5. EARLY INTERVENTION: HELPING HIGHER DEGREE RESEARCHERS THRIVE THROUGHOUT CANDIDATURE

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Why read this chapter?

Sustainable higher degree research supervision requires a supportive and collaborative relationship between supervisors and higher degree researchers, which involves regular communication, clear expectations, and feedback. Higher degree researchers can face many challenges during their candidature which can impact their academic progress and well-being. When things do go wrong it is essential supervisors have the tools to identify problems early and provide appropriate guidance and support.

The **Graduate Research Engagement Assessment Tool (GREAT)** has been specifically designed as an early intervention communication tool to assist supervisors and higher degree researchers identify, assess, and problem-solve potential risks. The GREAT includes:

- self-assessment section to build higher degree researchers' self-awareness and problem-solve risk
- questionnaire and scoring criteria to identify and quantify risk
- opportunity to explore and request support
- step-by-step guide to give supervision meetings structure
- step-by-step guide to resolve challenges.

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Introduction

Sustainable research supervision is a multi-factorial construct that includes the creation of a supportive and inclusive research culture, the nurturing of students' intellectual and personal growth, and the responsible utilization of research resources. The overall aim of sustainable research supervision is to support resilient and socially aware higher degree researchers who can thrive in today's ever-changing academic world (Kaharudin et al., 2022).

Sustainable research supervisors put the well-being and advancement of their higher degree researchers first by encouraging teamwork, fostering critical thinking, and promoting ethical research practices. In this context, adopting a sustainable approach means prioritizing collaborative problem-solving, mentorship, and two-way communication (Allan, 2019).

Facilitating sustainable supervision through early intervention

Completing a higher research degree involves embarking on a 3–5-year journey that for many can be very rewarding. One of the notable highs of completing a higher research degree is the opportunity for significant intellectual growth. Higher degree researchers engage in deep exploration of a specific subject, which leads to expanded knowledge and expertise in their chosen field of study. There is the potential to make an original contribution and advance knowledge, which can be intellectually fulfilling and professionally rewarding (van Rooji et al., 2021). However, as with any journey, it is not unusual to encounter challenges along the way (Beasy et al., 2021). For example

1. **Goal-oriented challenges** revolve around differing opinions or priorities regarding research goals, performance criteria, methodology selection, or project milestones.
2. **Administrative challenges** relate to organizational or administrative aspects of research projects, such as defining roles and responsibilities, establishing reporting relationships, and clarifying decision-making authority.
3. **Interpersonal challenges** arise from differences in work styles, communication preferences, or personality clashes among researchers, supervisors, and/or team members.

The evidence suggests that if (or when) problems occur, early intervention on the part of the supervisor is critical to the success of a research project (O'Brien et al., 2008). It is essential that any challenges facing higher degree researchers can be identified early and appropriate strategies put in place to mitigate risk and support the higher degree researcher. By recognizing challenges before they become overwhelming, supervisors can empower higher degree researchers to proactively seek the necessary support, and resources, and make timely adjustments to their research plans and methodologies (Norton, 2011; Homer et al., 2021).

Facilitating sustainable supervision through effective communication

The relationship between higher degree researchers and supervisors plays a pivotal role in their academic and personal growth. Supervisors assume a crucial position by offering guidance, mentorship, and expertise, enabling students to navigate the intricate path of their research journey (Brownlow et al., 2023). Leveraging their knowledge, supervisors provide invaluable insights that shape the research project's trajectory, refine methodologies, and cultivate critical thinking skills (Satariyan et al., 2015).

Recent findings from a systematic review underscore the importance of fostering open, supportive, and frequent communication between higher degree researchers and their supervisors, as it directly correlates with student success and satisfaction. The consistency in shared work values, including communication style, interaction frequency, and adherence to timelines, is perceived by both supervisors and researchers as a measure of the strength of their relationship (Sverdlik et al., 2018). These key elements create a supportive and constructive environment where ideas can be exchanged, any challenges discussed and addressed, and knowledge shared (Berridge et al., 2010).

Incorporating effective communication practices into a sustainable supervisory approach can significantly impact the engagement and progression of higher degree researchers. When faced with challenges, actively involving higher degree researchers in constructive dialogues, and actively soliciting feedback fosters the development problem-solving skills, critical thinking abilities, and emotional intelligence (London et al., 2023).

Graduate Research Engagement Assessment Tool

The **Graduate Research Engagement Assessment Tool (GREAT)** is a multifaceted early intervention instrument that promotes open and effective communication and instils a sense of empowerment among higher degree researchers as they advance their studies. The complete GREAT tool can be divided into four sections and includes:

1. Self-assessment section to build higher degree researchers' self-awareness and problem-solve risk.
2. Risk assessment questionnaire and scoring criteria to identify and quantify risk.
3. Opportunity for HDRs to explore and request support.
4. Step-by-step guide for facilitating group discussion and staying on track.

    - Step-by-step guide for managing and resolving challenges.

For anyone looking to improve their communication skills, the GREAT is an invaluable communication resource, which has the capacity to significantly assist both supervisors and higher degree researchers throughout their collaborative research endeavours. Utilizing the GREAT affords supervisors and higher

degree researchers the chance to work together and proactively identify and manage challenges before they turn into obstacles that could jeopardize the project. A copy of the complete JCU GREAT form is available [Word document].

1. Self-assessment

The self-assessment part of the GREAT consists of six items. The aim is to develop self-awareness and accept responsibility for any challenges before they turn into roadblocks. Completing the self-assessment part of the GREAT can ensure supervisors and higher degree researchers are on the same page with respect to progress and expectations. A copy of the JCU HSSDP – HDR Student Self-directed Project Assessment form is available [Word document].

