

Research Results and Best Practices for GTA Preparation

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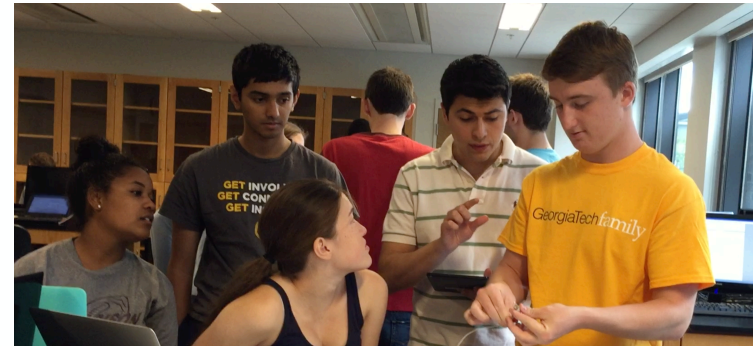
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Background

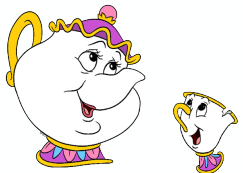
- GTAs are key partners in the education of undergraduate students
- In many large-enrollment intro physics classes, undergrads spend $\sim 50\%$ of their in-class time supervised by GTAs (labs, recitations)
- Potential for large impact on student learning
- **GTAs need preparation for teaching**



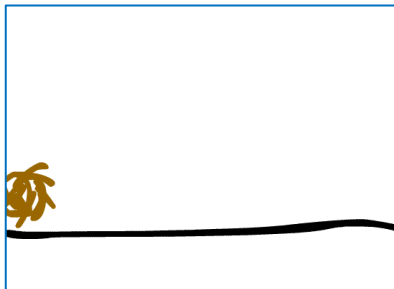
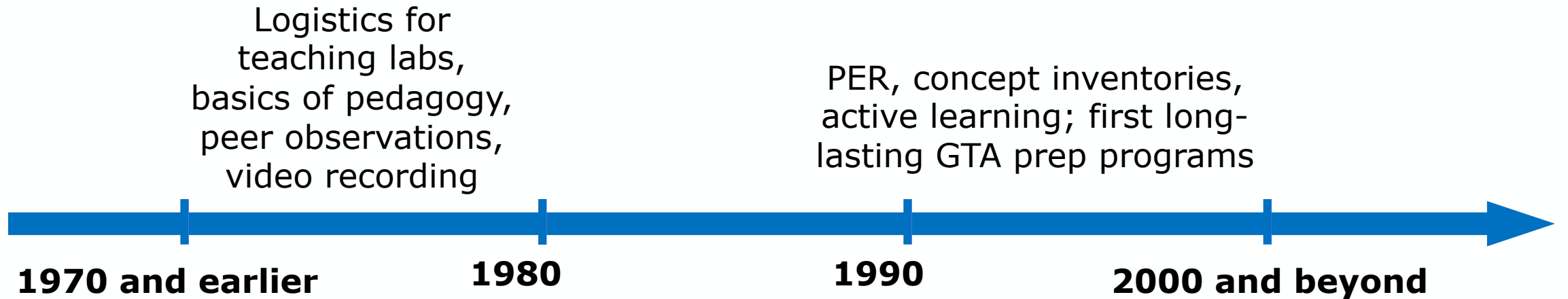
Tale as old as time

“In his inaugural oration as first president of Johns Hopkins University in **1876**, Daniel Coit Gilman expressed the pious hope that graduate schools would help to develop the teaching ability of future professors. This hope has remained largely unfulfilled to date.”

Charles Süsskind, American Journal of Physics, 25(3), **1957**



Timeline



First meta-analyses of GTA prep research; calls for more systematic research



Research shows that...

- Training improves GTAs' teaching **confidence** and **self-efficacy**
- Training improves GTAs' **pedagogical content knowledge (PCK)** and can result in adoption of learner-centered teaching styles
- Science GTAs benefit more from **discipline-specific preparation** than from campus-wide initiatives
- GTAs need guidance in **logistics** issues such as classroom management and grading
- Teaching experience improves graduate students' **research and transferable skills**

The takeaway

- If you're creating a new GTA training program, or looking to improve an existing program, you should keep in mind these **six (plus one) principles for best practices in GTA preparation**
 - ❖ Synthesis of most important recommendations in GTA prep literature
 - ❖ Plus one more regarding professional development
- Note: these come from a literature review. A more thorough meta-analysis is in the works (expected 2021).

Principles for Best Practices

1. GTA preparation should be **nurturing, meaningful**, and a **partnership** between graduate students and faculty
 - ❖ GTAs should be treated as partners, not cheap labor
 - ❖ Institutional culture must show teaching is valued
 - ❖ Training should provide safe space for expressing concerns
2. GTA development needs to be an **ongoing endeavor**
 - ❖ A one-time training *can* help, but it isn't enough

Principles for Best Practices

3. GTAs need to have the opportunity to **practice and receive feedback**
 - ❖ There's always better outcomes from “doing” than from “being told”
 - ❖ Practice improves confidence; feedback helps improvement
4. It is important to **observe GTAs' actual teaching** and provide them with feedback for improvement
 - ❖ Because how else will you know if your GTAs have absorbed their training and put it into effect?

Principles for Best Practices

5. GTA training must be grounded in **research-based** teaching strategies
 - ❖ Teach them in the way you expect them to teach
6. GTA development must take into account the **GTAs' beliefs** in order to foster a sense of **professional identity** and **buy-in** for reformed teaching
7. GTA professional development should highlight the **transferable skills** that can be useful outside of an academic career

Thanks for watching!

More information:

- **AAPT Invited Talk, ID #10066:** “Roleplaying in GTA Preparation: Microteaching and Lab Simulation” (example of practice/feedback activities for physics GTA preparation)
- **PERC Juried Talk, ID #8024:** “Transforming the Preparation of Physics GTAs” (research results from GT Physics GTA training since 2013)

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