AUSTRALIAN AND INTERNATIONAL JOURNAL OF RURAL EDUCATION

Qualitative Inquiry Into Generative Artificial Intelligence Impact on Rural and Regional Higher Education

Rachel Kornhaber
University of New England

Susan Bragg
Charles Sturt University

Annabel Matheson
Charles Sturt University

Pauletta Irwin
Charles Sturt University

Abstract

Generative artificial intelligence has become a transformative presence in higher education. The incorporation of generative artificial intelligence into educational frameworks has reshaped how students acquire knowledge, educators teach, and educational institutions operate. This study presents the qualitative findings on how students in rural and regional higher educational settings use generative artificial intelligence for their academic endeavours. A qualitative design was used in this study with a web-based survey asking open-ended questions, providing insights into student perspectives. This paper argues that generative artificial intelligence creates tension in rural and regional higher education: it can expand learning support and flexibility for students who are geographically and socially distant from campus, while simultaneously risking the amplification of existing digital divides, cultural biases, and equity gaps. Using students' accounts from a multi-campus regional university, the study addresses insight into how generative artificial intelligence is incorporated into study practices and how this use intersects with persistent issues of access, support, and digital inclusion. These findings contribute new evidence to guide equitable and ethical generative artificial intelligence implementation in rural and regional higher education. The findings suggest that while generative artificial intelligence can enrich the educational experience by adapting to diverse learning styles, it necessitates robust frameworks to manage ethical issues ensuring equitable access. This study highlights the need for policy interventions that provide necessary infrastructure and foster an environment where generative artificial intelligence complements traditional educational methods, supporting an inclusive learning environment. Such measures may ensure these benefits are realised across diverse geographical and socioeconomic contexts.

Keywords: *higher education, digital inclusion, rural and regional education, Artificial Intelligence, students, qualitative research*

Introduction

Generative artificial intelligence (AI) has rapidly emerged as a transformative force in higher education. The incorporation of AI into educational systems is transforming how students learn, educators instruct, and institutions operate (Kamalov et al., 2023). However, regional, rural, and

Volume 36 Issue 2, © The Author/s, 2026 https://doi.org/10.47381/aijre.v36i2.812
Corresponding author: Rachel Kornhaber, University of New England, rkornhab@une.edu.au

remote regions experience a digital divide marked by limited access to essential infrastructure and fewer opportunities for higher education (Archer, 2024). This is of significance, as educational institutions play a fundamental role in shaping the skills pathways selected by individuals in regional, rural, and remote communities (Archer, 2024). This work points to a key tension that frames our study: we argue that generative AI can expand flexible, personalised support for students, particularly those studying at a distance in rural and regional settings, while at the same time risking the amplification of existing digital divides, embedding culturally narrow and metrocentric worldviews, and eroding the relational dimensions of education that are crucial for students' sense of connection and wellbeing. In the following literature review, we therefore focus on three strands of scholarship that inform our argument: research on generative AI and learning in higher education, studies of the digital divide and digital inclusion in higher education, and work on the ethical and equity implications of AI in education.

Literature Review

Studies of generative AI in higher education have examined how its integration into tertiary education is changing how education is delivered and redefining the essence of teaching and learning globally (Hutson et al., 2022; George, 2023; Kamalov et al., 2023). This shift goes beyond challenging existing frameworks and is reshaping the core methodologies of education (George, 2023). Generative AI integration into academia allows higher education institutions to adapt educational content in ways that align closely with the diverse learning styles of individual students, thereby enriching the student experience and making it more engaging (Sajja et al., 2024). When strategically implemented, integrating generative AI with pedagogical approaches can facilitate educational pathways from the conceptualisation to the delivery of content, particularly through adaptive learning, automated feedback and personalised support mechanisms (Sajja et al., 2024). As AI gains traction in educational settings, it challenges traditional teaching methods, enabling educators to shift from conventional roles to facilitating an interactive, student-centred learning environment (Du et al., 2024). This shift fosters an educational atmosphere that values and promotes independent learning and critical thinking among students. These skills are indispensable in today's rapidly changing world, where the ability to think critically and learn independently are as important as the knowledge itself (Cantú-Ortiz et al., 2020). Within this environment, generative AI can play a pivotal role in preparing students to succeed academically and thrive beyond the classroom (Pedro et al., 2019). This holistic approach to integrating generative AI into education enhances learning experiences and contributes to the development of well-rounded individuals equipped to navigate the complexities of academia. Archer (2024) similarly highlights the importance of developing AI-related skills in regional, rural, and remote educational contexts. Although, as generative AI shapes student centred learning and automates teaching, over-reliance on these tools risks diminishing students' independent thought and agency, leading to passive learning and reduced critical engagement (Du et al., 2024).

Literature on the digital divide highlights how access to advanced technologies is unevenly distributed across socioeconomic, geographic, and institutional contexts, with important implications for higher education participation and success (Archer, 2024; Goswami & Sharma, 2024; Lainjo, 2023; Mohammed et al., 2024). Within this work, generative AI is emerging as another layer in existing patterns of inequality, as students in less affluent, rural or regional areas may experience greater constraints in infrastructure, connectivity, and digital capability compared to their metropolitan peers (Kitsara, 2022). Generative AI has been transformative in adapting learning

platforms that enhance instructional content, offering a student-centred experience that adapts to the specific needs of individuals (Tang, 2024). Addressing these challenges requires a concerted effort to ensure that AI technology is available and accessible to all students, regardless of their geographic or economic status. This is supported by Archer (2024), who identifies inequitable access to emerging technologies in regional and rural educational contexts. This includes investing in infrastructure to bring advanced technologies to regional, rural, and remote areas, ensuring a diverse educational environment (McDuie-Ra & Gulson, 2020). Although some Generative AI tools and platforms are available at no cost, they often lack the comprehensive features offered by premium versions, creating a distinct divide in technological capability (Luttrell et al., 2020). This disparity may impact the quality of education accessed and lead to a tiered system where only those who can afford the more sophisticated tools gain the full benefits. This raises ethical concerns about equity in educational technology, highlighting the need for guidelines and policies that promote fair access to these innovations (Orogun et al., 2024).

