Australian Government
Tertiary Education Quality and Standards Agency

Gen AI strategies for research training: Emerging practice

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TEQSA

Contents

Introduction

The adoption and integration of generative artificial intelligence (gen AI) into the research lifecycle present opportunities to support and streamline activities for institutions and researchers. But, alongside these opportunities is a pressing need to identify, understand, communicate and mitigate the complex, and still emerging, risks gen AI poses to research integrity and quality.

To foster an environment that promotes responsible research practices, institutions need to ensure governance and management practices articulate, encourage and enforce the responsible use of gen AI tools.

In supporting the use of gen AI tools, institutions can assist higher degree by research (HDR) candidates to develop general and discipline-specific gen AI literacies needed within their field, including how to:

- use different tools in their field of research
- evaluate the efficacy and output of gen AI tools
- effectively manage data integrity and security
- protect intellectual property
- safeguard the attribution of authorship
- maintain compliance with guidelines, codes and frameworks designed to ensure the responsible and ethical conduct of research
- familiarise themselves with interjurisdictional differences in gen AI legislation and acceptable use in research
- form nuanced judgements about the ethical and effective use of gen AI in various stages of the research lifecycle and across different research projects
- understand gen AI's social impact and learn to use the tools in a socially conscious and responsible way
- critically engage with gen AI tools to ensure that academic contributions are valid and reliable
- appropriately document gen AI use.

Additionally, institutions should invest in the professional development of supervisors, ensuring they are equipped to support research candidates to develop critical gen AI literacies.

All supervision staff, including those based externally, need to be familiar with institutional policies, guidelines and frameworks on gen AI use within graduate research in the thesis preparation and assessment process.

All supervision staff should be familiar with the tools being used in their field of research and understand how to balance the appropriate use of gen AI with obligations under relevant codes of conduct and frameworks, such as:

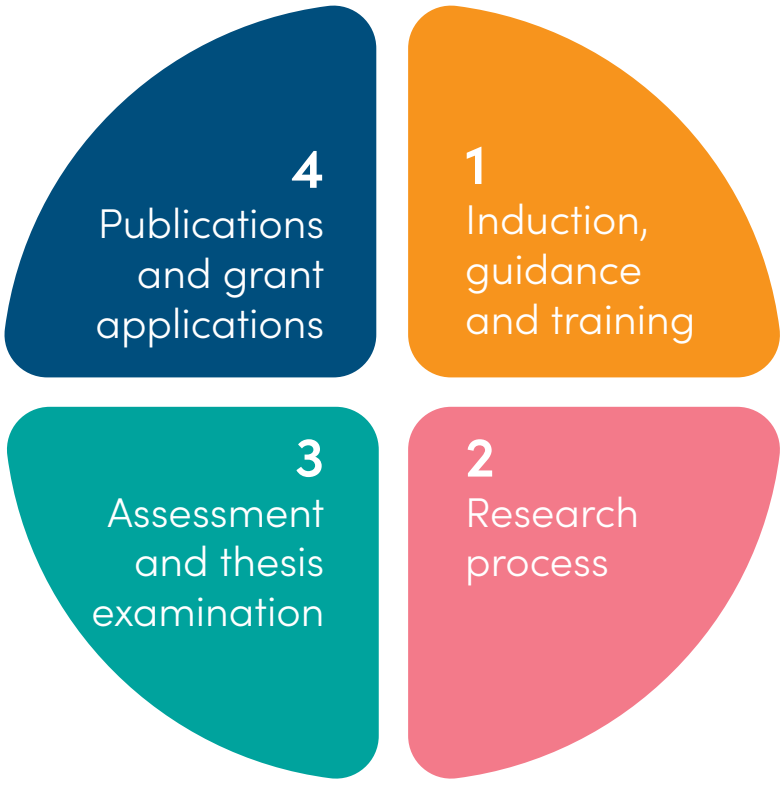
- Australian code for the responsible conduct of research
- National statement on ethical conduct in human research 2023
- Code of ethics for Aboriginal and Torres Strait Islander research
- Framework for governance of Indigenous data
- Australia's AI ethics principles
- Copyright Act 1968.

