

Online Student Supervision: A Reflective Study on Lessons and Challenges

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Abstract—This Research to Practice Full Paper presents a reflective study showing the online teaching and advisory practices during Covid-19. Due to the COVID-19 pandemic, distance learning and active practices to engage online learners are now centre focused on educational institutions' everyday praxis. Tertiary educators have often struggled during enforced lockdowns to convert courses from face-to-face delivery to pure online delivery. This change has presented challenges in curriculum development as academics strive to achieve best practice. It is also challenging to design a pedagogically sound and engaging course for diverse students from a broad spectrum of educational backgrounds. Online classes often require unique infrastructures such as devices with specific tools or hardware requirements. This paper presents a reflective study showing the online teaching and advisory practices during Covid-19 by the first author while teaching and supervising Master of Science (MSc) dissertation students online at a top-ranked UK university (i.e. University of Liverpool). The first author has been involved in the programme for more than ten years. This university is called University A (Uni A) throughout this paper. The paper demonstrates Uni A students' journey from finding the dissertation advisor to completing the research project. It also discusses the class structure, the university policy and guidelines, teaching practices, and how student progress is managed and assessed. The paper then contrasts the first authors experience at Uni A with that of all authors (including the first author - who has been working at both universities) experience supervising postgraduate and honours students at a top New Zealand University (i.e. Victoria University of Wellington). This university is called University B (Uni B) throughout this paper. The lessons learnt from teaching a stream of students enrolled in a pure distance learning degree (i.e. deliberate online degree) at Uni A offers insight into how Uni B might better restructure its predominantly face-to-face degrees to support both online and in-person best practices.

Index Terms—Distance Learning, Online Students, COVID-19 pandemic, Student supervision, Dissertation students.

vital for almost all educational institutions. However, while this presented educational opportunities for those unable to attend universities in person, it also presented challenges for academic staff in institutions where distance learning was not a common practice. Many academics were faced with developing engaging, and pedagogically sound online course content and supervising online learners for the first time.

Distance supervision of postgraduate research students provides complex challenges [1]. For example, students and academics can face the following supervision issues:

- 1) The selection of a supervisor and research topic [2]
- 2) understanding the academic research culture, including expectations of student and supervisor [3]–[6].
- 3) Tracking the students' progress [7]
- 4) Ensuring mental health during events such as pandemics (e.g. COVID-19) [8]

The task of postgraduate supervision is complex, and it demands non-trivial [9], [10]. Lee [11] proposes a framework that conceptualises research supervision as functional, enculturation, critical thinking, emancipation, and relationship development. A supervisor performs enculturation by introducing students to the dynamics and the culture of academia (which includes institutional and often societal contextual norms) [12] and to foster the mindset of research [13], [14]. For example, during the early stages, students and supervisors must align their research topics and form a supervisor-student relationship. At this time, students and supervisors find alignment on aspects such as accessibility, empathy, friendliness, support style, open mind, mastery of the field, and methodology [15].

Going through this alignment online only with a lack of in-person contact, makes this process awkward, especially for students returning to academia after some time away, for example, after participating in the workforce. Like, international students, students in online education usually select

I. INTRODUCTION

In a world where connectivity plays a significant role, online and distance learning has become essential for many students. During COVID-19 lockdowns, distance learning has proved

their supervisors by examining the online academic profiles of researchers in their intended area. Due to limitations (i.e. time, skill-set, resources, etc.), many students tend to select the first faculty member who agrees to supervise them. Some students may also not have a clear idea of their project and may not easily select a potential supervisor. Being able to visit faculty and discuss ideas and issues in-person dramatically improves supervisor-student matching.

The variety of pedagogical models used in distance learning across universities' make it hard for the research community to compare student supervision practices [16]. For that reason, this reflective paper discusses student supervision in University A (Uni A) during the last ten years. And, it reflects on the ad hoc practices developed at University B (Uni B) by the authors in response to COVID-19 lockdowns. The reflective practices of academic staff are significant in the learning/teaching cycle [17] and have been proved, as a mental activity, crucial by many researchers (i.e. [18]–[23]). As highlighted by Lundqvist et al. (2019), "For formative purpose, such as improvement of courses over time, it is generally considered best practice to follow this method instead of using quantitative tools, such as students' questionnaires, which are better at assessing individual teacher performance than improving course quality over time" [24].

