Classroom Observations as part of TA Training

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The need for TA preparation

• Students in large-enrollment intro physics classes spend up to half of their in-class contact hours supervised by TAs (labs, recitations, tutoring...)
• Potential to have large impact on student learning
• Graduate and undergraduate TAs are novice teachers, may have zero prior teaching experience

• TAs need preparation for teaching!
• They haven’t learned to swim yet so don’t throw them into the deep end without first giving them “water-wings of TA preparation” 😊
**TA preparation works!**

• Research shows* that training improves TAs’ **confidence** and **self-efficacy**, enhances TAs’ **pedagogical content knowledge**, and can result in the adoption of **learner-centered** teaching strategies

• TAs need to have the opportunity to **practice** and **receive feedback** on their performance, both before and during their teaching

• The best way to know what TAs are doing in the classroom is to **watch them teach** and provide them with useful **feedback** for reflection and improvement

* Alicea-Muñoz, PhD Dissertation, Chapter 2; Georgia Tech (2020) https://smartech.gatech.edu/handle/1853/62714
Physics GTA preparation at GT

- One credit, pass/fail, required for first-time GTAs, offered every Fall semester since 2013
- **3P Framework*** – integration of pedagogy, physics, and professional development results in GTAs who are motivated and effective teachers and helps GTAs develop transferable professional skills
- Structure: **Orientation** (before semester begins), **Follow-Up Meetings** (during semester), **Out-of-Class Activities**

Classroom Observations

• One of the **Out-of-Class Activities** in our GTA preparation program
• Goal is to observe each GTA **twice** per Fall semester:
  • Observation #1 in early September (around week 3-4 of the semester)
  • Observation #2 in late October (around week 10-11 of the semester)
• Caveats:
  • Some semesters have had one single observation due to logistics problems (e.g., semesters in which there are 30+ first-time GTAs)
  • Fall 2020 (the COVID fully-remote semester) had zero observations
  • Observations are **VERY time-consuming**; sometimes I have a TA that assists me (😊), but other times I’m all by myself (😭)
Classroom Observations

• **Benefits:**
  • Get to see exactly how the TAs are teaching
  • More reliable than self-reporting on effectiveness of training
  • Catch bad teaching practices before they become habit
  • Feedback allows TAs to improve their teaching

• **Drawbacks:**
  • Can’t observe ALL the teaching, all the time, for all TAs
  • Surprise observation could catch TA on a bad day; pre-scheduled observation could lead TA to prepare extra hard for that one single time
  • Student-TA interactions could be quantum phenomena (observation affects the outcome)
Observations checklist

- Pre-observation survey
- Scheduling the observations
- The observations:
  - Option for **video recording** (recommended but not required)
  - Each TA observed for **30 minutes** (labs are 2-3 hrs, recitations are 1hr)
  - Review observation (watch video or read notes taken),
  - Use **rubric** to write **feedback**, then send feedback to TA via email
  - Repeat for second observation
- After receiving feedback from both observations, TA writes **reflection** on the feedback received
Pre-observation survey

• Sent to TAs during first week of classes
• Google Form:
  • Name
  • Class you are teaching
  • Teaching schedule (day/time/location), first and second preference [for each observation]
  • Video recording [yes/no]
  • **Name one aspect of your teaching for which you want focused feedback** [for each observation]
• All are required fields – last item forces TAs to think about specifics (not just “general feedback please”)
Scheduling the observations

• Attempt to honor first-preference for each TA’s observations, but sometimes not possible

• Possible logistics issues:
  • Scheduling around your own teaching schedule
  • Some labs are late at night – may cause issues for observers (e.g., family obligations, can’t drive at night, etc)
  • Some labs/recitations happen at the same time – a single observer can’t be in two places at once
  • Too many observations in one single week can be exhausting – results in observations spreading over 2-3 weeks, depending on how many observers

• Share observations schedule with TAs as soon as it’s set
Observation rubric

- Nine evaluation criteria, scored in a four-point scale
- Rubric created in-house, modified several times as needs arose; current rubric is Version 4.1*
- Note: research-validated observation protocols exist (e.g., RIOT, TA-IOP, RTOP, COPUS, LOPUS), but we have not used them so far (future plans)

Video recording equipment

• 2014 – 2018: borrowed a camera from IT, sometimes also a mic
  • Issues: unreliable, always depending on whether the equipment was available, couldn’t always get a microphone which resulted in low-quality audio

• 2019 – present: managed to convince the Chair of the need for dedicated classroom observation equipment (yay!)
  • ~ $3000 budget, to buy two sets of equipment

• Possible near future (2023? 2024?): camera+mic at each lab table
  • If approved by IT...
  • Potential improvement: non-intrusive “invisible” recording
# Video recording equipment

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost Per Item</th>
<th>N</th>
<th>Total</th>
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<tbody>
<tr>
<td>Canon VIXIA HF G50</td>
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<td>$2,198.00</td>
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<tr>
<td>Canon Extra Battery and Charger</td>
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<td>2</td>
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<td>Lightweight foldable headphones</td>
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<td>Heavy Duty Video Tripod</td>
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<td>$128.99</td>
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<tr>
<td><strong>Totals</strong></td>
<td></td>
<td></td>
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<tr>
<td><strong>One set</strong></td>
<td><strong>$1,575.92</strong></td>
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<tr>
<td><strong>Two sets</strong></td>
<td><strong>$3,022.85</strong></td>
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</table>