How to use this toolkit

This toolkit has been developed to assist institutions in supporting their commencing and ongoing HDR candidates. This resource compliments *Gen AI strategies for Australian higher education: Emerging practice* and should be read in conjunction.

The toolkit has 4 sections:

- **1. Induction, guidance and training**
- **2. Research process**
- **3. Assessment and thesis examination**
- **4. Publications and grant applications.**



To assist institutions to evaluate their strategies and activities to support HDR candidates, each section includes a checklist of actions to consider, key takeaways and examples of emerging practice at Australian institutions.

Additional callouts to support readers to make use of this toolkit are:

Take note

The *Take note* callout, and accompanying icon, features practical tips and advice to support providers in addressing the risk gen AI tools pose to academic integrity at their institution.

Caution

The *Caution* callout, and accompanying icon, highlights potential risks for providers to consider when developing and executing their action plan.

The quotation mark icon identifies examples of practical actions providers have implemented or are working to achieve. These are drawn from submissions to TEQSA's 2024 request for information or from publicly available information on institutional websites, and are published with permission.

1

Induction, guidance and training

Induction, guidance and training

Checklist

- ☐ Provide clear and accessible guidance on gen AI use in research, tailored for HDR students.
- ☐ Develop a training module for staff and students on the ethical and responsible use of gen AI in research.
- ☐ Ensure all supervision staff receive clear guidance on the institutional position on ethical and responsible gen AI use in research and research training.
- ☐ Establish a formal gen AI use agreement that is signed by HDR candidates and supervisors at the beginning of candidature.

Familiarity with gen AI varies widely and institutions should not assume a baseline level of understanding. Providing guidance and training to all relevant staff and students on the ethical and responsible use of these tools will support institutions to maximise the benefits and mitigate the risks of this technology.

It is important that all supervision staff, including those located at other institutions, jurisdictions, within industry or adjunct staff, can provide HDR candidates with nuanced and context-specific gen AI support.

Expectations on permissible gen AI use in formal works, such as assessments, research proposals and theses, need to be incorporated into supervision training, as part of the HDR induction process and at key stages throughout candidature. Importantly, where HDR candidates are undertaking a joint PhD with another institution, or are being supervised by someone located within industry, an effective institutional strategy will ensure that policies, guidelines and expectations on gen AI use in research are clearly communicated and consistently upheld by all parties.

Take note

To provide clear and accurate guidance on acceptable gen AI use, and maximise the benefits this technology offers researchers, institutions should prioritise the evaluation of risks that may arise at different stages of the research lifecycle, with particular attention to cases where what is and is not permissible is nuanced.

Key takeaways

Effective induction, guidance and training will support HDR candidates, supervisors and auxiliary staff to use gen AI tools responsibly and effectively. Key institutional considerations are:

- **consultation and collaboration** – engage with the research community and relevant experts to ensure the institutional position reflects a broad range of perspectives and disciplines
- **institutional policies and procedures** – clearly communicate institutional expectations around gen AI use in research to HDR students, supervisors and support staff on a regular and ongoing basis
- **gen AI in HDR induction** – provide gen AI-specific content for HDR candidates as part of their induction process, to outline expectations around ethical and responsible use when planning and conducting research
- **context-specific guidance and training** – provide discipline-specific professional development opportunities to develop gen AI literacies which both enhance research outputs and researcher wellbeing, and raise awareness of legislative requirements, frameworks, guiding principles and practices in their field
- **emerging technologies** – ensure that HDR candidates and supervisors are kept informed of emerging technologies, practices, regulations and frameworks that may impact their field of research.

Caution

Ensure there is consistent high-level messaging around the acknowledgment and use of gen AI tools in research.

