Work-in-Progress: Unpacking Graduate Teaching Assistants' (GTAs) Taught Practice — Exploring Training through Decisional Capital

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WIP: Unpacking graduate teaching assistants' (GTAs) taught practice: exploring training through decisional capital

Abstract

High quality teaching in chemical engineering is often supported by graduate teaching assistants (GTAs) who have always been at the forefront of this endeavour. They often contribute to lectures, labs, academic tutorials and more occasionally get involved with assessment, feedback and learning design. Therefore, it is important that we understand how GTAs can develop their practice as professional educators – for the time they are employed in these roles and better support them. Decisional capital is a useful lens through which to appreciate the mechanisms that help GTAs make decisions and choices about their teaching. As such, GTAs were invited to complete online surveys in which they were asked questions about their levels of experience, training, and motivation to provide us with insights on how they developed their taught practice. Furthermore, a few GTAs contributed further insights. From an ongoing analysis of our findings, we are in the preliminary stages of developing appropriate support mechanisms for our GTAs which build on aspects of decisional capital, namely mentoring and evaluation. In this paper we start identifying what meaningful mentoring, and deep-rooted and critical evaluation consist of.

Introduction

Graduate teaching assistants (GTAs) perform an important role in engineering departments and are usually required to teach in a variety of subjects and settings. Additionally, they are paid for the work they do in this area, so are expected to be reasonably good in the role and are often relied upon to be an important role model for younger students [1]. However, there are times when the professional development needs of GTAs have been neglected, for example through inadequate training which is usually accompanied by a loss of motivation [2]. Hence, it is important to pinpoint training needs among the GTA population. In our particular context, we employ approximately 170 GTAs in various teaching roles (labs, tutorials and design projects), who contractually can undertake a maximum of 6 hours of teaching per week. Our GTA cohort is somewhat heterogenous made up of a mixture of recent graduates and those with industrial experience, with some being entirely new to teaching while others have limited prior experience.

The central research question guiding the study reported here is: whether there are any current mechanisms that are illustrative of (potential) decisional capital, and how these could be further enhanced. As this paper is a work in progress (WIP) piece, we are deliberately focusing on one aspect of a much wider study, that considers how professional capital [3][4] can be used to enable individual GTAs to professionalise their behaviours and activities. Decisional capital specifically, is being explored which inculcates active judgement, decisions and deliberation and is embodied by personal development and growth related to both drive and capability [5]. For example, research from engineering education suggested that GTAs changed their teaching orientations depending upon the quality of mentoring they received whereby they were exposed to awareness and active critique of their teaching choices through meaningful discussion [6].

Methodology

GTAs from a chemical engineering background in our department were invited to complete online surveys which gathered data on their levels of experience, motivation, mentorship, training opportunities etc. The items selected for the survey were based on previous work on professional capital and the associated specific characteristics related to the development of taught practice for

science-based lecturers [7]. The survey items are included as an Appendix in this paper and were quantitively ranked on a Likert scale from strongly agree to strongly disagree. The GTAs who completed the survey consented to their data being anonymised and used for publication purposes. Furthermore, 2-3 GTAs offered further, anonymised views in light of the findings from the survey. From an analysis of the findings, we aim to identify appropriate frameworks and strategies that enhance the decision-making skills of GTAs around good practice. Data was gathered and analysed on the assumption that GTAs can make better decisions as teachers when they have access to information, knowledge and learning from which to make them.

