

## **TA Training at Two R1 Institutions: A Comparative Analysis**

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## Introduction

Teaching assistants (TAs) play a vital role in the teaching mission of higher education institutions [1], including the College of Engineering at the University of Wisconsin- Madison and Imperial College London. TAs are expected to fill a variety of roles: they directly instruct students in discussions, labs, and lectures, host office hours, and complete a large portion of the formative and summative assessment for their students [2]. While the value of these educators is evident, training is resource-intensive and there are no standardized models of training. There are, however, some examples of good practice in this area: simulator training which consists of observation and developing questioning techniques [3], and a situated learning approach focused on developing authentic experiences [4]. As TA developers, we need to articulate the rationale and purpose for delivering training, consider its viability, and align the pedagogical delivery with the content we choose to include and exclude.

This paper compares the TA development models used by engineering educators from the University of Wisconsin-Madison and Imperial College London. We focus on the rationale that informs the design and delivery of the programs and draw comparisons between the following aspects: 1) the institutional context of each program, 2) the program structure, 3) content selection and delivery, and 4) recruitment and incentives for engagement in TA training. By sharing these models, readers will be able to intentionally reflect on their own training programs, consider components of our practices that could be incorporated into their own contexts, and ultimately serve future faculty in other institutions.

## 1. Institutional Context

Training teaching assistants is a relatively new practice in higher education, and the catalyst for programs differs in the US and UK. In the US, there are no standardized guidelines at the federal level for teacher preparedness in higher education whereas the training that Imperial College London conducts in the UK is largely informed by national government mandate. The Dearing Report of 1997 [5] provided a formal blueprint for teacher preparedness in the UK and the Labour Party Government introduced a policy requiring anyone teaching in higher education to obtain appropriate qualifications. Previously, certified courses had been administered by Staff Educational Development Association (SEDA), but the policy meant two things. First, a new organization, the Higher Education Academy (HEA), was established to ensure that at least probationary lecturers obtained accredited qualifications as teachers. Second, every higher education institution (HEI) in the UK received Government funding for 10 years to set up institutional centers that could deliver these accredited qualifications [6].

Even though the programs were mostly catered towards probationary lecturers, it was possible to achieve 3 levels of fellowship (associate fellowship, fellowship and senior fellowship), meaning that both TAs and experienced practitioners (e.g. tenured professors) could receive an appropriate qualification. Tenured professors were not always motivated to apply for the qualification and the

provisions set up for TAs were patchy at best. Some HEIs made tremendous effort to accommodate their TAs, while others provided no provisions.

When the initial funding stream ended, HEIs throughout the UK continued to provide accredited teaching qualifications for their probationary lecturers, with funding for centers and programs coming from the institutions themselves, but this meant that TAs often missed out. The Bologna Process of 2004 sought to address concerns felt by the postgraduate community across Europe as part of an EU initiative and TA training was taken more seriously with institutions being more purposeful in their approach and setting up more robust structures for it. The Teaching Excellence Framework (TEF) [7] which was introduced in 2015 throughout the UK, consolidated this desire from policy makers and institutional leaders for teaching at every level in higher education to be recognized, rewarded and funded [8].

In contrast to the UK, neither the University of Wisconsin-Madison (UW) nor the United States government mandates any specific teaching training for any instructional employee or any accreditation or licensure of the individuals [9]. Instead, colleges and departments are accredited as an organizational entity every 5-7 years and do not rely on individual instructor accreditation. The UW College of Engineering is accredited both by the Higher Learning Commission and the ABET Accreditation Board and base requirement to hold a teaching position at the instructional staff or faculty level is to hold a degree one level above the students in the course being taught. Even this requirement can be circumvented by Department or College discretion. Many Colleges and Schools within the university hold their own training sessions or events, but they are locally supported and there is no consistent model for delivery. Ultimately, many faculty and instructional staff are considered competent instructors during the hiring process, either by show of experience in their curriculum vitae or through a teaching demonstration during their interview. It is very common for new and experienced faculty and instructional staff to have little to no formal training in teaching, and those who do have typically sought it out on their own.