Items 1-4 are completed by all members of the higher degree research team and provide an opportunity for higher degree researchers and supervisors to reflect on:

- "How are things going?"
- The information provided by the university pertaining to the expectations of a supervisor and higher degree researchers.
- "What are my expectations?"

There is also an opportunity to brainstorm and problem-solve any challenges by thinking about possible options and outcomes before deciding on the best option for moving forward.

2. Risk assessment

Before completing item 5 "Do I need additional support?" the higher degree researcher is directed to completing a risk assessment. This provides an opportunity to build self-awareness and identify risk associated with six factors (i.e., physical health, social support, research engagement, mental health, personal wellbeing, and environment), previously shown to negatively impact higher degree researchers (Sverdlik et al., 2018). A copy of the JCU HSPRF HDR Student Potential Risk Factors Assessment Tool form is available [Word document].

The risk assessment contains 25 statements and statements are grouped according to the six factors. For each statement, the higher degree researcher must choose one of three options (Yes, No, Unsure). Each choice is weighted as 0, 1, 4, with responses deemed to suggest high risk = 4, moderate-low risk = 1, and no risk = 0. After reading a statement, the higher degree researcher is required to circle the response that best describes their circumstances. There are no right or wrong answers and the higher degree researcher can choose whether to show the completed form to the supervisor or submit it to the Graduate Research Office.

Scoring allows for six Factor scores and a Total risk score to be calculated. Total risk scores can range from 0 to 100, with a Total score above 12 deemed to suggest the higher degree researcher may be at risk.

After completing the risk assessment, the higher degree researcher is asked to reflect on responses with a risk score of 1 or 4 and use the information provided in the risk assessment scoring criteria as a guide to determine whether a meeting with the primary supervisor needs to be scheduled. If the Total risk score recommends arranging a meeting with the supervisor the meeting should be arranged as soon as possible.

The higher degree researcher is responsible for contacting the supervisor and asking that a meeting be scheduled at a convenient time for all parties involved. Meetings can vary in length, but as a rule, at least 1 hour should be set aside for the meeting to ensure there is plenty of time for discussion. It is important to make sure the location where the meeting will take place is in a private space, and free of interruptions.

3. Exploring and requesting support

Item 5 "Do I need additional support?" is only completed by the higher degree researcher. In this section

- There is space for the total risk score to be inserted.
- There is also space to provide more information and justify responses to questions with a weighting of 1 or 4 for the six factors.
- The risk assessment scoring criteria is used as a guide to prompt the higher degree researcher to book a meeting to discuss support with their primary advisor.

Item 6 "Accessing support" is completed by the higher degree researcher (only). This section

- Provides an opportunity for the higher degree researcher to let the primary supervisor know support is needed.
- Acts as an information source, highlighting the type of support that is provided by the organization.
- Provides an opportunity for the higher degree researcher to find out more about specific types of support.
- Provides an opportunity for the higher degree researcher to request external support.

4. Facilitating group discussion and staying on track

The GREAT is very useful because it helps to keep supervision meetings between the primary supervisor and higher degree researcher on track. Using the GREAT adds structure to the interaction and forces members of the research team to work through an agenda aimed at assessing the health of the project and student-supervisor relationship in an open, objective, and collaborative manner.

At least 2 days prior to the scheduled meeting, it is essential to provide all participants with an agenda and a

copy of the GREAT self-assessment form. In the communication, attendees should be instructed to bring the completed self-assessment form with them for group discussion. There is no mandatory requirement to physically exchange responses during the meeting. After all, we need to be mindful that there may be some things a higher degree researcher may either not want to or may not be ready to share with others (for whatever reason), and this needs to be respected. However, if all parties agree, there is no reason why completed self-assessment forms cannot be exchanged, especially if it helps facilitate open and honest communication.

Meeting with a higher degree researcher to discuss progress is not just two people having a chat, all meetings need to have an agenda, and this sent to attendees at least two days before the meeting. The agenda outlines the goals to be achieved during the meeting and should be based on the following:

1. How are things going?
    - What is working, what is not working?
    - Suggestions for improvement to create positive change
    - Is additional support required?
2. Moving forward
    - What steps do I need to take to get from A to B?
    - What are the measurable outcomes we want to see along the way?
3. Setting a review date
4. Evaluating progress

All discussions between a supervisor and higher degree researcher during a meeting should be meticulously documented. Either the higher degree researcher or supervisor can be responsible for taking minutes of the meeting. At the end of the meeting the primary supervisor is responsible for distributing copies of the minutes to attendees and completing the GREAT Supervision and Progression Assessment form. A copy of the JCU HSPA – HDR Supervision and Progression Assessment form is available [Word document].

The GREAT Supervision and Progression Assessment needs to be an accurate account of group views and the primary supervisor should ensure that a copy of the completed form is sent to all attendees for comment and any errors discussed and corrected before it is submitted to the Graduate Research Office for filing.

Resolving difficulties and moving forward

The GREAT is based on the conflict resolution model proposed by Davidson and Wood (2004) and has as its foundation the six step “no-lose” approach proposed by Gordon (1970), which encourages everyone to

accept responsibility and promotes problem-solving, positive relationships and effective communication. This means the GREAT can also be used in instances where communication between supervisor and a higher degree researcher has completely broken down.

In instances where the student-supervisor relationship has become unworkable, the GREAT can act as an objective communication tool for promoting constructive discussion through a mediator. The GREAT when used in conjunction with a mediator allows for a structured communication space to be created where everyone can put their case forward and be heard. There is an opportunity to listen to what others have to say, work together to problem-solve and evaluate options to hopefully reach consensus on the best solution, and move forward.