Results and Analysis

A total of 25 surveys have been completed to date, which accounts for nearly 15% of our GTA population. Some of our preliminary data is provided in this section in the form of bar charts (quantitative data) and additional commentary from the GTAs (qualitative data). In the following figure (Figure 1), GTA responses to survey items that related to the potential mechanisms that could enhance the decision-making abilities of GTAs by helping them understand their choices as teachers (and perhaps make different ones) are provided.
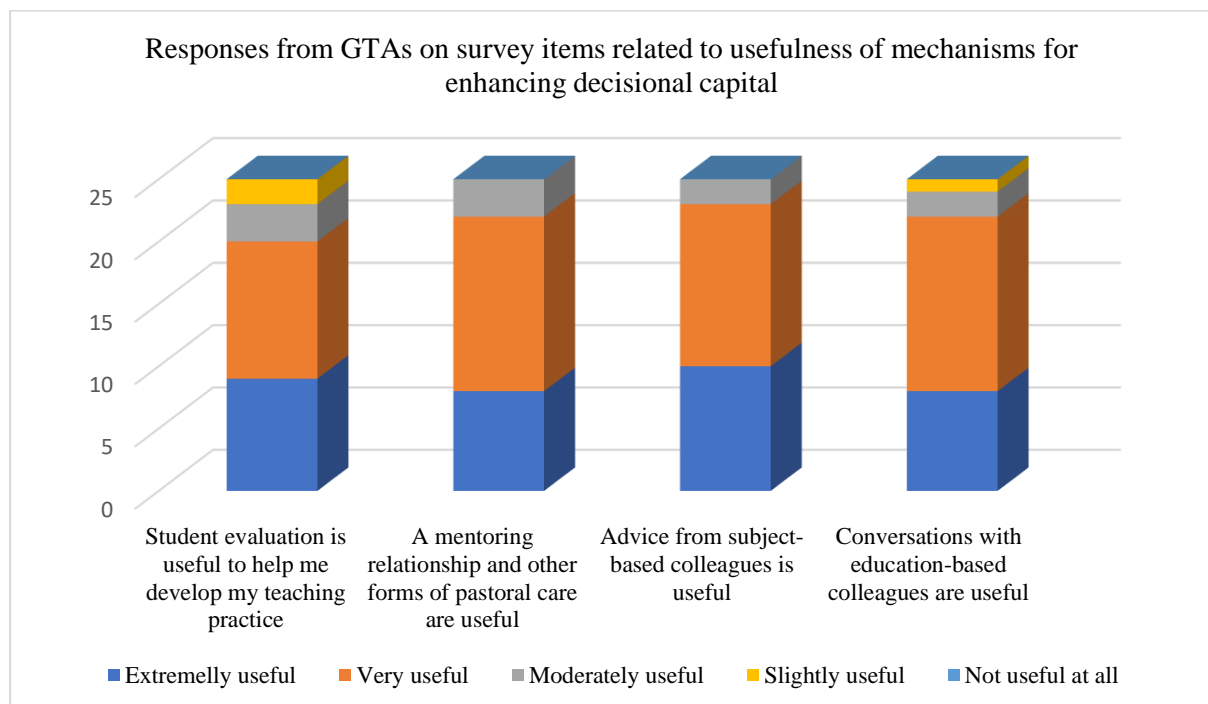

Figure 1: Bar charts representing GTA responses to survey items related to mechanisms that enhance decisional capital

Some additional comments from the surveys on mentoring and evaluation are provided:

Mentoring

- To deliver more quality teaching, prior training from the expert or module leader can lead towards more efficient teaching.
- We have a lot of conversations among ourselves as GTAs. It's an unofficial group where we just help each other out. It doesn't lead to any major outcome other than getting through the teaching that's in front of you.

Evaluation

- … as GTAs, we rarely (if ever) get this support. Also, I have only been observed teaching because I did extra teaching courses … GTAs that last for a longer time should be offered more training … there should be a cyclic relationship so you can develop more with time.
- We receive student evaluation but students are a little jaded sometimes, and the response isn't particularly specific to be helpful.
- You turn up, teach, move onto the next session and so on. I'd like a stop-gap, sort of reflective period and for someone to work through things with me … not just in the immediacy of a taught session but going forward and looking back.

For the most part, our data sets suggest that mentoring could be either extremely or very useful, but any form of mentoring offered was either limited or non-existent. The data also shows that GTAs find value in engaging with both academic experts and education-based staff, although there is a slight preference for subject-based colleagues. However, there is currently very little evidence of this in place, or that it is effective. Student evaluation is also highly rated but is seen as the least effective mechanism to help GTAs develop their practice. Following on from the survey results, GTAs were invited to comment more specifically on the gaps and opportunities regarding mentoring and evaluation in their current roles. Two GTAs offered their views, and extracts from the transcripts are provided:

> "Student evaluation would be useful with focus groups rather than 'mandatory' student-body wide surveys. In many cases, the surveys can be subject to different interpretations by students or worse, students often fill them in haphazardly. I do not believe peer review would be useful. The style and approach to GTA work is very much dependent on the medium and content being taught. Having someone who has more knowledge and experience beyond your own to review you would be helpful as they can guide you."
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> Chinese male

> "I think the best option for mentorship in terms of teaching would come from dedicated teaching personnel in the department. Often, education resources are too broad and esoteric, and supervisors/line managers are not the best choice, due to variable interest in teaching. A lot of the research staff is not overly interested in teaching, which would hinder the mentorship. The best option is local, decentralised mentoring on a hierarchy parallel to research staff. Ultimately, I believe that the main role is to guide the teaching. All else [like qualifications, journal papers] is an added bonus, of which help with professional development.
>
> British male

Discussion and Conclusions

There is currently a gap in the support offered to GTAs, although for the purposes of this particular work, we are considering specific support related to decisional capital, and that which helps guide good choices and judgements. Evaluation from students has its uses; in our context, module evaluation forms completed by students address some of the following criteria: structure, approachability, feedback, intellectual stimulation, academic support available, and opportunity for interaction. A quick and useful way in which GTAs could receive more direct and hopefully useful feedback from students is through the ABC method, whereby students leave anonymous notes for the GTA they are working with directing them to one thing they should abandon, begin, and continue in their practice. Judging from the earlier comment, we suggest that the GTA filter through the comments and work from those that genuinely reflected their practice and that would help them enhance it.

