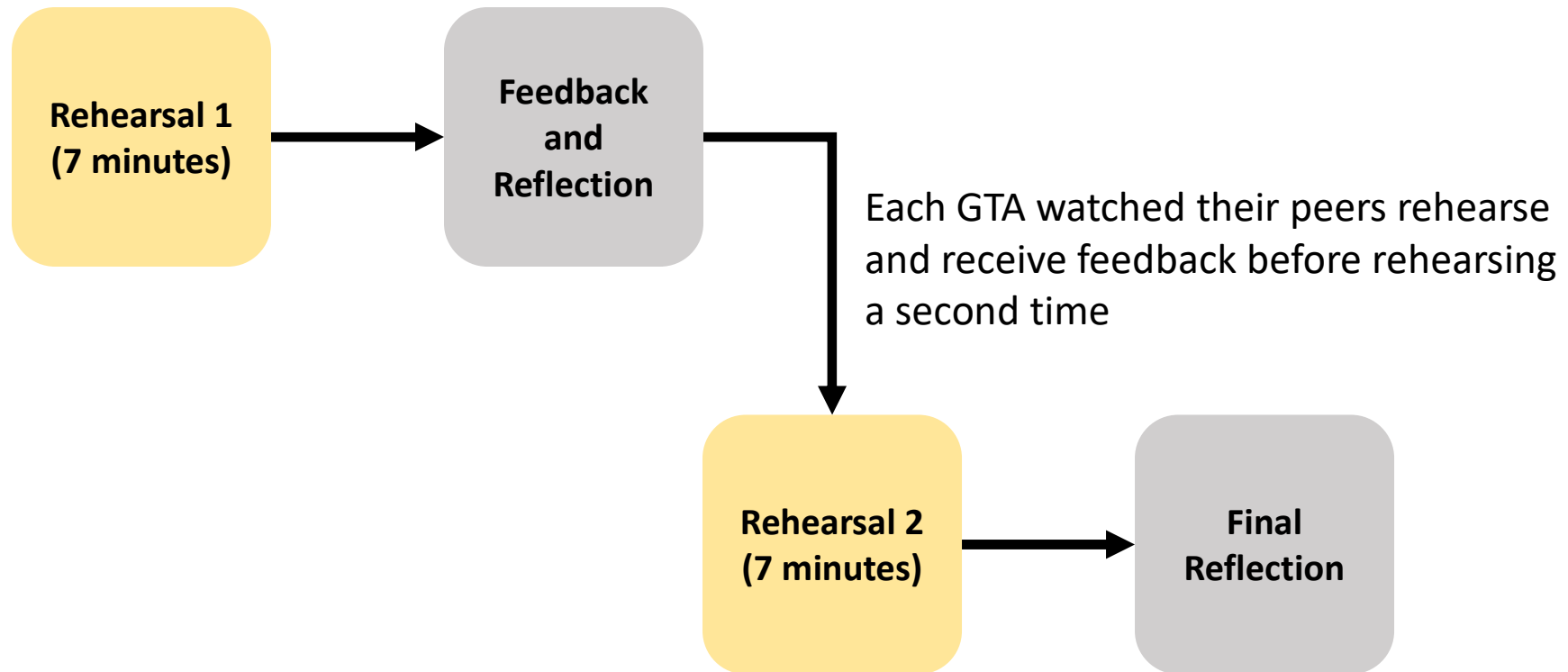
[2] Lemov, (2010).

[3] Dallimore, Hertenstein, and Platt, (2013).

[4] Cooper, Downing, and Brownell, (2018).

[5] Eddy, Converse, and Wenderoth, (2015).

GTA Training Session Procedure*



* Follows a cyclical training procedure^{1,2}

[1] Dieker, et al. (2014).

[2] Chini, Straub, and Thomas, (2016).