In higher education specifically, digital inequities shape who can meaningfully participate in technology-mediated learning and assessment. Studies of university students have shown that access to reliable devices, connectivity, and study environments varies considerably, with important implications for engagement and success (Lembani, 2020; Russo & Emtage, 2023). These findings highlight that the digital divide is not only a question of infrastructure, but also of how institutions support students to develop the skills and confidence needed to use digital tools effectively. Situating generative AI within this higher education literature highlights that students in rural and regional settings may experience barriers, even when tools are nominally available.

A growing body of scholarship addresses the ethical and equity implications of AI in education, highlighting complex issues that extend beyond technical performance (Borenstein & Howard, 2021; Kamalov et al., 2023). They encompass concerns about data privacy, where there is a need to protect sensitive student information from misuse or unauthorised access. Transparency in AI decision-making processes is critical, as stakeholders must understand how decisions are made to trust and use AI systems within educational practices (Wang, 2021). Potential biases in AI algorithms pose a risk, as they can perpetuate or even exacerbate existing inequalities (Lainjo, 2023). Critiques of AI emphasise that these biases are not random, but reflect the social, cultural, and economic contexts in which systems are developed and trained, often privileging urban, Western, English-speaking, and male-dominated perspectives (Hanna et al., 2024; Lainjo, 2023). When such systems are adopted in education, they risk marginalising local knowledges, rural and regional experiences, Indigenous perspectives, and can make some students feel that their communities and ways of life are invisible or devalued. For students in rural and regional higher education, whose circumstances are often underrepresented in mainstream curricula (Delahunty, 2022), the metrocentric and classed nature of many generative AI tools raises important questions about whose knowledge is centred, what examples and scenarios students encounter, and how well these tools speak to their lived realities. These ethical considerations require oversight and the establishment of regulations to ensure that AI tools are employed responsibly within educational settings (Alam, 2023; Nguyen et al., 2023).

In parallel, educational theorists emphasise that learning is fundamentally relational, grounded in interactions between students, teachers and peers, and in students' sense of belonging to a learning community. As higher education institutions experiment with AI-enabled teaching, there is growing concern that outsourcing explanation, feedback, and even elements of pastoral support to

generative AI may further reduce opportunities for meaningful human connection and dialogue. This is particularly troubling in rural and regional contexts, where students may already face social isolation, limited local peer networks and fewer opportunities to participate in on-campus learning communities (Bunn & Lumb, 2024). For young people in these settings, for whom social connectedness and belonging are recognised as important protective factors for mental health and wellbeing (Delahunty, 2022), the increasing use of generative AI as an intermediary in educational relationships raises important questions about how to balance technological support with the need to sustain human relationships and community within higher education.

Aim of the Study

The main purpose was to explore how students were using AI within rural and regional educational settings, offering a unique qualitative analysis. This study is pivotal in ensuring that generative AI benefits are distributed widely and equitably, helping to shape a future where educational opportunities are not bound by geographical constraints or socio-economic conditions.

Although there is a growing body of scholarship on generative AI in higher education, on digital divides and digital inclusion, on the ethical and cultural challenges of AI, and on debates about its implications for relational pedagogy, much of this work focuses on metropolitan institutions or on conceptual and policy perspectives rather than on students' day-to-day practices (Archer, 2024; Hutson et al., 2022; Kamalov et al., 2023; Lembani et al., 2020; Russo & Emtage, 2023; Tang, 2024; Wang et al., 2024). Less is known about how students in rural and regional universities are using generative AI to support their learning, and how these practices intersect with ongoing digital divides and questions of equity (Archer, 2024; Lembani et al., 2020; Russo & Emtage, 2023). By providing a qualitative account of students' own narratives from a large multi-campus regional university, this study addresses this gap and extends existing work on digital inclusion and AI in education. In doing so, it contributes evidence to inform institutional and policy decisions about the equitable and ethical implementation of generative AI in rural and regional higher education settings.

Methods

Research Design

This study formed part of a broader online survey that included both closed-ended and open-ended questions. The present article adopts a qualitative research design, drawing specifically on students' written responses to the open-ended questions. Qualitative survey methods were chosen because they allowed students to describe their experiences and uses of generative AI in their own words while still reaching a relatively large and diverse cohort across multiple campuses of a regional university. Using open-ended questions in an online questionnaire enabled the collection of brief but meaningful written responses (Karousos et al., 2024). This approach is consistent with established methodological guidance on survey methods in educational research, including the use of written, participant-generated responses to explore students' experiences and perspectives (Berends, 2012; Eisenhart, 2012). Our approach was informed by a qualitative, interpretivist orientation (Thanh & Thanh, 2015) in which students' accounts are treated as situated perspectives on generative AI in a specific institutional and regional context rather than as variables to be measured or compared statistically. In this article, we report only the qualitative findings derived

from the open-ended survey responses. The research was approved by the university's Human Research Ethics Committee.