Distance learners often come from diverse cultural, which complicates both the initial advisory process and ongoing supervision and study relationships. In other words, students and supervisors may differ significantly and may not share the same cultural norms and practices. This process in academic has been described by [25] as a form of culture shock. Unlike international in-person students who must go through this complex acculturation process in an unfamiliar country [26], international online students experience this alien culture through a narrow lens. Nilsson and Anderson [26] noted that the more time international students spend within a host culture, the easier they acculturate. Distance students thus can take much longer to adjust, making the study process more complicated. Distance students also often bring completely different perspectives to the accepted norms in higher education. For example, in some collective culture societies, valuable ideas are not individually attributed but are considered universal knowledge, making the concept of plagiarism complex to understand for some students [27].

These issues and more were experienced in greater magnification due to the COVID pandemic [28]. For example, in-person educators need to adapt to online teaching with little or no training, technological issues, such as internet, software and hardware issues for students and supervisors. In many countries, COVID is continuing to exacerbate these problems. As far as the authors know, this is the first paper to discuss supervision during COVID-19 lockdowns. A quite a few research papers concerning the teaching practices for online degrees during COVID-19 lockdowns are acknowledged, though.

Gray and Costa [29] advise that "the qualities of an effective doctoral supervisor remain the same regardless of whether the student is on or off-campus." Therefore, the success of

online supervision lies in nurturing healthy online relationships between the supervisor and student while making effective use of the technologies mediating that relationship. Technologies used for student supervision need to be robust and good fit with the skills of the student and the supervisor [30].

Having said that, this paper discusses reflections on the challenges the students faced as well as the supervisors in establishing a healthy relationship. It also discusses the observations as supported by the students' performance during COVID-19. This reflection paper was not designed as a research project; thus, no ethical approval is needed. None of the students' feedback is quoted in this paper. However, the students' feedback has impacted the authors' reflections.

II. UNI A: DISTANCE SUPERVISION MODEL: BACKGROUND, PRACTICES AND POLICIES

The online Master of Science (MSc) course at Uni A employs a unique learning model that provides a flexible, collaborative and meaningful learning experience. The students undertake self-study using the resources provided, library research, and online interactions with other students and the instructor. The wide variety of learning activities and assignments help students develop an understanding of theoretical concepts and practice skills. Each week consists of learning objectives, learning resources and learning activities, including collaboration activities and assignments.

The learning activities are designed to enable students to synthesise, evaluate and apply the research principles to the dissertation project. Both individual writing and collaborative activities, such as group conversations, take place in the discussion forum. One of the online learning programme strengths is the high level of student interaction, whereby students are encouraged to share their perspectives on module concepts, critical assessment of readings and resources, and their own experiences to benefit everyone.

For degree completion, a student has to take eight different modules, each of which is 15 credits and a computer science capstone project (i.e. Dissertation Project) of 60 credits. Each module is around eight weeks cycles except the first one, which is a ten-week module (i.e. intake module). The dissertation module is a nine months module. Because the dissertation project involves research at a Master's level, students need to be prepared.

Students start the dissertation project with a 7-weeks module (i.e. as part of the nine months) called Research Method Training (RMT) which aims at providing students with instruction and guidance on the planning and organisation of their work. Students are expected to start formulating their project proposal during the module, which they will continue to work on upon the completion of the module. In other words, this module provides a systematic analysis of the nature and conduct of information technology and computer science research. There is an interim assessment point during the course of the project where students submit their project specification and design report. At the end of the project, students are expected to submit a dissertation describing their

project. The entire dissertation project journey, along with the milestones, is depicted in Figure 1.