**Notes:**
- All items purchased on Amazon
- Prices are from 2019
Video recording equipment

1. Camera
2. Extra camera battery
3. Headphones
4. Microphone
5. Mic receiver
6. Rechargeable batteries and charger
7. Carrying case

Not pictured: tripod, SD card
During the observations

• Determine what time in the lab you’ll observe the TA
  • Start of lab/recitation: good for observing pre-lecture, not good for observing interactions with students
  • Middle of lab/recitation: good for observing interactions with students, but can’t observe the lab pre-lecture
  • Never schedule to observe near the end – many students will have left already

• Announce the observation to the students
  • Assure them that video won’t show up on social media

• If no video, follow TA around with a clipboard to take notes
• If video, give TA microphone, follow TA around with camera
• Leave after 30 minutes
Sample clip from an observation
After the observations

• Rest your camera-holding arm
• Upload videos to Dropbox
• Watch video recordings or re-read notes to write feedback to TA
  • Pro-tip: watch videos in 1.5x – 2x speed!
• Email each TA:
  • Filled-out rubric and written feedback
  • Link to their own video(s) on Dropbox
  • Offer for one-on-one meeting to discuss observation and feedback
• Debrief with other observers (if more than one person doing observations)
Observation reflection

• Assignment counted towards GTA preparation course grade
• Forces TAs to read and reflect on the feedback received

“After you’ve received all your observation feedback, answer the following questions in essay format:

• How does the feedback you received from your instructors differ from the feedback you received at the microteaching practice?
• Does the new feedback reflect an improvement on your teaching skills? Explain.
• Is there anything that stands out in your feedback that you’d like to discuss?”
Results

- No observations in pilot semester (2013)
- One or two observations per TA per semester since 2014 (except 2020)
- Approximately **620 GB** of video recordings accumulated so far

<table>
<thead>
<tr>
<th>Year</th>
<th>#GTAs</th>
<th>Observation 1</th>
<th>Observation 2</th>
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<tr>
<td></td>
<td></td>
<td>Video</td>
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</tr>
<tr>
<td>2014</td>
<td>13</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>2015</td>
<td>34</td>
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<td>23</td>
<td>16</td>
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<td>26</td>
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<td>2018</td>
<td>16</td>
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<td>2019</td>
<td>18</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>2020</td>
<td>22</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>2021</td>
<td>20</td>
<td>13</td>
<td>7</td>
</tr>
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</table>
Results

• Final survey at end of semester asked TAs to rate topics and activities (17 total items)
• Five-point Likert scale
• Classroom observations ranked #2 in 2015, #3 in 2016 (but higher score compared to 2015)
• Not pictured: #5 in 2017 and 2018; analysis not yet completed for 2019 – present

<table>
<thead>
<tr>
<th>Rank</th>
<th>Item</th>
<th>Score (M ± SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>1 Microteaching</td>
<td>4.38 ± 1.07</td>
</tr>
<tr>
<td></td>
<td>2 Individual Classroom Observations</td>
<td>3.79 ± 1.29</td>
</tr>
<tr>
<td></td>
<td>3 Teaching Physics</td>
<td>3.76 ± 1.06</td>
</tr>
<tr>
<td>2016</td>
<td>1 Microteaching</td>
<td>4.32 ± 0.72</td>
</tr>
<tr>
<td></td>
<td>2 Teaching Physics</td>
<td>4.23 ± 0.69</td>
</tr>
<tr>
<td></td>
<td>3 Individual Classroom Observations</td>
<td>4.09 ± 1.11</td>
</tr>
<tr>
<td>2017</td>
<td>1 Intro &amp; Georgia Tech Policies</td>
<td>4.38 ± 0.82</td>
</tr>
<tr>
<td></td>
<td>2 Microteaching</td>
<td>4.35 ± 1.07</td>
</tr>
<tr>
<td></td>
<td>3 Teaching Physics</td>
<td>4.29 ± 1.20</td>
</tr>
<tr>
<td>2018</td>
<td>1 Lab Simulation</td>
<td>4.80 ± 0.41</td>
</tr>
<tr>
<td></td>
<td>2 Microteaching</td>
<td>4.67 ± 0.82</td>
</tr>
<tr>
<td></td>
<td>3 Teaching Physics</td>
<td>4.33 ± 1.11</td>
</tr>
</tbody>
</table>
What happens to the videos?

- TAs are offered an opt-out: “let me know if you want me to delete your observation videos”
  - 1-2 people ask for their videos to be deleted every year
- Kept videos are used for later TA training
  - Videos of past TAs shown when discussing classroom management
  - More videos of past TAs discussed later in the semester
  - Clips chosen to highlight specific mistakes or things done well
- If TA signed IRB consent form, videos can be used for research
  - But that’s future work...
Summary

- Classroom observations are a useful tool to assess the effectiveness of TA training by seeing first-hand what the TAs do in the classroom.
- TAs benefit from feedback given based on classroom observations.
- Logistics can be difficult; video recordings help TAs and observers.
- Hard to tell if TA-student interactions are affected by observations.
- Email me if you’d like to discuss! ealicea@gatech.edu

Scan for all my GTA preparation materials and research: 

For more TA prep research: see my student Greg Carroll’s talk (Session LG) and PERC poster (Session 1)