Theoretical Framework

Our analysis was informed by a theoretical framework that brought together critical perspectives on digital inclusion and relational understandings of higher education. Critical digital inclusion scholarship conceptualises access as multi-dimensional, encompassing infrastructure, connectivity, skills, institutional support and the broader social conditions that shape who can make meaningful use of digital technologies (Archer, 2024; Lembani et al., 2020; McDuie-Ra & Gulson, 2020; Russo & Emtage, 2023). This work highlights how digital innovations, including AI, can both challenge and deepen existing inequalities, particularly for students in rural and regional settings. Relational perspectives on education emphasise that learning is grounded in interactions between students, teachers and peers, and in students' sense of belonging to a learning community (Mac Fadden et al., 2024). Bringing these strands together, we approached students' accounts as situated narratives about how generative AI intersects with questions of access, equity, and digital inclusion, and how it reshapes the relational and affective dimensions of studying at a regional university. We also drew, in a modest way, on Bourdieu's (1986) concept of cultural capital to consider how generative AI may help some students access dominant academic language and conventions, while still reflecting the values and assumptions of particular cultural groups.

Setting

This research was conducted online, targeting students enrolled at an Australian large regional and rural university that offered over 250 courses delivered on a network of regional campuses with over 34,000 students. The university has campuses in several key regional centres, focusing on meeting the educational and professional needs of these areas.

Participants

The study targeted a diverse group of participants, consisting of students enrolled across all faculties at a multi-campus regional university in Australia. Most of the students, 70% (n = 104), were from the Faculty of Science and Health, 56% (n = 83) were between the ages of 18 to 24 years, 50% (n = 74) were online students, and 33% were enrolled on campus (see Table 1). Although participants lived in a range of locations and studied in different modes (online and on-campus), they were all enrolled at a regional university that served rural and regional communities, and their accounts were, therefore, shaped by this institutional context.

Demographic data (age group, faculty, mode of study) were collected only in aggregate and were not linked to individual survey responses, in accordance with the anonymous design approved by the institutional ethics committee.

Data Collection

As part of a broader online survey that included both closed-ended and open-ended questions, we collected qualitative data through the open-ended items that required written responses from students, providing deeper insight into their perspectives and experiences of generative AI use (see Table 2). The present analysis focused solely on these text-based responses. The survey was administered through Microsoft Forms, ensuring the security of the data with encryption in transit and at rest. Participants had the option to review and adjust their responses before final

submission. All responses were securely stored on Microsoft OneDrive (Business) in compliance with established data storage protocols, and no identifiable information was retained.

Table 1. ***Demographic Information***

Demographics	**N = 149 (%)**
Faculty	
Faculty of Science and Health	104 (70%)
Faculty of Art and Education	22 (15%)
Faculty of Business, Justice and Behavioural Studies	20 (13%)
Other	3 (2%)
Age range (Years)	
18-24	83 (56%)
25-34	29 (19%)
35-44	27 (18%)
45-54	8 (5%)
55-64	2 (1%)
Mode of enrolment	
Online	74 (50%)
On-campus	49 (33%)
Online/on-campus	26 (17%)
Access to generative AI	
Free version	133 (89%)
Paid version	6 (4%)
Free/paid	10 (7%)
Frequency of usage	
Everyday	17 (11%)
Several times a week	23 (15%)
Once a week	31 (21%)
Several times a month	63 (42%)
Never	15 (10%)

Table 2. ***Textual Responses***

Questions
How do you use AI to facilitate your learning?
What are your reasons for using AI?
What are the advantages of using AI? Please provide a rationale for your response.
What are the disadvantages of using AI? Please provide a rationale for your response.

Microsoft Forms was used to distribute the online survey and collect responses to ensure easy access. The survey link was shared through recruitment announcements on various educational platform sites, including course pages and a student Facebook page. Participants were able to access the survey through a URL link and a QR code in the invitation. To encourage participation, incentives were offered, and students had the opportunity to enter a raffle to win one of 80 gift cards valued at $30 each, as this have been shown to increase response rates (Saleh & Bista, 2017). The research assistant conducted the survey, ensuring respondent anonymity by disabling the name recording feature in Microsoft Forms and using only de-identified data for analysis. Contact details for participants entering the draw for the $30 digital gift cards were separated from the survey data by the research assistant before being handed to the research team. These details were stored in a separate file managed by the Senior Faculty Operations Officer to prevent any linkage to survey responses. Participants were assured that their contributions would be used exclusively for research purposes.

Data Analysis

The 149 text-based responses were collated into a single dataset for analysis. The development and review of themes were guided by identifying codes and discerning patterns using Braun and Clarke's (2006) six-phase process for reflexive thematic analysis. In accordance with Braun and Clarke's (2021) later reflections on quality practice in reflexive thematic analysis, we treated the analysis as an iterative, reflective process that required ongoing engagement with the data and active researcher interpretation. This later work responds to critiques of their original 2006 publication by providing more explicit guidance on what constitutes quality practice in reflexive thematic analysis. Archer (2024) provides an example of this updated reflexive thematic analysis approach being applied within educational research, offering additional methodological precedent for our analytic strategy in this study. This process involved thoroughly reviewing the text-based participant responses by co-author Susan Bragg. Data were read several times ensuring the researcher was familiar and engaged with the data then categorised to identify recurring ideas and themes.

During a detailed re-reading of the responses, coding was conducted with the objective of understanding how students utilised AI in rural and regional educational settings, providing a distinctive qualitative analysis. In line with the theoretical framework outlined above, we attended to how students' descriptions of generative AI related to issues of digital inclusion and exclusion, and to how they understood its impact on relationships, support, and their sense of connection within the university. After establishing the primary codes, they were further divided into subthemes. Subsequently, the authors collaboratively reviewed and refined these themes and subthemes to reach a consensus. Direct quotations were used to illustrate and elaborate the

themes, supporting a rich and transparent account of students' experiences. Each theme represented an interpretive account of how students made sense of generative AI in relation to issues of access, equity, and the relational dimensions of their study experiences within a regional university context. As is characteristic of reflexive thematic analysis (Dellafiore et al., 2026), themes were developed through an interpretive, iterative process rather than through quantifying individual participant contributions; therefore, participant-level frequency data were not generated during analysis. As researchers, we approached generative AI as both a potentially useful tool and a source of concern, and we recognise that this cautiously optimistic interest may have sensitised us to ways in which students described its benefits as well as its limitations.

