When Confidence Exceeds Ability: Illusions of Competence Interfere with Training Success in Novice Graduate Teaching Assistants

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The Dunning-Kruger effect is a cognitive bias well-documented in the psychological literature which describes how self-perception of skill is only modestly correlated with actual level of performance. These illusions of competence have been explained as a metacognitive deficiency of the unskilled, who are simply incapable of recognizing their own shortcomings.

This study was conducted to determine the extent of this phenomenon in a cohort of first-year chemistry graduate students enrolled in a training program for Teaching Assistants (TA). For this purpose, members of the cohort were surveyed to determine their level of confidence in their teaching abilities 3 times during their first semester in the program. Their teaching performance was observed at the end of the semester.

Results indicate that low-performing TAs tend to overestimate their own performance while high-performing students are more likely to underestimate their abilities. This effect can interfere with TA instructional development because of a misperception of what improvements are required.

We did not observe a marked difference between male and female TAs in the study; however we did find that non-native TAs, for which English is a second language, have more modest assessment of their abilities and this is likely linked to their concern about language proficiency.

**BACKGROUND:**

**Foundations in Teaching (FIT)**

The graduate TAs in this study received training through the FIT program. This year-long program is supervised by faculty in the Department of Chemistry and designed to integrate with the professional development initiatives of the Graduate School.

The FIT program has been in operation in since 2012 and this training has been offered to five cohorts of incoming graduate student classes.

The program:
- addresses content delivery and classroom management
- requires completion of three teaching workshops
- provides TAs with two formally documented classroom observations
- have access to online instructional support

**Evaluation Process:**

Initial Self-Perception in August: The students in the Department of Chemistry first year graduate class complete a self-perception survey to evaluate their teaching performance relative to their peers.

Mid-August – November: Students attend two teaching workshops and experience teaching first-hand for approximately 8-11 weeks of labs.

Late November: teaching performance evaluated by supervisor. Thirty (30) students completed the self perception survey and their evaluated performance was grouped into quartiles for analysis.

**Consequences for Training**

- TAs who overestimate their competence might be resistant to training.
- Strategies that allow students to calibrate their own abilities might be helpful:
  1. Watch a video and follow up with a debriefing session
  2. Early observations with detailed feedback
  3. Peers observation with targeted worksheet that highlights desirable behaviors