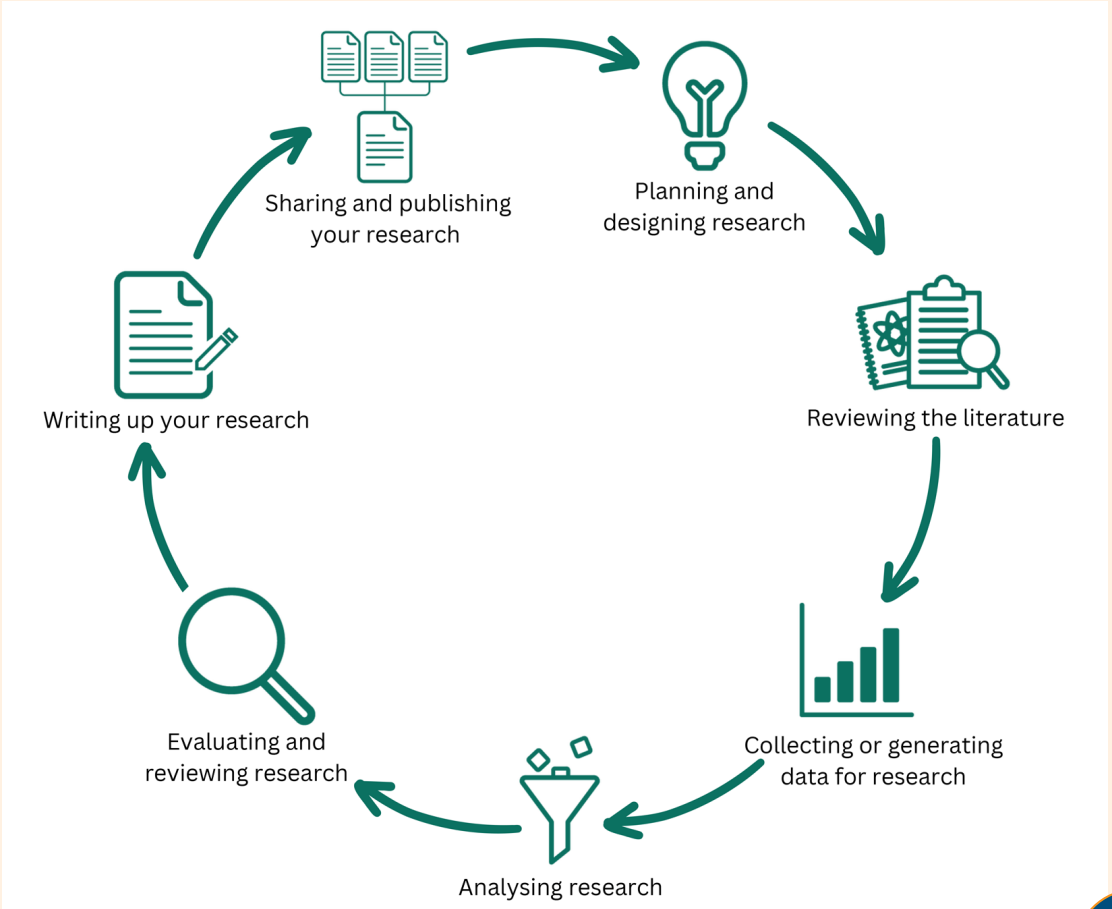
Where there are different expectations around gen AI use for research, either within disciplines or between faculties, clearly communicate both the difference and the rationale to candidates and staff.

Remember to also provide the messaging and communications to Honours students who are beginning their research training.

Examples of emerging practice: Induction, guidance and training

Deakin University (2024): Guidelines for research

This guide aligns with *Deakin Generative Artificial Intelligence (AI) guidelines for research* to support researchers in identifying responsible use of gen AI throughout the research life-cycle. It provides practical suggestions and hypothetical case scenarios to contextualise the guidelines.



Queensland University of Technology: Online module for AI in research writing

Online module for HDR students – 'Responsible use of AI in Research Writing' (QUT student only access).

University of Tasmania: Mandatory coursework for research students

Research students also undertake a Graduate Certificate in Research as mandatory coursework as part of their degree. Articulation of appropriate use of gen AI in the assessment tasks of this coursework will align with broader university guidelines around coursework more generally, but there is a need to provide a clear distinction in the information for research students between coursework and research resources around gen AI use and expectations.