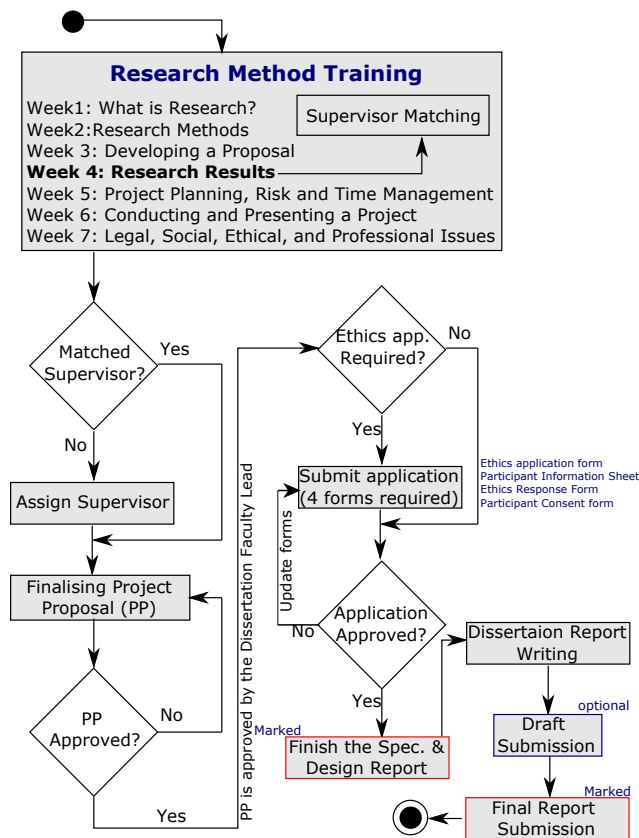


Fig. 1. The Dissertation Project Overview

It is worth noting that the Specification and Design report is a milestone that is marked. A student who failed to submit the report on time will not submit the final dissertation and hence, failed the entire dissertation project. The significance of the specification and design report is that it is a tool to measure the student's progress since the time of the project proposal approval. It demonstrates if

- 1) Topics are covered in depth
- 2) Referenced literature is from reputable and high-quality resources
- 3) Recognised research methods have been identified to inform the development of an IT artefact.
- 4) Thought has been given to design/analysis methods to be used in producing an IT artefact.
- 5) There is a project plan with appropriate milestones, and the plan is feasible in the time available
- 6) There is a reasonable means of evaluating the artefact in the light of the hypothesis.

The importance of such a report is to get the students more familiar with academic research and to make sure the students are progressing since their last milestone (i.e. Project Proposal developed during the RMT module). Once the dissertation report is submitted, the Dissertation Faculty Lead assigns two assessors. The first assessor is the dissertation advisor and

the second one is a faculty member with experience in the dissertation field. For a successful grading of the dissertation work, both assessors' grades need to be at the same grade band (i.e. 50-60, 60-70, 70-80, 80-100); otherwise, a negotiation is required. If the negotiation talks failed to agree on the same grade band, a third assessor would be called to approve either grade.

III. UNI B: DISTANCE SUPERVISION MODEL: BACKGROUND, PRACTICES AND POLICIES

In contrast, Uni B offers traditional person teaching, where it has honours students who undertake a one-year research project as part of their final year of the BE (Hons), Masters students who are one-year (2 years part-time), thesis students (The authors do not currently supervise any of these), Masters students who undertake taught courses over one year (typically conversion Masters programmes) and, PhD students.

Honours students undertake a full-year research project course alongside six other courses split across two trimesters. Supervisors are drawn from the academic staff, and these supervisors provide a research project outline for the students. Students bid for a project, and a sorting system allocates students to particular supervisors and projects. Several regular lectures are given to assist students in how to research and write their project. However, supervision by supervisors (there is usually a primary and secondary) is managed by the supervisor for the duration of the year-long project. There is a proposal document and two key reports due, and a presentation. There is no formal training given to supervisors, and they are free to arrange supervision meetings and the material covered in these in a manner they see fit to assist the student.

It is worth noting that Uni B has a couple of taught Masters programmes namely Master of Engineering Practice and Master of Software Development. The former is a three-trimester programme that combines taught courses and an industry project or placement. The students can focus on Mechatronics, Renewable Energy, Software Engineering, Electronics, or Networked Applications. The latter is a one-year Master's degree that focuses on career pathway change. Students enrolled in this programme are required not to have a degree in Engineering or Computer Science. They are coming from different career paths and educational backgrounds. The Master of Software Development equips the students with the necessary skills to pursue a career in the ICT industry.

PhD candidates approach the university and the supervisor and complete an application process. Initial contact between the supervisor (or supervisors- there is usually a primary and secondary) and the student is done in person or online if the candidate is overseas). Once enrolment and an agreement to supervise is reached and accepted, the student is expected to study at the physical campus. When PhD students initially arrive, they complete an orientation at the Faculty of Graduate Research (FGR) covering the expectations of the student and supervisor. Individual supervision is then left to the supervisor(s) to manage with some oversight over regular

progress reports by FGR. For example, a PhD student must complete a proposal document and presentation within the first twelve months (if full-time, 24 months if part-time). They can then progress from provisional to complete registration. The proposal document outlines the research project, literature review and research questions. Once at complete registration, the student continues meetings with the supervisor(s). These meetings frequencies and duration are set by negotiations between both parties and vary considerably depending on the supervisor's mindset. The PhD thesis and oral examination usually occur at the end of 36 months (for a full-time student or 72 months for a part-time student. The style of supervision and teaching (if any) given to a candidate during a PhD is not very prescriptive. Supervisors do undertake a course in supervision and have to have been a secondary supervisor before they can be a primary; however, most supervision training is learnt on the job.

