

Facilitating the ethical: collaborative support for researchers' responsible use of GenAl

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Abstract:

The fast-paced development of Generative Artificial Intelligence (GenAI) provides exciting opportunities for solving wicked problems. Policies and guidelines emerge to support research integrity and ethical considerations in using GenAI tools for research. The possibility of using powerful GenAI tools is tempered by concern about data security and confidentiality, transparency and compliance with research ethics. Deakin University Library (Deakin Library) is at the forefront of AI literacies learning and teaching, and this extends to supporting researchers and research students. Collaboration with Deakin Research facilitated the development of a guide, Responsible use of GenAI in Research to contextualise Deakin's Generative Artificial Intelligence (AI) guidelines for Research.

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Introduction

The fast-paced development of Generative Artificial Intelligence (GenAI) technologies provides exciting opportunities for solving the world's wicked problems. Yet with opportunity, there is also corresponding risk. Research plays a critical role in complex nuanced issues, allowing modelling and simulation and bringing interdisciplinary understanding, potential solutions and policy formation. However, there is tension between GenAl's powerful potential to enhance research processes and outcomes and ethical codes of conduct for research. This paper provides a brief outline of the rise of GenAl technology, the response of Deakin University, and Deakin Library's collaborative work with Deakin Research to develop a safeguard for researchers in supporting the responsible use of GenAl technologies with research in the form of a practical guide. It also explores this University's navigation of ethics and research integrity with GenAl use in research, and capability building of researchers and research students.

Background

Generative AI (GenAI) framing

GenAl is a powerful technology that identifies patterns in sets of training data and uses algorithms to produce new content (Rouse 2024). This output can be in almost any form – text, code, image, music, or video (Rouse 2024). GenAl tools have been available for many years, but the release of ChatGPT in late 2022 was a tipping point for the awareness and use of GenAl in the wider community. Created by Artificial Intelligence research company OpenAl, ChatGPT generates output in response to prompts, and Pocock (2024) reported it as the fastest digital tool in history to hit the milestone of 100 million users globally within just five days. There were early concerns raised about the bias and reliability of content generated by ChatGPT, with notable examples of fabricated responses to queries (known as hallucinations) (Ringman 2023) and fabricated references purportedly supporting output (Hillier 2023).

There has been a mix of excitement and caution around the possibilities of GenAl. Students are embracing GenAl as an active learning tool and are currently using it across a range of functions including supporting creation of material such as images, coding, searching for literature, supporting their understanding of complex topics, and in productivity such as task prioritisation (Attewell 2024). In the education sector, responses range from banning GenAl in schools (for example, the Victorian Department of Education in March 2023) (Carey, 2023) to cautious encouragement of use in universities (for example, advice from the University of Newcastle 'embracing the benefits' of AI (ASKUON 2023) and Southern Cross University's encouragement of appropriate use of GenAl technology' (Southern Cross University n.d.). Much of this concern and caution relates to the ethics of using GenAl tools, and there is an opportunity for libraries to contribute to the safeguards that will be required for the ethical use of these tools.

Deakin University and GenAl context

Deakin University's response to GenAl has been one of cautious encouragement, and Deakin recognises both the potential and risks of GenAl. Senior university leaders actively engaged in media debate, addressing community concerns about academic integrity and GenAl (particularly around ChatGPT at that time) (ABC Radio Melbourne 2023), and have communicated positive approaches to supporting

students in using GenAl and the development of GenAl literacies for their future workplaces (Johnson 2023). Deakin students were provided with guidelines for GenAl use in February 2023 and encouraged to explore GenAl as digital citizens (Deakin Life 2023).

In the teaching and learning space, there is clear advice from TEQSA around GenAl usage and academic integrity (TEQSA 2024) and there is considerable staff enthusiasm and engagement through communities of practice, workshops and presentations at Deakin. Deakin's Centre for Research in Assessment and Digital Learning (CRADLE) has published on the importance of authentic assessment and open conversations with students about GenAl use in learning (Bearman et al. 2023). All Deakin learning is underpinned by the DeakinDesign principles and practices that support lifelong learning; these include authentic and inclusive design (Deakin University 2024a). Deakin's GenAl principles are also inclusive, and include a human centred and evaluative approach (Deakin University 2024b). These will guide the University's response to GenAl, including its teaching and research.