Monash University: Graduate research and AI capability and engagement strategy

Graduate Research AI Capability and Engagement Strategy (GRAICE) for graduate research students endorsed by the University Graduate Research Committee.

The Graduate Research AI Capability and Engagement Strategy (GRAICE) has been developed in response to the increased availability of generative artificial intelligence (gen AI) technologies and tools. GRAICE has been designed specifically to ensure the Monash Graduate Research portfolio is best placed to harness the opportunities provided by emerging AI technologies.

GRAICE is a strategic plan to be enacted throughout 2024 and 2025 which will support Graduate Research students and supervisors at every campus and teaching location by ensuring that all have access to the resources, training, information and tools required to best utilise AI in their research in a responsible manner.

SP Jain School of Global Management: Research integrity training and support

At SP Jain School of Global Management, academic and research integrity are fundamental to the student experience and underpin the institution's scholarly culture. A range of targeted initiatives have been implemented to uphold and strengthen these values:

- **Student Orientation:** A comprehensive two-day orientation is conducted prior to the commencement of classes, introducing new students to SP Jain's academic standards and expectations. The program includes sessions on ethical writing, APA referencing, the responsible use of gen AI, and professional communication. For the Doctor of Business Administration (DBA) program, orientation materials have recently been updated to strengthen the focus on academic and research integrity. In particular, the workshop titled *Academic and Research Integrity, Ethical Writing (Including Use of Gen AI), Professional Communication, and APA Referencing* has been expanded with 12 new slides dedicated to gen AI and its implications for academic integrity.
- **Epigeum Academic Integrity Module:** All students and staff are required to complete a self-paced online academic integrity course. SP Jain has licensed the Epigeum Academic Integrity modules for DBA students and mandated their completion in the first term of coursework. Completion rates are approaching 100%, demonstrating strong engagement with the program.
- **Future Enhancements:** To further strengthen its integrity framework, SP Jain is exploring the adoption of the Epigeum Research Integrity modules for DBA students. The updated modules are aligned with the *Australian Code for the Responsible Conduct of Research (2018)* and are being evaluated for Integration into the curriculum.

University of Newcastle: HDR gen AI guidelines

Developed guidelines for the use of gen AI in Higher Degree by Research (HDR) that aligns with the 'Use of Generative Artificial Intelligence in Teaching, Learning, and Assessment Policy'.

Developed gen AI resources for HDR students in the university research training calendar, including deliver round table sessions with research integrity staff and advisors to proactively work with researchers to explore how researchers can engage appropriately with gen AI in research development activities.

2
Research process

Research process

Checklist

- ☐ Clearly communicate the ethical and legal obligations of using gen AI tools to conduct research.
- ☐ Provide instructions on what data can and cannot be uploaded to third-party gen AI platforms.
- ☐ Develop resources, case studies and guidance for candidates and staff on appropriate and inappropriate gen AI use.
- ☐ Provide information on gen AI tools that adhere to ethically sound data management practices.
- ☐ Update the student learning management system (LMS) and HDR webpages with clear instructions, guidelines and resources around the effective and ethical use of gen AI.

Gen AI offers researchers new opportunities to support and improve their research practices. Yet, despite the benefits this technology presents there are risks involved in HDR candidates using gen AI as part of their thesis planning, research or analysis process. To ensure HDR candidates can make informed decisions on the appropriate use of these tools, institutions need to provide training to develop gen AI literacy in authorship, collaboration, data governance and intellectual property.

Candidates, supervisors, support staff and external research partners need to understand that some gen AI outputs may undermine research integrity and quality due to inaccuracies, biases or the exclusion of extraneous variables.

All research staff and students need to understand the risks gen AI tools may pose to data security, accuracy and privacy, to assess the efficacy and safety of using them. Examples of some of the risks these tools may present are:

> Data management within gen AI models, and the tools and workloads used to train and fine-tune these models.