GTA Training Participants

- 11 physics GTAs
 - Introductory algebra-based physics “mini-studio”¹ (combined lab and recitation)
- 12 chemistry GTAs
 - Introductory guided inquiry-based lab (5e learning cycle²)

[1] Wilcox, Yang, and Chini, (2016).

[2] Bybee and Landes, (1990).

Data Analysis

- 5 researchers analyzed 3 video-recordings of GTA training sessions independently for instances of cold calling and error framing.
 - Researchers discussed and resolved inconsistencies¹.
- Process was repeated for the rest of the videos with groups of 2-3 researchers.

[1] Creswell and Poth, 2018.

Overall GTA Performance

Frequency of GTAs Who Practiced Teaching Skill

	Cold Calling		Error Framing	
	Rehearsal 1	Rehearsal 2	Rehearsal 1	Rehearsal 2
Physics GTAs	11	11	1	1*
Chemistry GTAs	12	12	1	4*
Total	23	23	2	5*

** Indicates different GTAs practiced the skill in Rehearsal 2 compared to Rehearsal 1.*

- All GTAs used cold calling in both rehearsals
- Number of GTAs who used error framing increased from rehearsal 1 to rehearsal 2

Focus on Two GTA Reflections

- Some GTAs were more vocal than other GTAs
- We focus on two GTA reflections
 - Both used cold calling
 - Both did not use error framing

How Many Times GTA Used a Teaching Skill in Rehearsal

GTA	Cold Calling		Error Framing	
	Rehearsal 1	Rehearsal 2	Rehearsal 1	Rehearsal 2
P	3	3	0	0
C	9	9	0	0

Letter indicates discipline, P = physics, C = chemistry

What were their reasons for not use error framing in their rehearsal in the simulator?



Physics GTA Example

After Rehearsal 1

P: I think I did better with cold calling, not normalizing error (error framing) because there was no error, I could not normalize the error.

After cross-talk with other GTA

Facilitator E: I think he (student-avatar) said he was wrong cause when I was watching you ... I think it was Maria (student-avatar) was the one that corrected him.

GTA did not perceive student-avatar to make an error

Chemistry GTA Example

After Rehearsal 1

Facilitator E: *What did you think about cold calling?*

C3: *I never minded cold calling, that's just you do it. ... I really don't like when you just sit there and constantly remind them that it is okay to fail. ... I'm not just going to abruptly stop what I am saying to say that.*

Error framing not part of GTA's current teaching style.



Takeaways

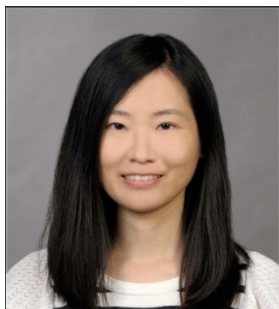
- Error framing was more challenging for the GTAs to practice in the simulator than cold calling.
- GTAs had a variety of reasons why they could not practice error framing.
 - Examples reasons included:
 - No awareness of student-avatar errors
 - Does not match current GTA teaching style

Research Team

Physics Team



Jacquelyn
Chini (PI)



Tong
Wan

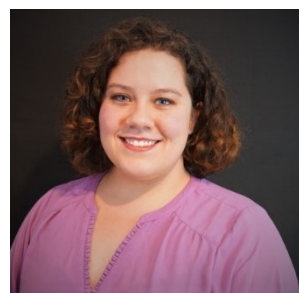


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Chemistry Team



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Thank you!

Questions?

Other AAPT Presentations

- Tong Wan – next speaker
*Characterizing Instructional Practices
in Inquiry-Oriented Laboratories*
- Jacquelyn J. Chini – PER: Instructional
Change Session (T, 5:25 pm)
*“Don’t just say, ‘You’re wrong’”: GTAs
Normalize Error in a Classroom Simulator*

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PERC Poster Session III (R, 9:45 am)

Student perspective of GTA strategies to reduce feelings of anxiousness of cold-calling

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