GenAl in Research context

GenAl tools have the potential to scale up analysis of big data and automate more monotonous research tasks. Climate change research, for example, can be progressed through GenAl by organising vast quantities of data (such as swathes of satellite images) and developing climate models to translate research into real world applications (Wegener et al. 2024). Machine learning tools, a type of Al, are already being used in screening studies for systematic reviews (Chelsea 2023), and researchers have been exploring GenAl technologies to semi-automate living reviews for many years (Thomas et al. 2017). There is potential for researchers to use GenAl to collect, generate and summarise data (Cornell University Task Force 2023).

Soon after ChatGPT was released, researchers began to list GenAl tools as authors on their scholarly papers, causing controversy (Stokel-Walker 2023). Publishers responded with guidelines prohibiting the listing of GenAl as authors, even when use is declared because a tool is unable to take responsibility for a study (Weerts 2024). Grant bodies have also banned the use of GenAl for peer review of grants because of potential breaches of privacy and confidentiality (NHMRC 2023; ARC 2023), and GenAl in broader peer review activities is also considered inappropriate for similar reasons (Wiley Author Services 2024). Not least of the concerns are the limitations of GenAl tools and the importance of appraisal of any output. There is a significant risk of misinformation or hallucinations generated by tools, particularly in text-generated content (Telus International 2023).

In the research sphere, there are different quality assurance and regulatory bodies that need to accommodate engagement with GenAI. While policies and guidelines were emerging at Deakin during 2023, there was a need for additional contextualisation for researcher practitioners. For many researchers, the excitement and possibility of using powerful GenAI tools is tempered by concern about data security and confidentiality, transparency, and compliance with research ethics.

During 2023, Deakin Research (including Ethics and Integrity and Researcher Development and Training) developed a set of <u>comprehensive guidelines</u> to support researchers and research students in the ethical and responsible use of GenAl tools. These guidelines recognise the vast potential of GenAl tools in timesaving and scaling up of research tasks and directly aligned with the Australian Code for the

Responsible Conduct of Research (NHMRC 2018). There is a particular focus in the guidelines on confidentiality, privacy, copyright and licensing conditions, noting the risk of breaching ethical standards and potential loss of control of information in missharing data with GenAl tools. There is also an emphasis on transparency and reporting any use of GenAl tools within research. The guidelines are tool agnostic and consider the changeable landscape of new tools and new features and functions of existing tools with ever more sophisticated outputs.

GenAl and libraries

There is a natural intersection between GenAl and libraries. Libraries have taken leadership in social change over hundreds of years, from free lending and improving access to knowledge during the 1600-1700s (Starmans 2016) to more recent adaptations to societal and technological changes. Over past decades, libraries have led change in the digital information space, supporting community access to, and skill development in, digital technologies including computers and the internet (Medlen 2018). During the COVID-19 pandemic lockdowns, there was a rapid response to support library client groups, both socially through new home delivery and wellbeing services, and technologically, by increasing digital access to both resources and programmes (Wakeling et al. 2022). Libraries have quickly adopted Al technologies into a range of activities. Examples include resource recommender technology such as the Best Match sorting algorithm in the PubMed database (Kiester and Turp 2022) and chatbot implementation at Lehman College in CUNY in New York (Ehrenpreis and DeLooper 2022). Libraries have also worked with their clients to use GenAl search tools, such as ResearchRabbit and Elicit (Osorio 2023), and machine learning within tools, such as Covidence review screening software (Covidence n.d.).

Libraries are actively positioning themselves as leaders in the GenAl space (Dempsey 2023), and the expertise of Deakin Library is increasingly recognised by the University as critical to responding to GenAl developments in research and higher education more broadly. From early 2023, Deakin Library has collaborated with divisions across the University to develop an introductory guide to GenAl for students (Deakin Library 2023c) and a series of modules to lead student development in GenAl literacy (Deakin Library 2023a). The expertise in technology, education and historical leadership in social change places libraries at the centre of this seismic shift and well placed to guide their communities in developing GenAl literacies and in using GenAl tools ethically.