Observation as a form of evaluation from members of staff would be beneficial, but beyond practical help should also enable GTAs to be more self-aware of their own practice and the everyday and deliberate decisions that guide that practice [8]. Any evaluation ought to address accreditation requirements (optional for GTAs) in addition to good practice, although evaluation through observation is currently not formally available to GTAs for our specific context (12 respondents had been previously observed, and 13 had not been previously observed as part of their training). In order to enhance the decisional capital of the GTA, and in addition to the more conventional criteria for making judgments e.g. whether learning outcomes are presented, there is a learning activity, the session is summarised etc. [9], we would recommend the following aspects are considered and discussed through a structured observation process, that encourages self-inquiry:

- How the educational context, learning culture of the students and teaching culture of the GTA connect with each other to make learning happen
- Whether and how the GTA is able to support both the individual learner and a community of learners (and understands the difference)
- How far the GTA is able/willing to go to support equality, diversity and inclusion in the educational environment
- Whether and how the GTA 'owns' their teaching and does not follow a prescription of dos and don'ts.

Effective mentoring plays a significant role in support provision [10], with the mentor providing the means through which the GTA can meaningfully journey through their teaching. In terms of decisional capital, we would expect the mentor to be someone who both supports the choices the GTA makes, and also provides them with the tools to query those choices. The interview comment is a useful one which highlights goal-orientation and focused mentorship (as opposed to that which unpacks the belief and value systems of GTAs [11]. In terms of internalising and articulating decision-making specifically, some prompts that could be used to guide the type of mentoring we are referring to here are provided:

- Unpack the rationales for teacher attitude, behaviour and activity in the classroom (usually related to values, beliefs, knowledge and understanding)
- Constructively work with the GTA on exploring their use of critical incident theory in guiding their teaching
- If GTAs are interested in gaining teaching qualifications, work with them to understand what evidence is and how it can be used to critique practice
- Similar to the above, direct GTAs to appropriate scholarly sources that challenge and enhance their notions of taught practice, and encourage active scholarship going forward

Different forms of mentoring can be applied to create a more robust and structured idea of what this means. For example, co-teaching has been used successfully to guide competency but also to enable and support the development of a scholarly approach to teaching and learning [12]. A second example involves mentoring through journaling whereby the teaching journals produced by GTAs are critiqued and discussed to draw out choices that have guided the practice of the GTA [13]. Other forms of mentoring exist and work well, but the ones mentioned here might be better placed in facilitating the decision-making capability we wish to see in our GTAs. As an end note, we would reiterate that this work is incomplete, but by exploring decisional capital in this way and the mechanisms available to us that would enhance the decisional capital of our GTAs (evaluation and mentoring), we start to construct a more helpful and intricate model of how best to engage our GTAs in developing their decisional capital going forward.

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Appendix

Inventory of survey items for GTA motivations in chemical engineering

Background Information

- How long have you been teaching in chemical engineering?
- What type of teaching are you involved with?
- Background (e.g. gender, country of origin and prior education)

Please state whether you agree/disagree with the following statements (range from strongly disagree to strongly agree)

Values and beliefs

- Teaching is about interaction
- Teaching is about imparting knowledge
- It is important that I am an expert in my field
- I'm developing in confidence as a teacher – techniques and strategies
- I'm developing in confidence as a teacher – course content
- I enjoy teaching
- I try and be innovative in my teaching

Any additional comments can be included here:

Training

- In order to develop my teaching practice, I have attended specific courses
- In order to develop my teaching practice, I have been observed teaching
- Critically reflecting on my teaching (conceptual understanding and practice) is helpful
- Conversations with education-based colleagues are useful
- Student evaluation is useful to help me develop my teaching practice
- A mentoring relationship and other forms of pastoral care are useful
- Practical help and guidance is important for developing my teaching practice
- Advice from subject-based colleagues is useful

Any additional comments can be included here:

Motivation to do better/be more engaged

- I am naturally interested in my CPD in this area
- I would be more motivated if I had an accredited qualification
- Collaborative research ought to be more encouraged
- Institutional strategies ought to direct innovation
- I would be more motivated if I was paid more
- I would be more motivated if my hours were different

Any additional comments can be included here: