

Case Study 2: How you have worked with and supported individual students

1. Context

In my current role as Lecturer in the Department of Mathematics, I am responsible for supervising both BSc and MSc Mathematics students, offering guidance throughout their dissertation projects and delivering academic support for their assignments [UKPSF 2011 Areas of Activity A2, A3].

Teaching academic and research skills at two different levels involved an understanding of the dissertation module expectations and anticipated outcomes. Both the UG and PGT dissertation modules entail writing a 15,000-word thesis on a topic chosen by the student from a portfolio of projects devised by the supervisor. When joining Hull in April 2023 I wrote two portfolios of dissertation projects [A1], see Evidence (C). These projects were directly informed by my research in mathematics and tailored to accommodate the academic levels and different skill sets of UG and PGT students [K1, V2]. This diversified portfolio aimed to foster inclusivity within the dissertation process [McKee and Scandrett, 2021].

In this essay I will delve into my reflections on how I supported two particular students [A2]. Section 2 will centre on my supervision experience with a PGT student named Jesse (fictitious name). In Section 3 I will recount a particular incident that occurred during Jesse's Master Thesis Viva, the implications of such incident, and how it was resolved. In Section 4, I will explore the evolution and enhancements I have made as a supervisor during my initial year at Hull. In particular, I will discuss how these efforts led to the joint publication of the research paper [Fry et al., 2024], see also Evidence (F), with an UG student named Tom (real name).

2. Supervising Jesse

Planning for the MSc dissertation presents unique challenges, as students select topics in April and must complete their theses within a very compressed 8-week timeframe [A2, A3]. Jesse, one of the Masters students under my supervision, initially chose a topic which necessitated extensive coding. During our introductory meeting, I presented the topic and relevant literature to Jesse and assigned readings, expecting him to return with a thesis outline after a week. However, despite my repeated mentions during our initial discussion that the project involved coding, Jesse had not fully grasped this aspect. It took him a week to realise that the project was beyond his capabilities, prompting him to request a new topic. Upon revisiting the project list (see Evidence (C)), we discovered that none of the available projects were suitable for Jesse. Rather than opting for Jesse to change supervisors and start anew, I took a day to devise a modified version of Jesse's initial project that did not require coding [K1, V1]. Jesse expressed gratitude for this solution, and I devised an updated timeline. Jesse shared chapter drafts on Teams according to the timeline, and I offered feedback in the form of annotated PDFs [A3, K4]. Recognising the tendency for students to overlook feedback [Pokorny, 2021], I meticulously reviewed the revised drafts to ensure that my feedback was accurately interpreted and integrated. Jesse successfully completed his thesis within the stringent 8-week timeframe, a significant accomplishment that I highly commend.

The experience with Jesse underscored a key challenge in supervising PGT dissertations at Hull: navigating a diverse cohort of non-UK students with varying technical backgrounds and academic writing experiences [A2, A3, K4, V1]. Additionally, as I do not currently teach on the Masters program, I lacked the opportunity for a preliminary discussion with Jesse about his interests and skills. Consequently, Jesse's choice of thesis topic rested solely on him, initially unaware of the project's feasibility within the tight 8-week timeline. This experience has underscored the importance of addressing individual learner needs within a diverse learning community. As a proactive measure, I initiated early contact with my current PGT supervisees this year, arranging individual meetings to discuss their project preferences. The agenda for these meetings is based on the suggestions I found in [Griffiths and Warren, 2021]. I am also adapting the chosen projects and corresponding reading lists to their levels and areas of competence. However, I question the long-term feasibility of this approach. In the future, I propose collaborative creation of PGT dissertation project lists with staff teaching on the Masters degree program. This collaborative effort aims to improve coordination between the dissertation module and other Master's program modules, ultimately enhancing the student experience.

3. Incident in Jesse's viva

I will now discuss a particular incident that happened during Jesse's dissertation Viva. The analysis uses the reflective model *What, So What, Now What?*, see [Rolfe et al., 2001].

3.1. What? Following the thesis writing process, PGT students must defend their work in a viva examination, where the dissertation supervisor and a second marker evaluate their performance [A3, K1]. During this examination, students are required to condense their dissertation into a 30-minute presentation accompanied by slides [A4, K4]. Subsequently, the examiners pose questions aimed at gauging the student's comprehension of the dissertation content. Aware of the stressfulness of this process, Jesse had expressed concerns about the viva in a prior meeting. I reassured Jesse, emphasising that vivas typically proceed smoothly and advising him to prepare for basic core questions on the dissertation material.

During Jesse's viva, the second examiner asked a question regarding a fundamental definition in mathematical analysis. This question caught Jesse off guard, leading to a momentary lapse in response. The second examiner and I moved on to other questions, and the viva concluded smoothly, with Jesse passing the dissertation module with merit. Following the presentation, Jesse expressed gratitude for the support provided and sought feedback on his presentation performance. I made the time to discuss the presentation with Jesse, and I realised that they were extremely disappointed. In particular, it became evident that the question posed by the second examiner had a profound impact on Jesse's confidence [V4].