Risks to data validity and security: model training and data handling

1. inadequacy of the training dataset that a gen AI model is exposed to
2. data poisoning resulting from models being trained on untrusted or unvalidated data
3. training AI models on proprietary or customer-owned data
4. sharing data beyond the scope of the training data
5. modification of data by a third-party, also known as a supply chain attack.

> The tools and workloads used to run applications that incorporate gen AI models and the application programming interface.

Risks to security and privacy risks: system architecture and model inference

1. multiple access points at the data, application or infrastructure levels
2. unintended access to external users, groups or applications
3. vulnerability to hackers who can feed malicious prompts and control user input
4. model extraction attacks that can be used to steal and replicate a target model.

(Adapted from Wix Experts Team, *7 AI security risks you can't ignore*, 21 May 2024)

Caution

Many HDR candidates are situated within industry or with external research partners. Extra attention may be required to make sure research students receive, and can make sense of, institutional messaging around gen AI within this context.

Key takeaways

To promote ethical and effective research practices, institutions need to provide clear guidance and resources which support HDR candidates to develop gen AI literacy. Key institutional considerations are:

> **research conduct with gen AI** – provide clear information on appropriate and inappropriate gen AI use in research, including discipline-specific guidance where relevant

> **gen AI regulations and use frameworks** – make domestic and international resources on gen AI regulations and frameworks readily available on HDR webpages and the student LMS

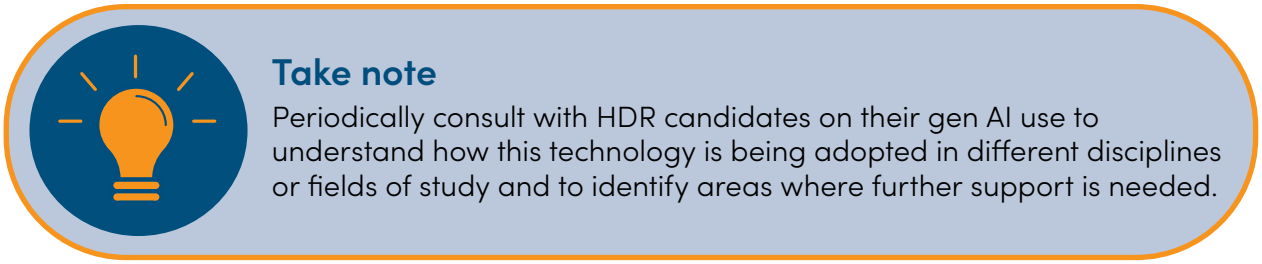
> **researching gen AI tools** – support supervisors to learn about the different tools graduate researchers may use, so they can support the development of digital and information literacies across the breadth of evolving gen AI technologies

> **gen AI user agreements** – to protect graduate researchers' intellectual property and ensure ethical compliance, inform research candidates of the importance of reviewing gen AI tools' user agreements prior to uploading any research outputs or research data to a third-party platform

> **governance and management** – provide clear and easily accessible directives on permitted gen AI uses, including the specific roles and responsibilities of candidates, supervisors, examiners and any other relevant stakeholders

> **gen AI use discussions** – encourage supervisors to maintain open and ongoing conversations on gen AI use throughout a research graduate's candidature and embed formal checkpoints to confirm ongoing ethical and responsible use

> **gen AI best practice** – stay abreast of international, national and local regulations and practices, to support the development of robust and up-to-date guidance for HDR candidates, researchers, supervisors and other relevant stakeholders.



Examples of emerging practice: Research process

Griffith University: Staff and student resource repository

The University Research Data Management SharePoint site (accessible to staff and students) contains information and guidance about the responsible use of gen AI including a table of risks and mitigation strategies associated with various products or services and notes about whether formal approvals are required to use each service.

University of Tasmania: Supervisor induction

Enhanced supervisor induction and training will address challenges, providing a research context to gen AI use in HDR assessment tasks. This advice will focus on how supervisors can provide guidance and develop capacity in their research students in the responsible use of gen AI in research.