The UW College of Engineering has offered dedicated TA training for over 25 years through the Collaboratory of Engineering Education and Teaching Excellence (CEETE) and the organization from which it grew, Teaching and Learning Services. This training was the first complete TA Teaching and Learning training program of its kind at the University and addressed teaching and learning skills, onboarding information, and professional and instructor identity development [10]. Today, the UW College of Engineering requires TAs to complete TA training as a part of the contracted time for their instructional appointment.

The only University-level mandate for TA training is that to be hired for a second semester, TAs must complete the Graduate Assistant Equity Workshop (GAEW) that covers the federal and state requirements for which they are responsible as employees of a state institution. The GAEW covers topics including Title IX, mandatory reporting of child and elder abuse, safety, and anti-discrimination using illustrative scenarios for discussion. Having considered the contextual and historical background of the programs, in the next section we will discuss their structure.

## 2. Program Structure

While institutionally prescribed motivators for offering training vary, both of our example programs share values in terms of content areas and engagement activities. The Imperial College London offers training at a department level. TAs are required to attend core workshops on Preparing to Teach and Assessment and Feedback before they are invited to take on any teaching responsibilities. Optional workshops are also available to them that center on supervision and teaching in lab-based settings with all optional workshops administered and run through the Graduate School. In Imperial College London's department of chemical engineering, all interested TAs are required to complete the following activities before they teach: complete specific training with the module lead, attend a departmental seminar, and engage with debriefs led by laboratory supervisors (e.g., how to run the equipment and health and safety concerns). Specific departmentally prepared handouts featuring tips and guidance notes on teaching small groups which demonstrate lab-based settings and initial preparation are also made available to the TAs.

The UW-Madison New Educators Orientation (NEO) is more specifically structured than Imperial College London's program and is done at a college-wide level instead of by department. The NEO includes a series of seven in-person required workshops offered over a day and a half. The NEO program includes lunch, breaks, and consistent facilitators to establish a sense of community among the TAs. UW-Madison staff see the merit in offering additional optional workshops because of the variance in TA duties across the college, but this would require additional staff and logistics that are a direction for future growth in this area.

The required NEO workshops are Introductions, Implicit Bias, Grading and Feedback, Engaging Students, Navigating Challenges, Presentation Skills, and a Q&A session with experienced TAs. Attendance and engagement in training workshops give TAs an opportunity to understand applied learning and share meaningful experiences [11]. Approximately 180 TAs participate in NEO each year; it is offered every semester to all first-time teaching assistants in the College of Engineering (80% of overall participants) while the other 20% come from the College of Agriculture and Life Sciences (CALs).

Returning TAs at UW-Madison attend a required training called ReTA, a much shorter program held virtually for 1.5 hours to focus on lessons learned from prior experience. This focus empowers TAs to give each other advice rather than relying on facilitators as experts. NEO and ReTA both have virtual courses through the University Learning Management System, Canvas, with quizzes, readings, and reflections that participants are expected to complete independently before their synchronous sessions meet. They also maintain access to the resources after the training is completed for reference throughout the semester as needed.

Both institutions have made peer feedback of presentations a priority, a useful skill for TA development in almost any context [12]. Imperial College London recently introduced compulsory micro-teaching sessions where TAs are required to prepare an appropriate session and teach for 10 minutes before they receive feedback from staff and their peers. In an almost

identical event, UW-Madison TAs attend “Presentation Skills” sessions at NEO where they are expected to have prepared a brief presentation to present for a small group of peers. At NEO, these presentation topics are not specified; non-academic topics are welcomed if the presenter gets speaking experience. The peer feedback element of these workshops is key to both institutions and is enriching in terms of the personal support TAs are given. They are given the tools to effectively judge teaching and enter this important dialogue with others. Table 1 summarizes how the programs compare in terms of some of the logistics regarding inputs and outputs.