Results

Before presenting the findings, we considered a pattern in the data to constitute a theme when it reflected a shared, recurring meaning across multiple participants in relation to the research question, rather than an isolated or idiosyncratic comment. Themes were included when they were conceptually coherent, analytically rich, and strongly grounded in the data, as judged through repeated reading, coding, and team discussion. More minor or fragmented patterns were treated as contextual details within broader themes rather than reported as stand-alone themes. Because responses were anonymous and demographic data were not linked to individual answers, participant quotations are presented without demographic identifiers. In keeping with reflexive thematic analysis, the themes that follow are analytic interpretations of patterned meaning in the data rather than descriptive summaries of all possible responses (Campbell et al., 2021).

Three major themes were identified from the analysis: generative AI as a catalyst for efficiency and learning; navigating generative AI ethical minefields; and generative AI and academic empowerment. These themes show how students at a large multi-campus regional university were weaving generative AI into their everyday study practices. Rather than only echoing existing claims about efficiency and personalisation, the themes highlight how generative AI was used to compensate for distance from campus and limited access to face-to-face support; how students in this context navigated digital inclusion and access constraints; and how they grappled with concerns about bias, fairness, and the relational aspects of learning. In this way, the findings extend earlier work by providing a grounded account of what generative AI looked like in practice for rural and regional university students.

Theme One: Generative AI as a Catalyst for Efficiency and Learning

When asked "*What are the advantages of using AI?*", participants described using generative AI to make the work of learning easier and faster. They reported that it provided swift, accessible answers, helped them manage routine tasks such as note-taking and proofreading, and supported them to clarify difficult concepts. In their accounts, these features made study feel more manageable and, at times, more engaging. The points they raised about the perceived benefits of generative AI are summarised in Table 3.

Table 3. ***Advantages of Using Generative AI***

Writing Improvement
• Enhances grammar, formatting, and assessment writing • Generates bibliographies • Provides proofreading and review services • Delivers more professional work • Organises and formats assignments
Concept Simplification and Clarification
• Enables concise communication • Clarifies and simplifies complex information • Compiles multiple sources into a single coherent output • Provides comprehensive descriptions and explanations of concepts
Learning Support and Resource Finding
• Offers a broad range of information from various perspectives • Generates creative ideas and summarises key points • Constructs intelligent work and assists with note-taking • Locates resources and provides assignment answers • Supplies study cases, lesson plans, and serves as a study aid
Personal Tutoring
• Acts as a personal, instant, and accessible tutor • Available anytime, facilitating ongoing, multiple-question interactions • Provides a non-judgmental and private learning environment • Tailored support to individual literacy levels and needs
Time Efficiency
• Significantly reduces the time spent on tedious tasks • Fast and simple to use, outperforming traditional search engines • Cuts down research time, offering easy and quick access to information • Alleviates stress and anxiety related to academic work by simplifying processes and providing quick answers

Table 3 provides a qualitative summary of the advantages that students described in their written responses; it synthesises themes rather than presenting numerical counts or rankings.

Efficiency and Time Management: Students described valuing the speed and accessibility of generative artificial intelligence, and some felt that using these tools reduced the hours they needed to spend on studying and research tasks. The immediate responsiveness of generative AI tools was particularly valued. One participant explained that it provided an:

> *immediate response to a question I may have regarding a part of my study, as opposed to sending an email or posting in the discussion spaces within Brightspace and having to wait for a reply. Obviously, I double check if the AI [artificial intelligence] response doesn't add up or make sense.*

This quick access to information was helpful in maintaining momentum during intensive study periods. Generative AI had a way for making routine tasks like note-taking and data organisation less arduous and more efficient as demonstrated here: in "*Its ability to handle repetitive tasks frees up my time to focus on higher-level thinking and creativity, which could potentially improve my academic*

performance and engagement" and highlights generative AI ability to streamline the collection and sorting of information as a "*Time saver, due to not spending time on pointless tasks.*" This streamlining extended to the students experience as well, with generative AI platforms designed to be intuitive and straightforward, as another student pointed out:

> *AI [artificial intelligence] provides a basis for study. Whilst it is not the only method I use to study, it generates questions quickly and in a broad sense so that the basis of topics are covered. From there I use … content covered from the AI [artificial intelligence] questions to build on the more difficult concepts of subjects.*

While another student found generative AI was "*quick and easy, can generate large responses in seconds and is also very handy for proof reading and finding grammatical errors*." Collectively, these personal insights illustrate how generative AI sped up academic tasks and enriched the learning process, allowing students to concentrate more on deep understanding. Generative AI was highly valued for its availability and user-friendliness. It provided assistance without time restrictions, making it accessible at any moment, which was especially crucial for students during late-night study sessions or when immediate help was needed. Participants appreciated these attributes, with one stating "*People can access AI [artificial intelligence] whenever and wherever which is good.*" Others highlighted the ease of use as it was "*a free and accessible source of learning*."