IV. REFLECTIVE ANALYSIS (PART I: UNI A)

It is worth noting that the following reflections are based on supervising about 101 dissertation students in the last ten years. It is worth also noting that those students are coming from a wide spectrum of cultural backgrounds. At Uni A, a deliberate attempt is made to match a student to a supervisor. Studies show the relationship between supervisors and students is not only critical for successful completion, but it also determines the quality of the research output [31], [32]. Online environments make it difficult to maintain positive supervisor-student relationships [33], [34] and can impede trust between parties [35], [36]. Overcoming spatial and temporal distance [37]–[39], loneliness and isolation [40], language and cultural barriers [37], [41], and managing expectations [42] are some of the common issues in online study and supervision. It is worth emphasising that students who are involved in the supervisor's match tend to be more satisfactory and performing better than those who are not involved at all [43]. The work in [29] discusses the possible criteria to select a supervisor from a student's point of view. Those criteria include accessibility, compassion, friendliness, support, open-mindedness, and knowledge of the field. From experience, compassion, friendliness and supervisor mastery of field have helped Uni A in the student matching as observed over the last ten years.

The cultural background of the students plays a vital role in the process [44]. Distance learners often come from diverse cultural backgrounds complicating both the initial advisory process and ongoing supervision and study relationships. In other words, students and supervisors may differ significantly and may not share the same cultural norms and practices. This process in academic has been described by [25] as a form of culture shock. Unlike international in-person students who must go through this complex acculturation process in an unfamiliar country [26], international online-students experience this alien culture through a narrow lens. To mitigate this where possible, supervisor matching considers the cultural group and background of the candidate and the supervisor.

Friendliness and empathy is a crucial way to establish a healthy relationship between students and supervisors and is of paramount importance in supervising online MSc dissertations [45]. Personality clashes could happen between students and supervisors at stressful moments like deadlines. Healthy relationships can also be affected by the power a supervisor has over a student [29]. From experience with over 120 students across ten years and working online during COVID-19, the following summarises the successful techniques used to establish healthy supervision relationships:

- 1) Setting expectation upfront. This has been already mentioned in [46] before, where an early discussion is encouraged to discuss the expectations from the supervisor as well as the students. An entire roadmap is sent to the students to review and ask any questions before starting the project. Things such as milestones, marked and unmarked assessments are demonstrated. One of the areas that the authors find students struggle with is understanding the by-contract duties of a supervisor. For example, a supervisor is not expected to undertake grammar, formatting referencing, data presentation and spell checks for students. A supervisor is not to provide reviews of incomplete chapters and not to provide feedback on more than one version of either a complete individual chapter or the final dissertation! Those expectations need to be communicated well in advance and with some follow-ups to remind the students.
- 2) Belongingness. Generally, "the need to belong influences health and well-being, behavioural, emotional and cognitive responses" [47]. To get students connected to the institution, they are encouraged to use educational materials, especially references from the institution's library and to check Microsoft Teams frequently to ask questions and to socialise with other students. To provide more support to our students that promotes Belongingness [29], Blackboard Collaborate is used to create a more engaging learning/supervision environment.
- 3) Multiple communication mediums [48]. Due to the dispersed nature of the locations of the students and supervisors, it is sometimes hard to maintain responsiveness in online learning tools such as Blackboard. To overcome this problem, especially when students need an urgent or prompt response to their inquiries, social media is used. WhatsApp application is used for urgent requests and questions. Students are asked to copy the communication in the Blackboard class for the sake of record keeping. It was found that this way is useful and less-stressful for students, especially when supervisors are away from their laptops. This, for sure, raises some privacy concerns, but students are asked to use this medium if they are comfortable.

The frequency of meetings and the turnaround time to respond to a student's inquiry play an essential role in completing the dissertation project [49], [50]. While Online learners are independent and self-paced, they sometimes lose focus,

which requires the dissertation supervisor to interject. Things such as scope creep could quickly occur, and without the help of the dissertation supervisor, students may not be able to complete the project.