Deakin's contextualised guidance and capacity building

In 2022, Deakin Library continued to build upon existing research service expertise, strong service reputation and relationships to refocus on partnering with researchers through a new strategic plan. Drawing on these relationships, Deakin Research approached the Library in late 2023 to discuss options for developing a research-focused guide on using GenAl that would be contextualised for the Deakin environment. This practical guide is designed to accompany the Generative Artificial Intelligence (AI) guidelines for Research (Deakin University 2023) and is intended to respond to the problem of building confidence and trust in researchers in using GenAl tools appropriately for research. Whilst the guidelines provide support for researcher decision-making for GenAl use, the Library Guide Responsible Use of GenAl in Research guide (Deakin Library 2023b) brings these guidelines to life with examples of responsible and cautionary use of GenAl throughout all stages of the

research lifecycle. The guide has been built using the LibGuides platform and the text content has been licensed under Creative Commons BY-NC 4.0 in line with Deakin Library's open practice values.

Deakin Library is at the forefront of Al literacies learning and teaching, and this extends to supporting researchers and research students. The Library is also the heart of the University, and this enables unique communication channels with researchers and students. These communication channels, relationships and the Library's burgeoning expertise in GenAl were leveraged to develop the guide rapidly over 3-4 months, to meet the specific needs of researchers. The guide would also complement existing GenAl guides and modules that had been developed to support undergraduate students in their understanding of the benefits and limitations of GenAl tools.

Designing the guide

Deakin Library led the project design, scope and delivery of the guide in consultation with Deakin Research partners. Importantly, Deakin Research leaders played a critical friend role throughout the project, with feedback and iteration embedded at multiple points in the project workflow and final approval for publication. Early project steps taken by Deakin Library included brainstorming, structure and approach to the guide. Environmental scanning revealed libraries across the world taking the lead in developing safeguards for GenAl use in the form of ethical guides. Deakin Library drew inspiration from these guides and explored discussion papers from the Australian Government (Department of Industry, Science and Resources 2024). TEQSA (n.d.) and Australia's Chief Scientist (Bell et al. 2023) informed early thinking on the guide design and content. The guide was initially informed by definitions of GenAl in Australian government documentation. Other significant shaping factors included ethical engagement and research integrity, specifically Deakin's research conduct policy (Deakin Policy Library 2018). This policy connects with the Australian Code for the Responsible Conduct of Research (NHMRC 2018) and with the Deakin Research Data procedure (Deakin Policy Library 2021).

Initially, the content plan for the guide included context for GenAI, authorship and publishing, ethical and legal considerations (integrity, bias, hallucinations, deep fakes, copyright, licensing, privacy, regulation), searching and emerging tools in finding and using information; exploration of pain points (research complexity, creative industries and rapid pace of change). Following discussions between the Library and Deakin Research, a Research Lifecycle was endorsed as the skeleton structure for the guide, enabling an exploration of responsible use throughout the various stages of research projects. An overall cycling structure of Context, Responsible Use, Cautions and Hypothetical Exemplar and Cautionary Tales was adopted.

A series of cyclic consultations with Deakin Research and Research Integrity was applied throughout the development of the content to ensure that the Responsible Use of GenAl in Research guide was faithful to the GenAl guidelines for research. Feedback supplied by Deakin Research enabled Deakin Library to adapt to changes in the guidelines. It has also flagged the importance of anticipating possible future adaptations to the Responsible Use of GenAl in Research guide as thinking around GenAl use continues to evolve with new policies, new tools and functionality.

Developing the Responsible Use of GenAl in Research guide



"Research Data Lifecycle" by LMA Research Data Management Working Group is licensed under CC BY-NC 4.0

The guide provides a grounding 'Before you begin' page which introduces GenAl and its intersection with research integrity. This highlights the eight principles of the Australian Code for the Responsible Conduct of Research (NHMRC 2018) and provides an example of acknowledgment of GenAl use. An H5P juxtaposition activity is embedded to illustrate using APA7 referencing style to acknowledge use of a GenAl tool.