Educational Support and Learning. Within educational support and learning, generative AI played a role in enhancing student engagement and understanding. It clarified complex concepts and language, making learning materials more accessible to students. Generative AI provided a personalised, student-centred approach by tailoring educational experiences to individual needs, thereby making study time more productive. Participants shared how generative AI directly impacted their learning approaches. Emphasising its role in facilitating deeper engagement with course content, one participant noted:

> *AI [artificial intelligence] helps me learn by giving me instant access to information and feedback that's tailored to me, which helps me understand and remember things better. It also has tools for making summaries, brainstorming ideas, and customising study materials, which makes learning more efficient and personalised. AI [artificial intelligence] can also help me develop skills like coding or language learning by offering practice and immediate assistance.*

Another commented on the customisation capabilities of artificial intelligence:

> *Using AI [artificial intelligence] in my education offers numerous advantages. It provides real-time feedback, acting as a personal tutor that I don't need to pay for, and is always accessible. AI [artificial intelligence] helps clarify complex concepts and theories, explaining them in simple terms and offering relatable examples. It customizes my work schedules, making my study time more efficient and tailored to my needs. Additionally, AI [artificial intelligence] enhances my learning experience by providing quizzes, flashcards, and practice problems, which reinforce my understanding and retention of material.*

Personalisation of learning was particularly valued, as one student highlighted:

> *Having a tool that can help me understand what is being asked of me and put it in simpler terms is very useful … even if I don't understand the feedback it will break it down for me further. I don't have to feel guilty asking it lots of silly questions. Being able to use it to summarise papers is incredibly useful especially if I'm not sure the paper is what I'm after.*

These reflections highlight generative AI transformative impact in making education more adaptable and responsive to student needs.

Writing and Communication Assistance. Generative AI played a role in enhancing students' abilities to produce higher-quality written work. It improved sentence structure, grammar, and overall writing quality and offered rapid proofreading and editing, enhancing the quality of students' written assessments. Students expressed their appreciation for these features. One participant noted:

> *It has provided me with less stress and anxiety as I feel I can now accomplish my assessments in writing skills as it has made it easier for me to read my assessments and it also teaches me in the future how to write with correct grammar and spelling.*

This approach helped streamline their writing process significantly. Another student explained the impact on their writing style: "*Helps me to be more concise and not over write [sic] with not important information for my assessments*." The practical assistance provided in refining and finalising their work was valued, as one student mentioned: "*Helping me submit my own work but just adding that extra the same way we use Studiosity*" and *"It can check for grammar or punctuation. It can assess my own writing for readability*."

Resource and Research Support. Generative AI enhanced resource and research support for students by streamlining the access and management of academic materials. It located relevant literature and research resources, considerably reducing the time spent on preliminary research, and proved invaluable in data management, effectively organising and compiling large datasets, which was beneficial for handling complex research projects. Students expressed great appreciation for these capabilities. One noted that it "*Helps find relevant literature quickly*" which streamlined their research process. Another emphasised the ability to targeted information facilitating research to "*provide information to relative questions and provides a means for research into the thought processes of machine/programs*." The robust data management abilities of generative AI were appreciated by a student who said:

> *It compiles multiple sources of information into one answer, making it really useful for my study notes. Additionally, I can ask multiple questions regarding the same topic, it works like a conversation, there's a lot more back and forth. I can add to my initial question, and it remembers all of the past conversation, which is really helpful.*

Generative AI played a key role by suggesting new ideas and creative approaches to problems. It introduced multiple perspectives on issues, significantly enhancing creative thinking. Participants highlighted generative AI impact in their creative processes. One noted it "*can also create fantastic lesson plans that are used as a springboard for other ideas. It can create fun games for students*." Another emphasised the breadth of generative AI input "*Gives an idea how to write, structure a paragraph or any other type of writing especially for someone like myself who was born abroad*."

Across the different aspects of Theme One, students consistently described using generative AI to make study tasks feel more manageable, to reduce the time and effort required for routine work, and to produce writing that better matches expected academic standards. At one level, this can be read as a desire to avoid some of the hard work of learning, and several students themselves worried about laziness and reduced skill development, which we explore further in Theme Two. However, these accounts can also be understood as students adapting to study in regional contexts where they juggle paid work, caring responsibilities and long travel times, and where access to staff

and peer support may be limited. From this perspective, generative AI can function as a form of academic support and, drawing on Bourdieu (1986), as a possible route into valued forms of academic language and cultural capital, even as it carries risks of reinforcing narrow, metrocentric norms.

Theme Two: Navigating Generative AI Ethical Minefield

Participants expressed concerns about the ethical challenges posed by artificial intelligence, reflecting on the need to balance its powerful capabilities with the ethical dilemmas it introduces. While generative AI transforms efficiency and information access, participants acknowledged that it also raises issues about its reliability and the integrity of its applications summarised in Table 4. Common themes in their responses included worries about misinformation, academic dishonesty, privacy breaches, and the cultural biases (in the broad use of the term) that may have been unknowingly/inadvertently written into the tool. These responses illustrate the complexity of the ethical landscape that generative AI inhabits, emphasising the need for vigilant oversight and stringent standards. As generative AI becomes more ingrained in everyday life and critical systems, participants stressed the importance of developing robust ethical frameworks to ensure that fundamental values are not undermined.

Reliability and Accuracy Issues. Generative AI potential to provide inaccurate or misleading information was identified as a major drawback, leading to misinformed decisions and confusion. Concerns about data integrity arose as participants questioned the reliability of the sources used by AI, demonstrating a need for improved verifiability and transparency. Participants expressed concerns about the accuracy and reliability of AI-generated content. There were frequent mentions of generative AI providing misleading or incorrect information, which could potentially lead students astray. As one participant pointed out, "*Sometimes info is wrong*" and "*It's not always right, I have caught out AI [artificial intelligence] a few times for the wrong information it has given me. So I'm not able to trust it to give correct answers all the time.*" Responses indicated that it often failed to provide depth in content and does not meet the specific academic needs as expressed here "*inaccuracies in AI [artificial intelligence] outputs can also mislead students if they aren't critically evaluated."* Participants pointed out that AI-generated responses could be superficial or not sufficiently tailored to their course requirements, as noted in comments like "*Not all answers are accurate, and the depth of knowledge I sometimes require isn't there*" and *"It can be very inaccurate."*

Table 4 summarises the disadvantages and concerns raised by students; it is a qualitative synthesis rather than a quantitative frequency count.

Table 4. ***Disadvantages of Using Generative AI***

Inaccuracy of Information
• Lack of trust in the information or the credibility of the content • Unreliable and can provide inaccurate information • Absence of references and peer-reviewed content • Content not specific to Australian contexts • Information may not be relevant to the assessment • Overabundance of irrelevant or useless information • Presence of fake or misleading content
Facilitation of Cheating
• Risk of getting caught cheating • Enables unethical academic behaviours, compromising academic integrity • Often used for the wrong reasons
Creation of Inequity
• Gives an unfair advantage to students who use AI over those who do not • Disparity in AI usage allowed between lecturers and students
Reduction in Student Learning
• Diminishes the student's ability to independently search and write assessments, limiting academic growth • Promotes dependency, making students less inclined to learn on their own • Encourages laziness and reduces proactive learning behaviours
Loss of Personal Essence
• AI-generated content does not reflect the student's unique voice or ideas • Lack of personal connection to the content • Potential harm to the student's academic reputation
Security Breaches
• Issues with the control and access of sensitive information • Concerns over privacy and data security

Ethical and Integrity Concerns. Generative artificial intelligence's ability to complete assignments encouraged academic dishonesty, undermining the educational process and potentially devaluing academic credentials. Concerns about cheating and academic misconduct highlighted the need for stringent measures to preserve integrity in education. The ease of copying and pasting AI-generated content raised serious concerns about plagiarism and the originality of student work. The potential for it to facilitate cheating and academic dishonesty was a major concern. Students were aware of the ease with which generative AI could be used to complete assignments without genuine understanding or effort, which threatened the integrity of their academic qualifications. Phrases like *"Can be used to cheat and misconduct*" and "*Creates the sense that others are using AI [artificial intelligence] and that the education field is not truly competitive or based on one's own merit"* reflect fears that it could undermine the fairness and authenticity of academic achievements. Concerns about how generative AI handled and processed personal data were mentioned, especially given the increasing sophistication of the technologies. Fears about the potential for unauthorised access emerged, which could compromise participant's privacy and

security as demonstrated here "*Privacy is another issue because AI [artificial intelligence] systems often collect and process personal data*."

Dependence and Skill Deterioration. Overreliance on generative AI impeded the development of critical thinking and problem-solving skills, which are essential for personal and professional growth. Regular reliance on AI for tasks like writing and calculation led to a deterioration of these fundamental skills as expressed here with this participant excerpt "*If used incorrectly can hinder student learning by providing answers rather then [sic] encouraging critical thinking. If the wrong questions are asked, invalid answers are easily given by AI [artificial intelligence].*" A disadvantage highlighted by participants was the dependency on AI, which could lead to a decline in their own research and problem-solving skills. This concern was articulated in statements as "*Allows people to become lazy and complacent, especially if you're in a situation where it cannot be used and you don't have the skills to do the tasks yourself*" and "*Reduces motivation and can create a reliance on its use. Can diminish people's feelings of capability when it does better than them*." Some students' comments also suggested that the ease of relying on generative AI to correct errors or complete tasks could reduce their opportunities to practise and consolidate their own academic skills.

Bias, Discrimination, and Equity. AI systems perpetuated existing biases when trained on biased data, leading to unfair outcomes in various applications, from job screening to education (Min, 2023). The global use of AI necessitated sensitivity to diverse cultures, which AI often failed to account for, resulting in culturally biased or misaligned responses (Tao et al., 2024). Participants also noted that AI could enable biases and present ethical challenges. The training data and algorithms underlying AI can reflect and amplify existing prejudices, leading to biased or discriminatory outputs. These excerpts highlight these issues *"AI [artificial intelligence] is biased and sometimes propagandised"* and another participant felt was:

> *discriminatory against different races and ethnicities depending on where the AI [artificial intelligence] is trained, which is particularly significant in AI [artificial intelligence] using any sort of image identification. Prioritises the political views of the country or area it was trained in. Stops people having rights to their own artistic and creative works and ideas. Promotes blatant theft of creative works.*

The issues of equity and fairness were raised where it was stated by participants as "*Not all students have equal access to AI [artificial intelligence] tools, which could make the digital divide worse and make it harder for some students to learn*" and "*It might also make the biases in the data it was trained on worse, which could lead to unfair results*."

For students studying at a regional university, these ethical concerns were intertwined with existing digital and social inequalities, since unreliable connectivity, variable institutional support and limited access to in-person guidance may heighten both the appeal of generative AI and the risks of misuse, dependency and exclusion.

Theme Three: Generative AI and Academic Empowerment

When questioned about their reasons for using generative AI and how generative AI facilitated learning, participants highlighted that generative AI enhanced the educational experience by streamlining learning processes and improving efficiency. The program's ability to simplify complex concepts, refine writing skills, and organise study materials effectively was important to the participants. Generative AI provided real-time, individual support that extended beyond asynchronous support to include tailored educational tools like practice exams and revision

resources, meeting diverse learning needs. This adaptability made it an indispensable asset in academic settings, transforming it from a mere tool to a vital component of their educational journeys. Data from the study demonstrated the participants' perspective that AI's role is of a dynamic facilitator, that not only supported but actively enhanced their pursuit of academic excellence by its ability to adapt to various educational requirements.