Our experience shows a different dimension of the frequency of meetings and turnaround time for responses. It is understood that too many meetings make the students overly dependant on the supervisor's presence and direction and would hinder autonomy and self-independence skills. It affects the student's progress when the supervisor is not available at times. There was a situation where a student chose to change the dissertation supervisor in the middle of the project because the student thought the supervisor is not as responsive as they should be! Investigating the matter revealed that supervisors were meeting the responsiveness requirement in general (i.e. the requirement was a window of 10 days to review and comment on a submitted document such as a chapter).

The COVID-19 pandemic has had a dramatic impact on the world [51], where people suffer from illness, job insecurity, anxiety, and depression [52]. Although many Uni A's students, since they are primarily professionals, struggled to keep their jobs, the COVID-19 lockdowns were academically useful for these students. In 2020, Uni A had an all-time high submission rate of 33 Masters submissions. There was a rise in the number of research publications by the dissertation students. The quality of the dissertations during 2020 and 2021 are higher than those before, resulting in more publishable workpieces. This further confirms our observation that COVID-19 lockdowns were academically helpful for the students. It is understood those observations might need further investigations since there could be other factors affecting them.

V. REFLECTIVE ANALYSIS (PART I: UNI B)

In contrast to the deliberate online course in Uni A, all authors, who are currently academics in Uni B, found themselves having to deliver online postgraduate learning to honours and PhD students due to COVID. Many universities found themselves in the same position [53]. For most of this paper's authors, it was up until this period uncommon for any of our teaching (undergraduate or postgraduate) in NZ to be distance-based.

The immediate strategy to engage with our students during the 2020 COVID-19 lockdowns was to establish regular weekly online Zoom meetings, where possible. In general, the students were treated like individual contracts as a consequence of missing a deliberately designed online framework for supervision like that in Uni A.

The authors attempted to be as understanding of the student's issues as possible, giving the students additional time to work on any material. This resulted in several challenges with some successes and some failures. With our honours students, the meetings worked well, their software topics allowed them to provide regular updates, and their work is easily monitored through GIT. GIT software allowed for version control and notification of updates, meaning the authors could remain in constant contact with the students and their

work without doing so in person. The result of this was that supervisors and students could make their in-person meetings more efficient and focused as the supervisor could oversee the students' actual work. All of the honours students were domestic students in the fourth year of their programme and well-accustomed to Uni B environment and their supervisors. From our observations, COVID-19's impact on these honours students work was minimal. Our reflection on this success is because it was the final year project for those students before entering the workplace, which made them highly focused on graduating. It was also part of a suite of courses and not the sole course students took in their final year. It is believed that their motivation, experience with our university, familiarity with their supervisors, regular Zoom meetings, and GIT monitoring alleviated many potential problems. By the end of the year, those students had completed their honours projects with good results.

However, our experience reveals that things were quite different with our PhD thesis students. It is noticed that new postgraduate students seemed to be impacted more than those well into their degrees (i.e. who passed their probation period, proposal document and presentation and were into the second year of the thesis). We theorise that as at Uni B, there is no proper orientation or time to acculturate as it is at Uni A where the students have to undertake the RMT module.

Our experience also reveals that the usual Zoom meetings are insufficient to generate any productivity from new students. Forming the central student-supervisor relationship at Uni B is usually done over the first year as part of the proposal process. Zoom meetings seem an artificial platform for developing this relationship and managing the critical early learning required for developing the research questions and project.

One of the workarounds for this problem was to change the typical student/supervisor meetings to group meetings, by facilitating smaller "buddy" networks, where meetings were limited to groups of three students. Most of the international students joined this option, and after the lockdown, the feedback was positive as they felt supported during this time. However, from a supervisor stance, productivity, and depth of research development were hindered during this online experience. In general, during the lockdown, the zoom meetings became a form of pastoral care, which was used to strengthen the interpersonal connections between the supervisor (i.e. one of the authors) and the student. Of course, there was a careful consideration to retain a sense of separation and boundary necessary for the supervisor student relationship [54].

VI. CONCLUSION

Online classes often require unique infrastructures such as devices with specific tools or hardware requirements., but more importantly, they need a change in teaching practice. Given the practices and observations from both Uni A and Uni B, it is clear that with a properly designed online program for the supervision of students, both supervisors and students can succeed. The authors experience in Uni B illustrates that exposing both supervisors and students to a new situation (i.e.

having to work together remotely) where no prior training or orientation increases the stress level and productivity of both parties. Incorporating Uni A's design framework and matching it to both in-person and online teaching could greatly benefit supervisors and students. Uni B could operate many of the same processes of Uni A, such as RMT, into their postgraduate programme as a standard for in-person supervision, and this could easily be ported directly to online learning in lockdown situations.

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