Each lifecycle section opens with an explanatory section of how GenAI tools could be used in that stage of the research. This then progresses to clear, concise points outlining responsible use and cautions, and concludes with hypothetical case examples. Hypotheticals were written to contextualise the guidelines at each stage of the research lifecycle. These were deliberately written as brief, digestible, and toolagnostic, to future-proof the guide as best as possible, to provide context specific to the Deakin Research guidelines and to help support the application of the guidelines to GenAI use in research.

The hypotheticals were created by Deakin Library using inspiration from GenAl tools themselves – notably, ChatGPT and Perplexity to help brainstorm possible scenarios to illustrate particular aspects of the guidelines, and from real case examples identified through environmental scanning and supplied by Deakin Research. A name generator was employed to ensure that the guide was inclusive. Exemplar hypotheticals outlined imaginary but realistic scenarios in which researchers or research students use GenAl in their research and demonstrate the ethical use of tools. The ethical action is called out and an explanation is provided of why the

action is compliant with the guidelines. The cautionary hypotheticals are intended to provide the opposite: an imaginary scenario in which an action is taken that does not comply with the guidelines.

An example lifecycle stage is the 'Starting your research' page. In this stage, the guide identifies that GenAl tools can be used in research to brainstorm ideas, identify research design and support project management. Responsible Use points called out at this stage carry through to most other stages of the research lifecycle. These include being transparent and accountable in using GenAl, complying with relevant policies and guidelines, checking terms of use of GenAl tools (including privacy policies) and checking output for inaccuracies and bias. At this starting stage, researchers could also consider using GenAl as a virtual mentor, to address writer's block, and for project planning. Cautions include avoiding uploading confidential or sensitive data into GenAl tools or via prompts, being aware of oversharing research questions into GenAl tools, avoiding sharing grant applications with any GenAl tool (as it will breach guidelines), avoiding uploading licenced or copyrighted material into GenAl tools, avoiding using GenAl tools to create or manipulate images unless fully disclosed as part of research methodology, and not claiming GenAl output as own work.

Hypotheticals for this stage include an exemplar case example of a PhD student using GenAl to explore research design approaches:

Sara is a PhD student preparing for her research project. She consults with her supervisor, then uses a GenAl tool to generate and refine her research ideas. She then employs a different tool to explore research design approaches. Sara keeps a record of how she has used GenAl tools and all her prompts and outputs to ensure transparency when reporting her research.

Sara is compliant with Deakin's guidelines to support the use of Generative Al for researchers because she has used the tool to stimulate her creativity and has been transparent about her use of the tool. She has not shared any confidential information with the tool.

The cautionary case example warns against uploading copyrighted content into a GenAl tool:

Caleb is an early career researcher about to embark on his research project and uses GenAI to help him plan his research proposal. Caleb uses a GenAI tool and copy-pastes the full text of his colleague's published article from the team's earlier research. He prompts the tool for new research ideas which would build on this work. He copies the output text into a Word document without noting the GenAI as the source. A few weeks later, he finds the notes and, forgetting that they came from GenAI, integrates them verbatim into his project proposal.

Caleb has failed to adhere to Deakin's guidelines to support the use of Generative AI for researchers because he has breached copyright in copying text from a published work. He has failed to exercise critical evaluation of the GenAI output and he has used GenAI output verbatim and without disclosure which is an example of plagiarism.

GenAl Ethics in Research

Through the development of this accompanying guide, common ethical considerations emerged across the various stages of the research lifecycle. Transparency in GenAl use is crucial across all stages, as is the researcher or research student taking ethical and legal responsibility for any GenAl use in their research.

Breaching confidentiality is a common caution from starting research through to publishing, and the Responsible Use guide warns against inadvertent sharing of information through prompts or by uploading datasets into GenAl tools, particularly commercial tools. The Deakin guidelines note that what is shared with tools should only be what would be shared with competitors and other external organisations. When uploading data or even prompts into commercial GenAl tools, there is a risk to research ethics, as many tools subsumed inputs into their training data, thus risking breach of privacy as well as confidentiality. Disclosure of GenAl tool to research participants through data collection is equally important as reporting the use of the tool in the final research output. This becomes most relevant during the collecting and analysing data stages of any research.