Generative AI Facilitated Learning and Productivity. Participants shared that generative AI had transformed the landscape of their learning and productivity by acting as an on-demand tutor. They shared that it was instrumental in helping participants grasp complex concepts and generate ideas for their research, providing tailored support that was highly valued in academic settings as it provided quick answers and helped in organising study schedules, saving time for participants who juggled various responsibilities. This excerpt reflects how essential generative AI was for those who were time-poor, *"My use of the Grammarly AI [artificial intelligence] platform was minimal. It was used only for checking sentence structures and grammar when I had insufficient* time to use Studiosity." Illustrating the practical utility, another participant noted:

> *it provided a faster answer than Google, it helped my work look more polished, and it was easy to use. I could ask the question exactly as I would to a lecturer, and ask it to explain things in a different way if I didn't understand initially.*

Generative AI pivotal role in facilitating continuous learning support, regardless of location is demonstrated here *"It was really helpful when I was off campus and couldn't ask a lecturer for help all the time."* It was used to spark ideas and provide a starting point for research into complex topics and leveraging generative AI to aid in creative ideas with one participant stating that it *"helps to spark ideas and understand my learning content much better. I use information AI [artificial intelligence] gives me and relate it to the learning content so that I can understand what we are learning better."*

Inclusivity. Generative AI facilitated support for participants with disabilities by addressing learning difficulties. These tools enhanced the accessibility of learning for those who encounter challenges with conventional educational resources as this participant expressed:

> *I am neurodivergent and have a study access plan but as well-meaning as the lecturers are, sometimes they don't understand my question or can't explain the answer in a way that makes sense to me. Sometimes the lecturers don't really give an answer at all, just a vague response which isn't helpful or clarifying.*

While another participant found *"a program called speechify which helps me greatly in converting my textbooks into audio. This is a great help as I have ADHD*."

Simplification. Participants leveraged generative AI to simplify complex topics into more digestible parts. This was particularly useful for those who found traditional explanations difficult to grasp. One participant highlighted this noting AI "*explain[s] things to me in simpler forms if I am struggling to understand something, checks my writing for any spelling or grammatical errors*"; reflecting how AI facilitated an understanding more closely aligned to the user, who had utilised it to clarify and simplify assignment questions, aiding students in constructing their responses with a clearer understanding of what was required. A participant explained this approach stating that generative AI "*Make[s] questions I don't understand more simple and to give me an outline for assessments*" demonstrating its value in the academic settings where understanding the question correctly is a key challenge.

Generative AI also served as a tool for obtaining alternative perspectives on assignment queries, while these alternatives may be culturally biased, it was helpful in broadening participant's understanding of the study material. Another participant described using generative AI to gain a deeper understanding of assignments:

> *when given a question to answer in an assignment question I will feed it in ChatGPT to get another perspective of what the question I need to answer is in a different set of words. Also, I would use it to explain concepts I have trouble learning that I can get a connected definition and explanation on rather than chasing a meaning on Google*.

Study Tools and Exam Preparation. Generative AI was used to facilitate exam preparation, as well as generating learning materials tailored to specific course objectives. One participant described the utility of AI in their studies, stating "*create exam questions based on the learning objectives, and then mark them. Also used to make flashcards and assist with AI [artificial intelligence] tutoring*." This highlights how generative AI facilitated the creation of study aids and contributed to the assessment process. Some participants stated a reliance on generative AI for preparing for examinations with one noting "*AI [artificial intelligence] generates practice questions and conceptual questions which allow me to effectively revise content as past papers and past exams are not available to use as study*." This use of generative AI demonstrated its role in compensating for the absence of traditional study materials by providing alternative resources that support revision. The versatility of generative AI was evident in clinical settings. For example, a participant explained how generative AI was instrumental in preparing for Objective Structured Clinical Examinations (OSCEs) "*Creating patient profiles for OSCE practice, answering practice MCQs and SAQs where sample answers aren't available*."

In a regional higher education context, where students often balance study with work, family responsibilities and geographical distance from campus, these forms of support can be especially significant. At the same time, the reliance on generative AI to provide personalised, always-available assistance underlines the importance of ensuring that regional institutions have the infrastructure, policies, and pedagogical strategies needed to integrate these tools in equitable and culturally responsive ways.

Discussion

This study aimed to explore how students in rural and regional educational settings use generative AI for their academic studies. Much of the existing literature on generative AI in higher education focuses on metropolitan universities, institutional or staff perspectives, or hypothetical use cases. The findings from this study offer a student-centred account from a large regional university, where students described using generative AI within the constraints of uneven digital infrastructure, distance from campus, and limited access to human support. The results also draw attention to students' concerns about cultural bias, equity, and the relational aspects of learning, which have been less visible in earlier research that has tended to emphasise efficiency, productivity, and performance. These insights extend current discussions by showing how regionality, digital inclusion, and social connection shape students' experiences with generative artificial intelligence.

Generative artificial intelligence's ability to customise learning experiences and enhance the comprehension of complex concepts was demonstrated as beneficial within academic settings. This aligns with the broader literature that emphasises its role in transforming educational environments by providing adaptive learning technologies that cater to unique ways in which

students engage with, understand, and remember content and skills (Wang et al., 2024). Generative AI facilitates an efficient management of educational resources, allowing for a streamlined approach to academic tasks, which can significantly alleviate the administrative burdens on students and educators alike (Kamalov et al., 2023). The impact of generative AI on learning allows for managing tasks and enriching the learning journey. Generative AI provides the capacity to unpack complex information and present it in an understandable, digestible, and engaging manner that can transform passive learning into an interactive experience (Gonsalves, 2026). This is particularly beneficial in disciplines where the material is dense or inherently complex as highlighted in our results.