University of Technology Sydney: Principles of research

UTS has approved new guidelines — Use of AI in Research Guidelines — to help researchers at UTS use gen AI in an ethical and transparent way. The guidelines are structured around each stage of a research project and consider principles of responsible research conduct and risk types when using gen AI. The guidelines have been implemented to ensure that all UTS researchers can engage gen AI productively and effectively while maintaining academic integrity and achieving research excellence.

Central Queensland University: Research governance and risk management

Research governance	Conduct an iterative process to audit the university's research policy suite to reflect changes in research best practice as it relates to gen AI adoption and use, to mitigate risks for research integrity and realise gen AI opportunities.
Research risk management	Conduct a risk assessment of the university's research operations in the context of existing research collaborations, partnerships, locations and projects.
Research workforce planning	Evaluate the impact of gen AI technologies on existing and forecasted research skills needs and develop a research workforce plan.
Research professional development	Embed gen AI skills training into researcher development series (ECR, ECR Foundations, Research Leadership and RHD Accelerate programs).
Research technology	Develop a gen AI Technology Roadmap for Research to drive decision-making for investment in enabling technologies.
Research communications and culture	Develop a communications strategy and calendar of initiatives to educate and encourage researchers and graduate research trainees to responsibly adopt gen AI in their practice (e.g. Research Gen AI Champions, Community of Practice, Seminar Series, e-newsletters).

The University of Adelaide: Training and resources

The Researcher Education and Development team is updating training and resources to include the appropriate and responsible use of gen AI tools for HDR students and supervisors.

***Integrity in Research Writing* – online course**

- Updated to include appropriate use of gen AI alongside other aspects of integrity in research writing.
- Available to HDR students, supervisors, and other researchers.

Gen AI guidelines for use in your research thesis

- Will provide principles for the use of gen AI tools in thesis preparation and editing; for HDR students and supervisors.
- Separate guidelines will be provided as part of instructions for thesis examiners.

The University of Adelaide: HDR research guide

Students must maintain their own records of gen AI use, including programs or applications used, dates and prompts. These records may be requested where concerns about gen AI use are raised by supervisors, other university staff, examiners or other relevant parties.

University of Wollongong: Gen AI in research workshops

The Graduate Research School, Researcher Development Unit and Research Integrity and Ethics Office collaborated to deliver workshops on 'Using Generative Artificial Intelligence in Research Effectively and Responsibly'. Concerns and considerations for the use of gen AI in research have been included in various HDR training programs.

uow.edu.au/research/graduate-research/current-students/generative-ai-in-hdr

James Cook University: AI literacy training

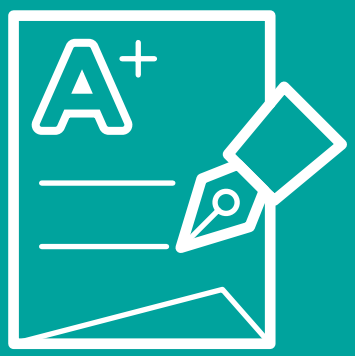
The GRS has recognised the need for AI literacy and responsible industry links and provides staff and student facing information through the AI Literacy Series, including sessions on:

- Navigating the Legal Landscape: Gen AI and IP
- AI for Social Good: Empowering NGOs and NFPs
- How is Gen AI shifting the workforce of the Future?

The GRS has partnered with the Queensland AI Hub to integrate AI related coursework (including AI ethics in research) into research training for HDR students.

3

Assessment and thesis examination



Assessment and thesis examination

Checklist

- ☐ Review existing assessment and examination requirements for assurance of learning.
- ☐ Implement necessary system changes to confirm submitted work has been appropriately prepared and gen AI use acknowledged and declared.
- ☐ Distribute formal guidance to external examiners on institutional expectations around gen AI use in graduate research, and the assessment and feedback process.

A robust gen AI framework will provide clarity around permissible gen AI use during thesis preparation, submission and examination processes. This framework should recognise the potential for differences in permissible and ethical gen AI use between faculties and across institutions and jurisdictions. It should also include formal documentation and agreements for all parties on the acceptable use and acknowledgement of gen AI.

To protect HDR candidates' privacy and intellectual property, provide examiners from other institutions or jurisdictions with your institutional policies around using gen AI in the examination and assessment process, and guidance on their application.