The agenda to be worked through at this meeting should be based on the following:

1. Defining the source of the conflict by focusing on the underlying needs.
2. Generating a range of possible solutions that could potentially meet the needs of all parties.
3. Evaluating and assessing the potential of each solution.
4. Collaboratively deciding on a mutually acceptable solution.
5. Implementing the chosen solution.
6. Evaluating the effectiveness of the solution at a later point in time.

The GREAT Supervision and Progression Assessment needs to be treated as a confidential document that is an accurate account of group views and discussions. All discussions during a meeting should be meticulously documented and the views of attendees respected. An independent person should be recruited to take minutes during the meeting. Alternatively, the appointed mediator can be asked to take notes.

At the end of the meeting, the mediator is responsible for distributing copies of the minutes to attendees, completing the GREAT Supervision and Progression Assessment form, requesting signatures from attendees, amending any errors, and submitting the signed form to the Graduate Research Office for filing. A copy of the JCU HSPA – HDR Supervision and Progression Assessment form is available [Word document].

Putting it into practice

Case study

Hassan is a higher degree researcher in Engineering from Oman and is 35 years old. He has been married for 5 years and his second child was born two months after he arrived in Australia to commence studies. After working as an engineer in Oman he completed his Masters in the US. Then he took time out to work as an academic in Oman. Now with government funding for three years, he is hoping to complete his doctorate to be eligible for tenure and progress along his academic career. He has co-authored two mid-level publications and feels confident about his capacity as a researcher. He selected his supervisors after many conversations. His supervisors include a male external industry partner, a senior female primary advisor and a female secondary advisor who is a 3rd year Early Career Researcher. The team has worked and is working with other higher degree researchers that have a strong presence as a research group. While he is the first Oman higher degree researcher to join the group – it is a very multi-cultural group. They often go for coffee and lunch as a group and meet for fortnightly cohort discussions about readings and methods and the latest research. He has struggled to engage with the group, feeling very stressed almost since arriving because he only has 3 years to complete and because he misses his family greatly. He was desolated when he had to request a 3-month extension when he was not ready for confirmation. He has a lot of feedback to address in order to finalise this milestone. He feels the supervisors are being too demanding, having never struggled with deadlines or received so much feedback on his written work before. The supervisory relationship is strained but all are trying hard to be receptive as they exchange ideas and Hassan works on his research design and literature review.

Instructions

Step 1: Download a copy of the JCU HSSDP – HDR Student Self-directed Project Assessment [Word document] and complete items 1-4 using the information provided in the case study.

- How do you think things are going?
    - List the things that are working well and Hassan seems happy about in the space provided on the form.
    - Is Hassan concerned about or does he want to change anything? Complete your response in the space provided on the form.

    - Overall does Hassan seem happy about his progress?
- What are Hassan's expectations regarding his situation?
    - Review the information provided to higher degree researchers pertaining to expectations.
        - Do Hassan's expectations align with university expectations?
    - Is there anything more Hassan could be doing?
        - Look at your responses to items 1 and 2 and suggest three ways of improving Hassan's situation.
        - How would implementing these options benefit Hassan?
        - How would each option enhance Hassan's research experience?
        - How would each option impact the final project?
        - What do you think Hassan's best option is at this stage?

Step 2: Download a copy of the JCU HSPRF – HDR Student Potential Risk Factors Assessment Tool [Word document] and use the information provided in the case study to answer each of the 25 questions. After you have finished, score the questionnaire, and answer the following:

- What score did Hassan achieve?
    - Would Hassan benefit from accessing additional support?
        - If yes, what type of support would improve Hassan's research experience?
    - Would Hassan benefit from meeting with his primary supervisor?

Step 3: Summary and recommendations

- How do you think Hassan is going?
- Is his project at risk?
- Would he benefit from receiving additional support?
- As the primary supervisor, what recommendations would you give to Hassan?
- Any other comments?

Reference Materials

- JCU GREAT [Word document]
- JCU HSSDP – HDR Student Self-directed Project Assessment [Word document]
- JCU HSPRF HDR Student Potential Risk Factors Assessment Tool [Word document]
- JCU HSPA – HDR Supervision and Progression Assessment [Word document]

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DIVERSE RESEARCH ENVIRONMENTS

6. CREATING SUCCESSFUL HIGHER DEGREE RESEARCHER PATHWAYS IN A DEVELOPING COUNTRY - PAPUA NEW GUINEA

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Why read this chapter?

The key learnings from this chapter are:

- the context of supervising higher degree researchers in Papua New Guinea
- the key stakeholders informing success
- a checklist for success.

This chapter is informed by the lived experiences of researchers currently living and working in Papua New Guinea. As you explore this chapter you may find aspects of this discussion that resonate with you regardless of where you are located or the resources that are available to you. However, the fundamentals of supervisory practice are nuanced in this chapter to address the context for supervision of higher degree researchers in Papua New Guinea. Our exploration of this unique research education context contributes to broader discussions of inclusivity, equity and diversity in the higher education sector. Our chapter recognises the vulnerability of PNG and other less developed nations to global events such as the COVID-19 pandemic, climate change, and technological advances. These events have widened disparities between education systems and resources of the global north and south. We propose supervisory practices that enable diverse collaboration and network engagement, highlighting the strengths and opportunities that PNG and other developing countries can contribute to global research endeavours. Our chapter is inspired by Ha's (2018) notion of "pockets of possibility" and proposes more inclusive approaches to internationalisation (de Wit, 2019).