GenAl tools can be used responsibly to help with project ideas generation. This could be done by using GenAl as a brainstorming tool. Researchers could prompt a GenAl tool asking for suggestions and approaches for research design for a particular research problem, or even broadly asking for ideas for hypotheses. GenAl can also assist with administrative tasks such as project planning. Emerging GenAl searching tools can also be used ethically to help identify literature and obtain overviews of topics through emerging GenAl search tools; however, caution must be taken to appraise output for hallucinations. Researchers must also refrain from uploading articles into summarising tools unless they have suitable creative commons licensing, as otherwise they may be in breach of licences and copyright legislation.

Care must be taken with data in several stages of the research project. There may be responsible use of GenAl tools in generating synthetic data; however, analysis of data using commercial GenAl tools can be ethically problematic if it involves uploading research data into a tool and potentially breaching privacy and confidentiality. This is a repeating consideration across the project. GenAl tools are useful for copyediting and proof-reading but generating text breaches numerous research policies and publisher guidelines, and this is a major consideration.

Delivery of the quide

Communication for the guide was an important piece in the delivery stage. Staff working on the guide shared the completed version amongst other staff across the Library and Deakin Research. The Library ensured that the guide was linked and visible from the Library webpage and that there were interconnections between this guide and other Deakin GenAl guides. Formal communication was shared through a Library blog piece and through Deakin Research newsletters. The guide also is not the only safeguard developed and delivered by Deakin Library for researchers and research students. The suite of safeguards includes presentations and workshops based on the guide content. To date, these have been adapted for training for students competing in the Three Minute Thesis and Visualise Your Thesis competitions, and for a group of Research Integrity Advisors. Following this latter session, a rich conversation ensued about the risks and values of GenAl in research.

Deakin Library staff, too, are being trained in GenAl and are increasing their knowledge of the ethical issues surrounding GenAl use. Professional development sessions have been run for the Scholarly Services Librarian team on using GenAl in complex searches, and the library has contributed to the industry conversation through participation in GenAl Communities of Practice and presenting at conferences. Many staff actively seek out educational podcasts, writings and external webinars and use these to contribute to internal conversations around GenAl use.

Library staff are also being immersed in GenAl issues through contribution to projects such as Deakin's Living Review System, a collaborative project between the Centre for Social and Early Emotional Development (SEED) and the Applied Artificial Intelligence Institute (A2I2) to develop a boutique machine learning screening tool. Staff also learn by doing – by investigation and exposure to client queries regarding the use of GenAl, particularly for literature searching and related activities.

Reflections and Lessons Learnt

A necessarily cautious approach has been taken to the development of safeguards for GenAl use in research. The adoption of the technology in the wider community is happening at such a pace that initial experimentation and exploration of tools may inadvertently breach research ethics and Codes of Conduct. Safeguards may be relaxed over time, as society develops a better understanding of the wider long-term implications of tools, and as tool creators themselves respond to society through better terms and conditions, mitigations for the limitations of tools, or through localised operation of tools on isolated servers, minimising risk of data breaches.

There is tension between GenAl possibilities and the ethical considerations, and researchers are craving clear guidance and examples to help them navigate this arena. Library staff have valued the opportunity to explore and learn GenAl technologies and associated ethical implications through developing the guide. They have valued the chance to further enable researchers at the intersection of GenAl, ethics and research.

Beyond the development of the guide, there are plans to further develop capacity in library outreach teams in their support of researchers and enabling their conversations around the responsible use of GenAl in research. Deakin Library will continue to lean into the affordances of GenAl along with Deakin Research, continuing the conversation about enabling researchers and providing safeguards. There will continue to be changes to tools and policies, and there will be corresponding iterative changes to the guide. There is further scope to explore the impact of GenAl on informal scholarly outputs, such as presentations, blogs, and social media.

Conclusion

The Responsible use of GenAl in Research guide is just one of the many collaborative projects that Deakin Library is leading to increase the confidence of our researchers and students in responsible use of GenAl. Recognising the power and potential of tools to help solve wicked problems is important, but it is equally important to use GenAl responsibly. Research is looking to the library to support building digital capabilities in our researchers.

Ethical and responsible use will stay at the core of GenAl use within research. The technology will continue to evolve and grow in potential, approaches to its use will change, but the eight principles at the centre of the Code of Conduct will remain. Libraries will continue to lead and support their communities in adapting to social and technological change.

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