To maintain assurances that HDR candidates have attained the relevant skills and knowledge of their degree, institutions should consider including additional assessments as part of the thesis examination process. Oral examinations are a well-established complementary assessment that affords HDR candidates the opportunity to showcase their knowledge and achievements, while providing additional certainty that examination requirements have been met.

Take note

Provide gen AI examination guidelines for non-traditional research outputs, such as creative works, exhibitions and performance, and design and digital art.

Key takeaways

Institutions need to maintain a fair and consistent thesis examination process with assurances that HDR candidates have attained the necessary skills and knowledge of their degree, and have developed digital and information literacies which are transferable across evolving gen AI technologies. Key institutional considerations are:

- **field-specific gen AI knowledge and skills** – periodically review graduate capabilities and learning outcomes, where appropriate, to ensure HDR candidates are receiving appropriate professional development opportunities to stay abreast of the technological developments and tools being used in their field of study
- **gen AI use in thesis preparation, submission and examination** – review and update policies and procedures, and develop supporting documentation to facilitate acceptable gen AI use throughout the assessment and thesis examination process
- **preparation and submission requirements** – provide clear messaging and formal documentation to all relevant internal and external parties, on institutional expectations of gen AI use in the thesis assessment and examination process
- **candidate capabilities and skills** – maintain assurances that research graduates have attained the necessary skills and knowledge for their award by including assessment checkpoints, such as *viva voce* examinations, at key points of candidature.

Take note

As with other degrees, institutions must assure their graduate research students are meeting the learning outcomes of their award. Supervisors should get to know their students and monitor their progress to assure learning has taken place.

Examples of emerging practice: Assessment and thesis examination

Macquarie University: Research authorship

The Research Authorship Policy (approved in 2023) and Graduate Research Thesis Preparation, Submission and Examination Policy (commencing September 2024) include references to the responsible use of gen AI.

Murdoch University: HDR authenticity of work milestones

Update current HDR milestones to assess authenticity of work and implement assessment policies/processes (Viva Voice/Oral exam) to ensure degree award represents candidate efforts.

Monash University: Gen AI in thesis examination guidance

Use of gen AI in thesis examination

No use of gen AI in thesis examination by thesis examiners

All thesis examiners are advised of the university's position on encouraging responsible use of gen AI that complies with the Australian Code for the Responsible Conduct of Research. In addition, they are made aware of the requirements for students in relation to gen AI, including the responsible conduct of research and the declaration and acknowledgement of any use of gen AI technologies in their research.

Thesis examiners should appropriately consider all relevant declarations and acknowledgements concerning the use gen AI in reviewing and examining students' thesis submissions.

To preserve the confidentiality of thesis examination, examiners are not permitted to use gen AI technologies (such as ChatGPT) during the thesis examination process to support, prepare or write their examiners' report.

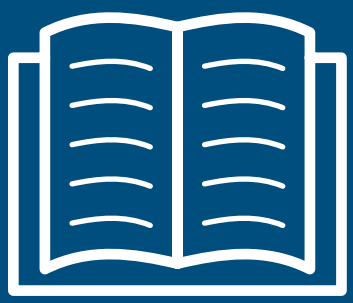
University of Southern Queensland: Oral examinations

Ensure that all HDR students provide a written and oral defence for confirmation of their candidature, and complete an oral defence as a standard component of the PhD examination (for students starting after January 2024).

Western Sydney University: HDR criteria review

Similar to undergraduate qualifications, we commit to reviewing the criteria that candidates must demonstrate to qualify for an award with a research preparation or training component. This evaluation stems from the evolving landscape of the knowledge, skills, and predispositions that research professionals now require which has shifted because of the widespread availability of gen AI.

4 Publications and grant applications



Publications and grant applications

Checklist

- ☐ Provide information for HDR students around gen AI use in publications and grant applications.
- ☐ Inform candidates about the importance of checking publisher policies and journal submission guidelines relating to gen AI use.
- ☐ Provide guidance and training on the necessary considerations when using gen AI and obligations to additional legislation, codes of conduct and policies pertaining to research.