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Introduction

Supervising higher degree researchers in Papua New Guinea (PNG) is informed by its sociocultural, geographic and economic context. While the country has a wealth of natural resources it ranks 155th out of 189 countries on the United Nations Human Development Index – lower than other Pacific Island nations. It maintains diverse cultures across a population of nearly 10.5 million (including more than 800 spoken languages). The population lives across 3.1 million square kilometres of rugged terrain that hosts 5% of the world's total biodiversity and the world's third largest expanse of tropical rainforest. Societal rules and norms continue to deny Papua New Guinean women basic rights, with domestic violence affecting two-thirds of women in the country. Their access to health care and education, and representation in government and public policy debates are also limited. This profile invites further research and engagement from global researchers.

Sustainable development of higher education and research in PNG is constrained by limited funding and resources, and relatively low participation rates in higher education. Ongoing economic and political pressures create uncertainty and instability in many aspects of daily life, from public safety to access to the internet. This context makes it hard for PNG's education system to begin to address global standards for accreditation and quality assurance and support the creation of opportunities for research networks and collaboration.

Most of the authors of this chapter are members of a Women in Higher Education SIG (significant interest group) and all are female and reside in PNG and Australia. PNG authors have completed or are completing higher degrees by research in Communication and Development Studies, Civil Engineering and Agriculture at universities in Australia, the Philippines, and Papua New Guinea. Many have been supervising higher degree researchers, as well as teaching and leading, for more than 10 years at the Papua New Guinea University of Technology (**PNGUoT**).

Established in 1965, PNGUoT became an institute of technology in 1970 and then a University of Technology in 1973. PNGUoT is now one of eight universities operating in PNG. The university continues to strive to develop guidelines and policies to meet global teaching and research standards with support from valued international partners in the Asia-Pacific region. As part of its commitment to women's rights, it supports the Women in Higher Education SIG (established in collaboration with James Cook University's Cairns Institute) and its activities.

This chapter provides an example of an inclusive collaborative research culture. The PNGUoT authors

have, with Susan and Jill from Australia, researched and written this chapter to identify ways to strengthen research capacity and realise the potential of PNGUoT's unique research education environment. It would be easy to propose addressing a lack of researcher expertise, weak infrastructure and limited resources. Instead, we focus on the potential of researchers in PNG and the unique research and fieldwork possibilities offered by the region as value propositions to encourage international collaboration and investment through inclusive supervisory practices. The authors have drawn on their experiences of supervision and in supporting higher degree researchers to identify ways for supervisors to ensure higher degree researchers can progress uniquely framed topics of local interest and potential impact, taking advantage of access to:

- a depth and breadth of global and local methodological and theoretical expertise
- information services and professional development resources
- adequate infrastructure.

Scene setting – The path to success

Figure 6.1 shows the range of stakeholders who can assist supervisors in creating a path to success for their higher degree researcher:

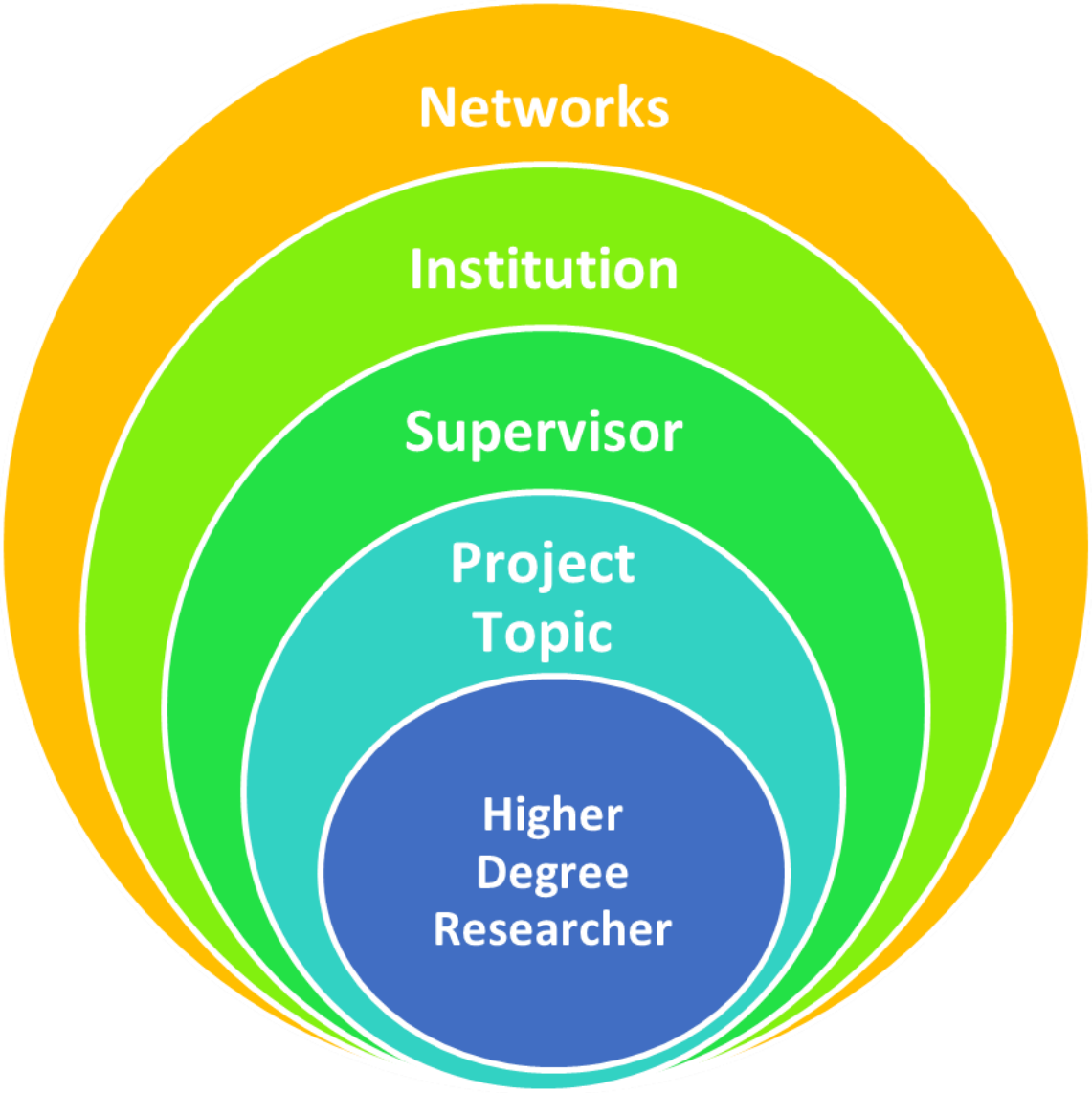

Figure 6.1 Key stakeholders on the HDR path by Rachel Aisoli-Orake, Susan Gasson and Jill Blacker used under a CC BY-NC-SA 4.0 licence

The Higher Degree Researcher is at the centre of the model, without them there is no research education environment. The project topic is defined here as a stakeholder because it strongly influences, and is influenced by, the skills and capacities of other stakeholders, and the resources and contexts where the research is conducted. Ensuring the topic can be supported and is sustainable is a primary key to success in the fragile PNG research education context. The figure emphasises that stakeholders do not operate in isolation. Accounting for interdependencies between stakeholders is a vital practice for supervisors to model to higher degree researchers.

The important factors for success

Topic

Supervisors, in working with their higher degree researcher, will take the lead initially to ensure that the topic selected aligns with the supervisors' areas of expertise. In the unique PNG context there is also a need to account for the availability of suitable literature and selection of suitable research design and data analytics sensitive to the local context. Identification of local fieldwork sites or accessible datasets and tools is also key. The PNG context is a rich site for research, but researchers need to be alert to socio-cultural, geographic, resourcing and economic considerations that may affect topics that can be examined, and data collection practices that will be feasible. These fresh fields ensure the potential for the social impact of research is rich, despite the need to constrain the focus and scope of higher degree research undertaken. Leveraging the strengths and expertise of local supervisors and engaged national and international research networks may enhance the viability of a given topic or proposed research design, and lead to richer more strategically beneficial research partnerships.

Case study – Recruiting quality higher degree researchers

The thesis topic is normally a consideration from pre-admission through to the completion of candidature. For example, the selection of higher degree researchers is undertaken by each department, after initial screening for entry requirements by the PNGUoT Admission committee. The respective postgraduate committee (faculty members) for each department meet to screen the applications. During this time the supervisors get to assess the higher degree researchers' proposed research topics, and their qualification and experiences in conducting research. Through the screening process, the supervisors get to have pre-knowledge of the higher degree researchers they would potentially be supervising. Having pre-knowledge of the higher degree researcher helps the supervisors in providing the necessary supervision and mentoring throughout the postgraduate research journey.

Another aspect to consider is the logistics if 3 or 4 higher degree researchers have indicated their interest to study in a field where there is only one suitable supervisor. Such selection can be dictated by the thesis topic, resulting in many higher degree researchers being assigned to one supervisor. That is why at times the number of higher degree researchers allocated to one supervisor may go over the supervisory limit. This has impacts on both supervisory load, and the quality of the supervision that is able to be provided to each of the higher degree researchers. Supervisory practices in this context are explored further in the next section.

Supervisors and higher degree researchers

Supervisors must take time to get to know the background, experience and interests of their higher degree researcher in order to identify a topic that aligns with available expertise, research resources and networks. Additionally, there is a need to address research integrity and ethical conduct considerations. PNG guidelines and policy are often in development and may be relatively untested in the local context. It is for the supervisors to be the guides, aware of potential delays, or difficulties that could arise due to societal rules and norms or environmental driven constraints. The confidence of higher degree researchers in the topic and their supervisors will be enriched by open discussion of research design considerations that result in the setting of realistic plans and approaches to the research process. The tyranny of distance, when supporting a Higher Degree Researcher located away from campus, is much harsher in PNG. Online interview data collection, sharing of large data sets or written drafts may not be feasible in a context of limited internet and electricity supplies. Visits to multiple sites may not be realistic in certain seasons of the year or in particularly harsh terrain. Finding ways to be available to problem solve and contribute to discussion with your higher degree researcher on the merits of alternative approaches enriches the learning and reduces anxiety and frustration when attempting to make steady progress. In time the higher degree researchers, like their supervisors, will come to navigate around limitations and weaknesses and to access experts and reliable approaches routinely. Finding ways to optimise use of limited internet services, and avoid expensive and unreliable postal services, can be essential strategies for supervisors trying to provide timely feedback.

Case study – Building positive relationships

An anecdote shared by a first-time supervisor, who was the principal supervisor of two Masters students highlights positive relationship building. “Being a first-time supervisor as well as a PhD candidate in the final stages of writing is no easy task. I focus on factors or themes I experience, and have dealt with, in order to successfully help the students I supervised”.

It is important that supervisors have a positive relationship with their higher degree researchers. The supervisors must provide consultative support and feedback and assist in networking with the related communities of practices in scientific research and the context of the study. Consultation tools including Google apps (Google Sheets, Google Docs, Google Slides, Gmail), WhatsApp, Messenger, LinkedIn, and text messaging are useful but can be limited by access to relevant technology and internet stability as well as considerations such as electricity blackouts. So, while there is a willingness to embrace technology to progress both research activities and supervisor/researcher relationships, there are factors that

impact that are beyond the control of both the researchers and their supervisors. For those in remote areas, a letter does help, or a message is sent to the higher degree researcher through someone else.