3.2. So What? Presenting one's own work can indeed be a nerve-racking experience, particularly when faced with questions from the audience that may leave a lasting negative impression. This pressure is particularly pronounced for postgraduate PGT students, who are likely presenting original work for the first time. Jesse, deeply invested in both his dissertation and presentation, devoted significant time and effort to ensure his work met high standards. Consequently, failing to answer a question about a basic mathematical notion during the viva left Jesse extremely disappointed.

In my perspective, the question posed by the second examiner was relevant to Jesse's thesis but unfair, considering Jesse's non-UK background. This situation underscores the broader challenge of teaching a diverse cohort of non-UK students with varying technical backgrounds [A1]. The assumption that Jesse would possess the same type of knowledge as someone who completed a BSc in Mathematics at Hull is problematic and unjust. It is important to acknowledge that most students in the Master's cohort do not have a UK background, and possess diverse and unique skill sets in applied mathematics. Jesse's proficiency in statistics, for instance, complemented the data science component of the Masters in Mathematics, contributing to their excellent performance in exams and the dissertation module.

I advocate for examiners to consider diversity when evaluating PGT dissertations and framing viva questions. Doing so promotes inclusivity and fairness in what can be a highly stressful examination process.

3.3. Now What? I have engaged in discussions with the second examiner regarding this incident, and we have mutually agreed that questions for vivas should be documented and reviewed by both examiners prior to the examination. Furthermore, we concluded that questions should strictly adhere to the scope of the dissertation topic. This protocol aims to prevent the evaluation of students based on assumed knowledge that may not be necessary or relevant to their work. These recommendations will be incorporated into the guidelines for viva examinations for the PGT dissertation module, with the consensus of other faculty members.

Additionally, I made a point to check on Jesse's well-being a few days following the viva [V4]. In response, I received a heartfelt and appreciative email from Jesse, which I have attached as Evidence (D). Later in the year, Jesse reached out to request a reference letter for their application to a PhD program in Mathematics in the US. I gladly provided the letter and continued to offer support and guidance regarding their career aspirations. I am truly grateful for the opportunity to have crossed paths with Jesse and to have potentially contributed positively to his future endeavors.

4. Publishing with Tom

Upon assuming my role as Lecturer in April 2023, I authored a portfolio of original dissertation projects, detailed in Evidence (C). However, following my initial supervision experiences in Summer 2023, I recognised the need to augment these projects with more applications in areas such as *Fluid Dynamics* or *Statistics*, which are core disciplines in the mathematics programmes at Hull. This adjustment aims to bridge any disconnect between my projects and the curriculum at Hull, ensuring they are more accessible to students [V1, V2, K6].

Since I am currently leading the module *Statistical Models* (Module 551305 T2 2023/24), it was only logical to include projects in *Statistics* in my portfolio. With this goal in mind, I dedicated plenty of time to develop teaching material for the *Statistical Models* module, see slides in Evidence (E), and to deliver engaging and interesting sessions. In particular, I showed the students possible applied and original projects in finance and sports. The effectiveness of the sessions I designed was noted in peer observations, see Evidence (A)-(B).

This groundwork positioned me to effectively supervise dissertations in these topics. In collaboration with a colleague, I supervised the dissertation of one UG student named Tom. The supervision achieved the remarkable accomplishment of a publication in a prestigious economics journal [Fry et al., 2024], see attached Evidence (F). This achievement is of utmost importance for Tom's professional development. In addition, it allowed Tom to get involved in the peer-review process, a task typically encountered at the doctoral level. In response to a reviewer's request for access to code and data, Tom and I created an open-access Github page, seen in Evidence (G), exemplifying our commitment to transparency and accessibility.

This experience surpassed the typical scope of an undergraduate dissertation, providing Tom with invaluable exposure to professional academic practices [A2, K6]. It is my aspiration to replicate this success with future students, offering them similarly enriching experiences [A2, A4].

Supporting Evidence

- (A) Peer observation from member of PCAP team
File name: Evidence - Catherine Lille Observation.docx
- (B) Peer observation from colleague on PCAP programme
File name: Evidence - Daniel Farrow Observation.docx
- (C) Portfolio of dissertation projects for MSc in Mathematics
File name: Evidence - Fanzon thesis projects.pdf
- (D) Excerpt from an email I received from Jesse
File name: Evidence - Jesses email.pdf
- (E) Fanzon, S. *Lecture Slides on Statistical Models*. (Module 551305 T2 2023/24)
Available online at: <https://www.silviofanzon.com/2024-Statistical-Models-Slides>
- (F) Journal publication with UG student
File name: Evidence - Paper with Tom.pdf
- (G) Open source code and data published on GitHub pages with UG student
Available online at: <https://www.silviofanzon.com/F1-Paper-Code/>

References

- [Fry et al., 2024] Fry, J., Brighton, T., and Fanzon, S. (2024). Faster identification of faster formula 1 drivers via time-rank duality. *Economics Letters*, 237:111671.
- [Griffiths and Warren, 2021] Griffiths, D. and Warren, D. (2021). Effective Supervision. In Pokorny, H. and Warren, D., editors, *Enhancing Teaching Practice in Higher Education*. London: Sage.
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