The permissible use of gen AI in the grant application process, or in works for publication, differs between funding bodies, publishers, journals and jurisdictions. HDR candidates should be made aware, early in their candidature, of the importance of familiarising themselves with the requirements of individual publishers and funding bodies, and reading relevant guidelines to identify any conditions around the use of gen AI tools.

Institutions need to stress that the principles of integrity and accountability apply at all stages of the research life cycle, including as part of the publication or grant application process.

It is important for HDR candidates to understand the legal and ethical considerations of gen AI use in their research. They should also exercise caution in using gen AI tools when publishing or applying for grants. To support HDR students in understanding the different requirements of gen AI use in publications and grant applications, institutions can include links on their HDR resource page to the Australian Research Council and National Health and Medical Research Council guidelines and to select publishers' policies.

Caution

Develop awareness of the complexity and uncertainty around copyright infringement when using gen AI by encouraging ongoing discussion throughout HDR candidature on differences in expectations and legislation in various jurisdictions.

Key takeaways

To uphold research integrity and accountability, HDR candidates require guidance and support on the ethical and responsible use of gen AI when preparing works for publication or applying for grants. Key institutional considerations are:

- **grant application and publication policies and frameworks** – include guidance on the relevant frameworks and guidelines for preparing grant applications or research for publication as part of the HDR induction process
- **publication guidelines** – encourage HDR candidates to read publishers' guidelines on using gen AI in works for publication, given the allowable use and disclosure of these tools varies across publishers and journals
- **permissible gen AI tools** – provide clear guidance to HDR candidates on the gen AI tools which have been assessed as appropriate to use to uphold research integrity and avoid issues around plagiarism, copyright, confidentiality and unauthorised use of proprietary information.

Examples of emerging practice: Publications and grant applications

University of Canberra: Using gen AI in articles for publication

The gen AI environment is rapidly evolving. No major publishers currently permit gen AI tools to be an author. Gen AI tools cannot carry out the role of, or be listed as, an author of an article including making a substantial contribution, approval a final version [sic] or being accountable for accuracy and integrity. These tasks require knowledge of the subject, critical thinking, analysis, and interpretation of data.

Gen AI content is not considered capable of initiating an original piece of research without direction from human authors. It also raises issues of plagiarism as there is no guarantee that content is original and not copied from existing sources. Several tests have also revealed that gen AI tools are not capable of effectively creating a literature review (e.g. by generating incorrect or made-up references and DOIs).

Some publishers do not permit the use of gen AI tools to author scientific articles but allow some use in prewriting activities. See the Publisher guidelines table below for some examples of publisher policies.

If you are writing with the intention of publishing your work, you should check the publisher's information page to check whether using gen AI for article preparation is allowed.

The University of Adelaide: Gen AI for researchers

Gen AI and preparing research outputs

Gen AI is a rapidly evolving technology, with new capabilities and applications being introduced regularly. The purpose of the document linked below is to provide guidelines and expectations for the use of gen AI tools in the preparation of research outputs related to the Higher Degree by Research (HDR) program, including the thesis. These guidelines do not prescribe specific tools or uses, and are subject to change from time to time.

> Guidelines for use of generative AI tools in the preparation of Research Outputs by Higher Degree by Research Students

Using gen AI in grants and article publications

Grants

Grant funding bodies have recently released guidelines on the use of gen AI in grant applications and application peer review process. We will continue to add to this list as more guidelines become available.

> NHMRC Policy on Use of Generative Artificial Intelligence in Grant Applications and Peer Review

The use of gen AI may present a number of opportunities and challenges for grant applicants and peer reviewers. The purpose of this document is to outline NHMRC's policy on the use of gen AI.

> ARC Policy on Use of Generative Artificial Intelligence in the ARC's grants programs

This document provides guidance for researchers, administering organisations, and peer reviewers including all detailed and general assessors engaged in the Australian Research Council's (ARC) National Competitive Grants Program in relation to the use of gen AI tools.

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