Different perspectives on time and prioritisation of research in the context of broader social concerns can be hard to monitor in PNG and can impact the effective use of time. In one example, the supervisor created a structured schedule, distributing specific time slots for supervisory meetings, teaching undergraduate courses, research consultations, and personal study. Being aware of the time commitments of higher degree researchers is important. Consider the time they have available to conduct their studies routinely, and their expected timeline for progressing to completion. Consider logistical constraints, and check that timelines reflect the actual durations of key research activities. Discuss how long it takes the researcher to travel to campus, ask them what forms of transport, and timetables are available. Take these and their work and family commitments into account when scheduling meetings (See also Chapter 2).

A key consideration in PNG is that information services within the university may be very limited, so routine access to online journals, or current textbooks may not be possible. Consider institutional and research networks that may provide additional access or can – given time – facilitate the sharing of key documents. Plan with your higher degree researcher to navigate away from places and spaces that may put the conduct of rigorous research at risk.

Here are some examples of risks to three of the key stakeholders:

1. The higher degree researchers – their development must be managed in a context of limited resources, while research standards remain unchanged regardless of context.
2. The project topic – contingency plans for conducting research on the topic are essential. Loss of access to resources, data or expertise can be very disruptive, putting the conduct of the study at risk.
3. The supervisors – their expertise in supporting the higher degree researchers and their research projects are vital, especially in a potentially volatile research context. Supervisors become the core, and sometimes sole, source of guidance and advice. Their roles include: building researcher capacity, sponsoring access to networks and resources, and overseeing the conduct of projects.

Case study – Jane and Adam building expectations

Jane had used Adam as a tutor in a number of her subjects and always found him easy to

work with and able to conduct his classes professionally. As a Senior Lecturer she was also on the university ethics committee and academic board, supervised two higher degree researchers as primary advisor and was working on a grant application. Her grant topic allowed her to ask for funds for research support.

Jane and Adam agreed that Adam would work with Jane on the grant application with a budget for a PhD scholarship for Adam. Jane had also invited a colleague from a developed country to join the work. A librarian by profession as well as a researcher, Ray was able to contribute to the grant writing and provide access to the latest journals based on agreed search strategies. By developing the application together, they ensured that the academic requirements of the grant matched their expertise. Adam also monitored some online modules to refresh his methodological skills and began reading journals to become familiar with the field.

Together they set out the details of the grant to show a timeline for Adam's doctoral studies. Adam talked to his family about his plans to enrol in a PhD if the grant was successful. The scholarship would allow him to devote all his time to his project, but he hoped to continue to do a small amount of teaching to continue developing his practice. His family accepted that if the grant was successful Adam would need time to focus on his studies and they talked about finding a quiet space at home for him to write and think.

Institution

A university's infrastructure should cater for the needs of the higher degree researcher's program of study. This can include but is not limited to, access to technology, access to laboratories and related resources, access to libraries and scholarly articles and databases, funding and scholarships, and workload recognition for supervisors. To explore these elements in practice, consider the following. Within the last decade, there has been a dynamic shift in research practices with the use of Learning Management Systems (LMS) and electronic devices. These electronic and technical devices have had an impact on various stages and aspects of academic research (collecting, measuring and recording data and writing the report on the findings). So higher degree researchers have to be trained to learn, and know how to use, the device and computer programs. Additionally, the capacity of both researcher and supervisors to use these devices to conduct the research successfully, and with ease must be considered.

Further, the institution's support of the availability of laboratory equipment in a technical institution is very important to the success of research outputs. For example, if the water samples brought to the laboratory cannot be appropriately processed and stored, the validity of the test results would be compromised.

Access to resources goes beyond the availability of laboratory equipment. Facilities such as libraries and academic writing and language support are fundamental to the success of a higher degree research candidature. If these cannot be made available at the institutional level, then the higher degree researcher and supervisors must explore research networks and institutional partner organisations to identify alternative ways to access resources. This may involve getting a grant to travel elsewhere to conduct research, or sending samples or data elsewhere, or inviting key experts to visit at key times to engage locally.

Case study – Professional development resources

The establishment of the Academic Resource Centre at PNGUoT could provide professional development and writing resources to maximize higher degree researcher progress. While it is acknowledged that this is a good step, the addition of a dedicated academic writing and learning support centre, with professional tutors specially tailored to assist higher degree researchers, is an ideal that requires funding. Papua New Guineans use English as a second, third or fourth language, so the need for good writing is a big challenge. This challenge remains the supervisors' responsibility when there are no resources or access to an academic writing centre.

Chapter 9 and Chapter 10 explore the roles of libraries and librarians, freely available online programs and resources, and the role of supervisors. These chapters explore how supervisors can facilitate the use of libraries and informed learning resources. Capacity to access, gather and process information is key to the development of independent researchers.

Funding can also impact the success of a research project. Anecdotal experience of supervisors and higher degree researchers is reflected in the following observation: 'The university has a facility to draw funds for my projects, however, there is a funding limit that constrains production of much better research results'. Lack of scholarships and fund sources for high degree researchers can force them to engage in full time work that can distract from their research progress. Work commitments can impact on higher degree researcher's ability to conduct research, realise quality research outcomes, and gain experience as an independent researcher. Higher degree researcher studies require large blocks of time for deeper thinking and engagement with key literature. Scheduling 30-minute blocks between teaching classes is unlikely to be a productive way of progressing studies. Access to quiet workspaces where interruptions are infrequent can be highly beneficial. It can be hard to find such space in a busy work or home environment if facilities are not available on campus.

Finally, institutional support for supervisors to manage workload is essential. Academics face ever-increasing pressures to publish, and to maintain heavy teaching loads and administrative roles. Pressures are also on higher degree researchers to publish before graduation to enhance their employability. Supervisors

can work on publications with higher degree researchers, to reduce the pressures for all concerned and share the workload, and their expertise. Teamwork can reduce the amount of time that needs to be found for research and writing. Equally university leadership has a key role to play in ensuring that workload is distributed fairly, giving everyone opportunities across the domains of teaching, research, and service. These pressures are no different for those in PNG, where teaching and service workload allocations are high, and potentially more so for women academics.

Networks

Networking and collaboration with other researchers is a fundamental aspect of successful supervision. In developing countries like PNG, networks may be used to access essential resources and expertise. Networks can be used to give researchers in other institutions and other countries privileged access to unique local data sets and knowledge that will allow their conduct of research in country. Collaborators can become external supervisors or 'critical friends' of the higher degree researcher. They may agree to review or examine projects. They may be able to grant supervisors and higher degree researchers access to additional library resources, research funding, data analytical tools or infrastructure. Network relationships developed and maintained by supervisors can involve mentoring where those more experienced can guide and role model supervisory practices. They may share different ways of critiquing work, or different theoretical and methodological approaches to inform research conduct and design. In return local supervisors can grant access to unique data sets and knowledges, explain the navigation of rich and diverse cultural contexts, and manage expectations of research stakeholders.

Other examples of engagement activities through local and international networks may include enrichment programs. University wide lectures from expert staff throughout the year, specifically targeting topics about the research journey and supervision may be offered. Topics might include introduction to the research culture, preparation for candidacy, reviewing literature, research methodology, data collection, analysis, thesis write-up/ writing for publication or thesis examination. Some departments may be able to frame events as course content for their higher degree researchers. If research methodology subjects are not offered within courses, then supervisory mentorship may be required. For departments that do offer research methodology subjects, there may be online resources available, or visiting experts providing complementary resources to the support provided to higher degree researchers. Sourcing support beyond the supervisory team needs to be considered and planned for well ahead of time.

Higher Degree Researcher networks or significant interest groups, initiated by supervisors or the researchers, allow researchers to share, learn and support one another through candidature. Networks may include researchers from across a range of related fields, connected by their higher degree by research enrolment. Such groups can allow more advanced higher degree researchers to provide advice on the navigation of candidature to new researchers, and help them in the identification of additional expertise and infrastructure that may inform their progress.

Some other examples of key additional stakeholders include mentors, sponsors, or collaborators who may

be found in other areas of the university, beyond the university in industry or government, or perhaps in universities in other countries around the world. The authors of this chapter who are members of PNGUoT Women in Higher Education (WIHE) SIG acknowledge the value and power of their peer-to-peer community of practice.

Case study: Jane and Adam build research networks

The grant was successful and a year later Adam is enrolled in his PhD, on a scholarship, progressing his research. A big hurdle for Adam is that he must present on his project to a panel and provide his literature review and project plan for their comments. The outcome of this presentation will be confirmation of his candidature and scholarship for the next 2 and a half years.

Jane is keen to use this milestone to further develop Adam's academic writing and presentation skills. As a writer Adam is still struggling to adopt the thesis genre that involves using the literature to support his argument and intended research contribution. His critical thinking skills are growing, but he is finding constant reviews and revisions of his work troubling, unclear why his current drafts are not good enough. Similarly, he is approaching the presentation as a tutorial and not confident about responding to questions from the audience and panel at the conclusion of the presentation.

To address these issues Jane is prompted to create a peer mentoring group. She creates a monthly meeting and invites Adam and her other two students to attend. Two other supervisors and their two higher degree researchers also come along to the meetings.

At each meeting higher degree researchers present, lead discussions, or nominate to present or lead future sessions. There is also time devoted to a round table sharing of researchers' project progress. Presentations include practice presentations for conference papers and confirmations. Leaders present papers they find interesting and facilitate discussion of their contents. Supervisors are present to support discussion and model good practice in reviewing work and giving constructive feedback.

For Adam and others, meetings provide a valuable way of learning from the experience of others, discovering the standard of work expected at different stages of candidature, and developing critical thinking and reviewing skills.

Checklist for success

The following checklists are provided for supervisors to discuss with their higher degree researcher, accounting for key stakeholder considerations.

Higher Degree Researcher – For the higher degree researcher to complete and discuss with the supervisors:

	Considered? (Yes or No)
Consider your work and research experience to date, and how it has prepared you for research studies? Honestly consider your strengths and how to ensure a good fit for your background, expertise and interests with a possible project and supervisor. What are the admission requirements and are you able to meet them?	
Are your family and friends supportive of your studies, and aware of how it will impact your time and devotion to their needs? Have you discussed your commitments with your supervisor and discussed a study timeline? Have you engaged any scholarly networks or contacts you have who may be able to provide advice on managing your time?	
What arrangements can you put in place to travel regularly to campus to meet your supervisor? Do you have access to study related resources? Have you discussed your needs with your supervisory team? Is there a place where you can go to focus on your studies for at least 20 hours a week if you are studying part time and double that if you are studying full time?	
Are you aware of the support you can get from your supervisors? Have you considered with them how you will work together, and accounted for any concerns about professional development or infrastructure needs? Have you explored networks beyond the supervisory team and institution that may be important to you and your studies?	
Are their financial considerations to be addressed before you can study? Have you explored available funding and scholarships with your supervisors? Have you considered study exchanges or double degrees with overseas universities?	
Will you be studying full or part time? Externally or internally? Have you considered and addressed the implications of your study mode for meetings with supervisors, accessing resources, family and work commitments?	
How will you manage work life balance during the term of candidature, that could be up to a decade for part time students. Carefully consider your goals and motivations. Have you discussed with your supervisors your goals?	

Topic – For the supervisory team to complete and discuss with the higher degree researcher:

	Considered? (Yes or No)
Is the proposed project topic well aligned with the available infrastructure and expertise? If not, who can assist you to address needs locally or globally?	
Does the higher degree researcher's academic and research record reflect the capacity required to conduct the research? If not, what are the options in terms of variation to topic or additional pathway courses to better prepare the researcher?	
Do the supervisor's theoretical and methodological approaches align well in supporting the student and their project? If not consider where additional support may come from, or how accounting for existing areas of strength may help better align the topic with supervisory capacity.	
What are the possible outcomes of the research (e.g., journals, books, patents, or reports to government) and what role can the supervisors play in supporting their achievement? What expertise and expectations does the Higher Degree Researcher bring and are those accounted for in the outcomes planned? What other experts may be useful stakeholders to invite onto the supervision panel or contact for support?	
What are the research integrity considerations to be agreed on and understood (e.g., authorship, intellectual property, ethics, and data management) and does the supervisor's range of expertise and experience mean they can support this work? What policy, guidelines, online resource, or external expert can you call on to guide you in ensuring the research is conducted appropriately?	
Will supervisors' research be used to inform or be informed by working with the higher degree researcher on a topic led and owned by the higher degree researcher? Are appropriate arrangements in place to ensure all authors will be credited on work generated? Is there a need to explore how to set such arrangements in place, and if so, what appropriate resources can be accessed?	

Supervisor – Supervisors along with their higher degree researchers to discuss supervisory approaches available to them (See also Chapter 1):

	Considered? (Yes or No)
Can supervisors establish an enduring relationship with the higher degree researcher in this context? If working across communities or countries – have you set up time to share and discuss contextual considerations?	
Can supervisors negotiate meeting arrangements and ways of providing feedback that are suitable for all concerned? Can realistic expectations be set with higher degree researchers about timelines based on access to internet and postal services, and time required to prepare for meetings? Negotiate and explore options if timeframes are not reasonable.	
Can supervisors champion the higher degree researcher's research by introducing them to a range of networks, providing one to one support and guidance, and being a research role model?	

Institution – For supervisors and their higher degree researcher to discuss the resources available to them:

	Considered? (Yes or No)
Can supervisors confirm that required infrastructure can be made available to the higher degree researcher? Have concerns or constraints been discussed? Are Plan Bs in place to account for any concerns?	
Can supervisors ensure the higher degree researcher is aware of and can make good use of resources available? Have concerns or constraints been discussed? Are Plan Bs in place to account for any concerns?	
Who are the key stakeholders within the university the supervisors should liaise with or introduce the higher degree researcher to in order to provide sufficient administrative support and guidance? Who within the broader community may be able to assist including alumni, university networks and researcher development organisations?	

Networks – What additional resources are available? Have the following factors been considered?

	Considered? (Yes or No)
What library resources, professional development offerings and infrastructure will be accessed beyond the institution and how?	
What supervisor and higher degree researcher networks beyond the university can be used to inform the higher degree researcher's progress?	
Can higher degree researchers networks at the institution, or with higher degree researchers and alumni beyond the institution provide added support for the higher degree researcher?	
What internal and external scholarships, grants or resource providers can supervisors and the higher degree researcher identify to enhance access to resources?	
What sources of emotional and practical support are available? How can supervisors and the higher degree researcher access these more readily?	

Evidence your practice

Can you identify a topic that is well aligned with your research interests and expertise? Can you identify a potential applicant to discuss this topic with? Are their interests, skills, and experience well aligned to the topic?

What are your current practices as a supervisor in building student skills? Based on your review of this chapter, are there other new practices that would be more effective? Articulate these.

Consider your research networks. How can you apply these to develop a sustainable research education environment for you and your higher degree researcher?

Conclusion

PNG supervisors and higher degree researchers face many challenges and have access to many opportunities as they navigate a doctoral candidature together. As noted by Papoutsaki & Rooney (2006) they include:

- building a research culture through continuity of staffing
- designing curriculum in response to the needs of PNGs diverse communities
- creating new knowledge building on locally based fieldwork
- using senior academics to mentor new researchers in required research skills

- nurturing academic networks across the Asia Pacific region.

The learnings and lived experience shared by authors in this chapter provide unique, informing insights aimed at enhancing collaboration and supervisory practices. Institution support and appropriate guidelines are important in administering graduate research school programs. Where the institution is less research intensive it may be an opportunity for the active research community to contribute to development of resources, perhaps drawing on the expertise of their scholarly networks and trusted online resources. The priority is to ensure that PNG and its wealth of promising researchers and research contexts are brought into the frame of global research activity. PNG has much to offer in terms of unique resources and varied social cultural perspectives. Being aware of their own research strengths, access to resources and expectations and plans will help supervisors to make best use of higher degree researchers' strengths and capacity. Continuing to build relationships with networks globally is a vital strategy employed by even the highest-ranking universities. Building on strengths, being innovative and creative in approaching challenges and being inclusive in research practice will always serve the PNG researcher and those in the global research community well.

Additional Resources

While most of these sources and additional readings are freely available, some are not. The lock icon beside an entry indicates that the source *may* be available from your library.

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