|                                  | University of Wisconsin-Madison   | Imperial College London (departmental)   |
|----------------------------------|---|--|
| Number of staff and people hours | <ul style="list-style-type: none"> <li>• NEO: 12 hours/person (2 full-time staff, 1 graduate student coordinator), twice a year</li> <li>• ReTA: 2 hours/person (2 full-time staff), twice a year</li> </ul>  | <ul style="list-style-type: none"> <li>• 6 hours per person (4 or 5 members of staff), twice a year for micro-teaching</li> <li>• 1 hour (2 or 3 members of staff), for initial training lecture</li> </ul>  |
| Resources                        | <ul style="list-style-type: none"> <li>• Handouts on specific topics (e.g. implicit bias, expectations agreements with instructors of record)</li> <li>• Canvas course with modules containing required pre-readings, quizzes, and optional supplementary resources</li> <li>• Classrooms for presentation skills activity</li> <li>• Provided food and drink for NEO participants</li> </ul> | <ul style="list-style-type: none"> <li>• Handouts on specific topics e.g. small group teaching, lab demonstrating,</li> <li>• Seminar rooms for micro-teaching</li> <li>• Further support and guidance are available to all TAs in the institution via a website.</li> </ul> |
| Demographic data of TAs          | <ul style="list-style-type: none"> <li>• 50% international with a large contingent from East-Asia and India</li> <li>• At least 2/3 male</li> </ul>   | <ul style="list-style-type: none"> <li>• Mostly international with a large contingent from East-Asia and central Europe.</li> <li>• At least 2/3 male.</li> </ul>  |
| Number trained annually          | <ul style="list-style-type: none"> <li>• 160-180 new TAs</li> <li>• 100-120 returning TAs</li> </ul>  | <ul style="list-style-type: none"> <li>• ~45-50</li> </ul>   |

*Table 1: comparative logistical data for the TA training programs at the University of Madison-Wisconsin and Imperial College London*

Additionally, Figure 1 below is a graphical representation of the time flow of each program.

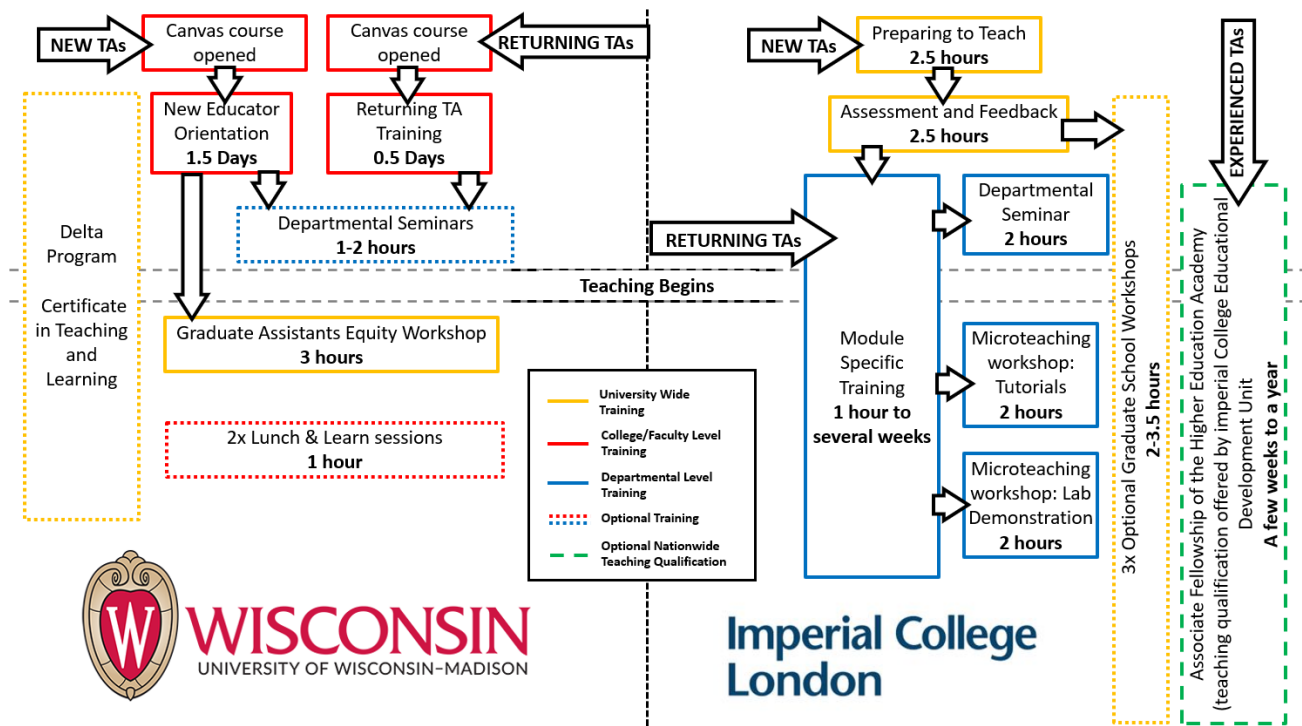


Figure 1. A timeline comparison of required and optional training programs at the University of Wisconsin-Madison and Imperial College London.

### 3. Content Selection and Delivery

As part of this critical reflection on the structure of the programs, it is important to briefly mention the underlying rationale for their overall design. Design decisions that have informed the ICL's departmental-wide program are related to earlier work on what TAs feel they initially need in the classroom, with the first challenge often being the confidence to deliver a taught session [13]. Similarly, a key goal of NEO at UW is for participants to feel comfortable and confident on their first day of teaching. Because the Imperial College London training is for students of one specific department, they offer a seminar to ensure that TAs are aware of all relevant processes and procedures within that department (e.g. expectations of the role, how to address serious problems in their taught sessions, how to claim payment). Some of these topics, such as addressing problems, are also offered at NEO, but specifics about payment are not possible in a multi-department training session. Both training programs prepare handouts to help TAs develop their self-efficacy [14]; at UW-Madison, for example, TAs are given a timesheet so they can learn to track their time and create clear expectations with their instructors of record. UW's handouts, readings, and other activities are collected in the Canvas course, which TAs may revisit whenever a teaching question arises during their teaching tenure. In both of our examples, it is difficult to gauge whether the TAs utilize the materials as follow-up resources or how impactful they are in terms of reference material after their initial training. Some handouts are passively offered but not actively engaged with during training, which may need to be redressed, especially as the major concerns faced by TAs relate to classroom management and the design and delivery of impactful sessions [15].

#### **4. Recruitment and Incentives for Engagement in TA Training**

Finally, the methods of TA recruitment differ in both contexts and may influence their motivation to engage with continual professional development. Recruitment also inadvertently has a bearing on how the programs are structured and administered. At ICL, TAs elect to teach and sign up for various roles on modules aligned to their knowledge base. At UW, TAs do not choose their specific appointment, but rather are chosen by the leads of specific modules or courses based partly on skills and experience, but more often based on who needs funding. This model may not engage the intrinsic motivation of TAs as well as that of the UK model. Very few positions in UW's College of Engineering are left open to applications. Previous research suggests that appointment structures play an important role in how motivated TAs are and how they respond to their teaching duties [16].

Both institutions have incentives for TAs to continue developing their teaching skills beyond the workshops required for employment. UW-Madison offers the Delta Certificate in Research, Teaching, and Learning at a campus level, and Imperial College London TAs can pursue an accredited qualification as an associate fellowship of Advanced HE (Higher Education). Neither of these achievements are required to maintain employment, however they both offer additional training opportunities that are helpful when they enter the job market upon graduation.

The Delta certificate confers recognition of a student's achievement in teaching experience, promotion of successful learning with diverse participants, knowledge of the foundational scholarship in teaching and learning, and more. Scholarship can be especially important, as there is often a perceived lack of it amongst engineering faculty, which acts as a hinderance to enhanced teaching practices [17]. Applicants must complete Delta-approved courses, such as "Using Writing to Teach in Any Discipline". They also complete a Delta Internship in which they build a sample aligned teaching plan, create a portfolio, and present these to their certificate defense committee. The portfolio is a useful mechanism through which continual professional development is captured, as it enables individuals to interrogate their own practice, critically reflect upon it and understand their teacher identity [18]. At Imperial College London, TAs can gain the accredited status of Advance HE, which requires them to submit a critically reflective account of their taught practice and supporting statement, adhering to a prescribed set of professional standards. Additionally, TAs can be nominated for an annual prize which recognizes individual endeavor and success of the TA. Currently, only one such prize is awarded annually, although this number could be increased to accommodate other, meaningful criteria.

#### **Conclusion**

We feel strongly that teaching assistants represent the future of higher education. Providing a strong foundation of pedagogical literacy and hands-on experience early in their careers helps them enter faculty positions with increased competency and confidence in the classroom that ultimately benefits student learning. In comparing these two models, we understand that there is no single "right" way to provide training; this work must be localized to an institution's context and culture. However, by sharing stories and lessons learned, we seek to initiate and expand the

conversation about diverse models of TA training from which new programs can be built and existing programs can be honed.

We aspire to collaborate with staff at other campuses to learn from their experiences, share ours, and find mutually beneficial ways we can inform our collective work. In the future, we will also enrich this preliminary comparative analysis by gathering data from the graduate student participants to get their feedback about their experiences, future training needs, and what content and activities are most impactful for their professional teaching development.

- [1] Muzaka, V., 2009. The niche of graduate teaching assistants (GTAs): Perceptions and reflections. *Teaching in Higher Education*, 14(1), pp.1-12.
- [2] Winstone, N. and Moore, D., 2017. Sometimes fish, sometimes fowl? Liminality, identity work and identity malleability in graduate teaching assistants. *Innovations in education and teaching international*, 54(5), pp.494-502.
- [3] Wan, T., Doty, C.M., Geraets, A.A., Nix, C.A., Saitta, E.K. and Chini, J.J., 2021. Evaluating the impact of a classroom simulator training on graduate teaching assistants' instructional practices and undergraduate student learning. *Physical Review Physics Education Research*, 17(1), p.010146.
- [4] Wheeler, L.B., Maeng, J.L. and Whitworth, B.A., 2015. Teaching assistants' perceptions of a training to support an inquiry-based general chemistry laboratory course. *Chemistry Education Research and Practice*, 16(4), pp.824-842.
- [5] UK National Committee of Inquiry into Higher Education (the Dearing Committee), Higher Education in the Learning Society: Summary Report, London, HMSO, 1997 (also available at <http://www.leeds.ac.uk/educol/ncihe>).
- [6] Gosling, D., 2009. Educational development in the UK: A complex and contradictory reality. *International Journal for Academic Development*, 14(1), pp.5-18.
- [7] Teaching Excellence Framework, Available at: <https://www.officeforstudents.org.uk/advice-and-guidance/the-tef/>.
- [8] Gunn, A., 2018. Metrics and methodologies for measuring teaching quality in higher education: developing the Teaching Excellence Framework (TEF). *Educational Review*, 70(2), pp.129-148.
- [9] Lewis, K.G., 1996. Faculty development in the United States: A brief history. *The International Journal for Academic Development*, 1(2), pp.26-33.
- [10] Hagen, E. J., & Harris, E. C. (2020, June), Lessons Learned in Professional and Identity Development as Part of a Teaching Assistant Training Program Paper presented at 2020 ASEE Virtual Annual Conference Content Access, Virtual On line . 10.18260/1-2-34915



- [11] Parker, M.A., Ashe, D., Boersma, J., Hicks, R. and Bennett, V., 2015. Good teaching starts here: Applied learning at the Graduate Teaching Assistant Institute. *Canadian Journal of Higher Education*, 45(3), pp.84-110.
- [12] Miller, K., Brickman, P. and Oliver, J.S., 2014. Enhancing teaching assistants'(ta s') inquiry teaching by means of teaching observations and reflective discourse. *School Science and Mathematics*, 114(4), pp.178-190.
- [13] Chadha, D. and Shah, U.V., 2023, June. Work-in-Progress: Unpacking Graduate Teaching Assistants'(GTAs) Taught Practice—Exploring Training through Decisional Capital. In *2023 ASEE Annual Conference & Exposition*.
- [14] Chadha, D., 2013. Reconceptualising and reframing graduate teaching assistant (GTA) provision for a research-intensive institution. *Teaching in Higher Education*, 18(2), pp.205-217.
- [15] Cho, Y., Kim, M., Svinicki, M.D. and Decker, M.L., 2011. Exploring teaching concerns and characteristics of graduate teaching assistants. *Teaching in Higher Education*, 16(3), pp.267-279.
- [16] Kajfez, R.L. and Matusovich, H.M., 2017. Competence, autonomy, and relatedness as motivators of graduate teaching assistants. *Journal of Engineering Education*, 106(2), pp.245-272.
- [17] Wankat, P.C., Felder, R.M., Smith, K.A. and Oreovicz, F.S., 2023. The scholarship of teaching and learning in engineering. *Disciplinary styles in the scholarship of teaching and learning*, pp.217-237.
- [18] Hamilton, M., 2018. Bridging the gap from teacher to teacher educator: The role of a teaching portfolio. *Studying Teacher Education*, 14(1), pp.88-102.