The recent introduction of DeepSeek is an example of a free, open source, accessible generative AI tool that is touted to provide more efficient alternatives with lower resource requirements, making it more suitable for widespread educational applications (Kerimbayev et al., 2024; Sallam et al., 2025). DeepSeek's reasoning skills are impressive, with evidence it outperforms other generative AI tools such as GPT-4o and Open AI o1 in fields such as coding and mathematics (Sallam et al., 2025). This aligns with the educational needs of students in rural and regional settings, as identified in the study. This platform shows strong adaptability and excels at integration, enabling seamless incorporation into existing educational platforms, a crucial aspect for real-world applications where interoperability is essential (Kerimbayev et al., 2024). There is the potential for disparities in how effectively students can leverage this free generative AI, dependent on the availability of supporting infrastructure and digital literacy, particularly in regional, rural and remote communities where existing digital divides constrain access to emerging technologies (Archer, 2024).

Despite the benefits, the use of generative AI in education brings forth significant ethical challenges. The issue of academic integrity and the potential for it to facilitate cheating are of paramount concern to educators. As generative AI becomes more capable of performing tasks traditionally conducted by humans, there is a growing concern about students relying too heavily on technology, potentially at the expense of their learning and critical thinking skills (Savardi et al., 2025). It is important to strike a balance between harnessing generative AI educational advantages and mitigating the risks of deskilling to effectively use generative AI systems as learning tools in educational settings. As raised in this current study, privacy issues and data security are critical, especially as AI systems often require the collection and processing of personal data. There is an ongoing debate about the extent to which these systems should be integrated into educational frameworks, with calls for stringent data protection measures and transparency in generative AI operations (Ali et al., 2024). Bias is another concern raised in our study as it has the potential to perpetuate existing biases. generative AI systems are only as unbiased as the data they are trained on, and if this data reflects historical inequalities and inequities, these platforms can inadvertently continue to propagate these biases (Hanna et al., 2024). These issues may arise from training data, algorithmic bias, feature selection, reporting bias, and changes in technology or practices (Hanna et al., 2024). It is important for tertiary institutions to implement generative AI technologies that are both fair and equitable, ensuring that these tools do not reinforce societal disparities but rather contribute to a more inclusive educational environment (Chan, 2023).

To access the full potential of generative AI while mitigating its risks, educational policymakers and stakeholders must consider developing robust frameworks that govern the use of generative AI within educational settings. These frameworks should ensure that generative AI is used to complement traditional educational methods, by challenging traditions in some instances and

offering hybrid and improved approaches in others, without replacing them. This lays the foundations to develop an environment where technology serves as another tool rather than a dependency that could potentially undermine students' skill development (Francis et al., 2025). The ongoing discourse in the peer-reviewed literature provides a valuable foundation for developing strategies that leverage generative AI strengths while addressing its potential drawbacks, ensuring that its integration into educational settings is both thoughtful and beneficial to students learning.

The findings of this current study reflect a complex interplay between the transformative potential of generative AI in education and the imperative for appropriate oversight. It highlights the importance of integrating generative AI into educational settings in a manner that respects both the technological advancements and the ethical boundaries necessary to foster a learning environment that benefits all students equitably. While educational institutions continue to navigate this evolving and rapidly changing space, it is fundamental to balance innovation with responsibility, ensuring that its use as a tool to enhance, rather than replace, the human elements of education.

Limitations

This qualitative study was deliberately bounded by its focus on students enrolled at a large multi-campus regional university in Australia and by the use of an anonymous online survey with open-ended questions. These boundaries are characteristic of qualitative research and were intentionally chosen to generate situated accounts of how students were using generative AI in their studies, rather than to produce statistically representative findings or estimate prevalence.

Recruitment occurred via voluntary participation in response to online announcements, course sites, and a QR code link. During the data collection period, a temporary break in the QR code link interrupted recruitment, and participation depended on students noticing the invitation, having access to a device and connectivity, and choosing to respond. Rather than treating this as a source of ‘bias’ in a quantitative sense, we understand it as part of the institutional and digital context within which generative AI is taken up and talked about by students studying at a regional university. Readers are encouraged to consider the transferability of these findings to other universities, particularly those that serve rural and regional communities, rather than assuming statistical generalisation to all students.

The use of a qualitative online survey also shaped the nature and depth of the data. Written responses to open-ended questions were often brief, and the format did not allow for probing or follow-up, which may have limited the detail of some accounts. In addition, demographic information (such as age, faculty, mode of study, and location) was collected only in aggregate and could not be linked to individual responses, in line with the anonymous design approved by the ethics committee. This meant that we could not systematically compare the experiences of students living in rural or regional areas with those studying from metropolitan locations or fully online, even though all participants were enrolled in a regional university context. Finally, the study provides a cross-sectional snapshot of student experiences at one point in time; future qualitative research that combines in-depth interviews or focus groups with linked demographic information would enable more detailed exploration of how generative AI use may differ across locations and cohorts.

Conclusion

Generative AI may provide students with benefits that can enhance their education in rural and regional areas, but its implementation must be balanced with ethical considerations and inclusivity. It is essential to ensure that generative AI tools are accessible to all students and tailored to meet the unique challenges of these regions. Despite these considerations, there is a fundamental need to uphold academic integrity and protect the institutional reputation. Balancing the potential to improve student learning with the need to uphold rigorous academic standards is therefore paramount. This highlights the need for further research into diverse educational contexts and establishing policies to guide their ethical use.

Acknowledgements

Funding: This study was funded by the 2024 Charles Sturt University Teaching Academy Grant

Conflict of Interest: None to declare

Data Availability Statement: The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Ethics approval statement: Approval received from the Human Research Ethics Committee of the University (HREC # 24247).

Acknowledgement: We extend our heartfelt gratitude to Maryam Rouhi, whose role as research assistant was pivotal in facilitating in data collection. Her dedication has been invaluable in facilitating the research process.

References

Alam, A. (2023). Developing a curriculum for ethical and responsible AI: A university course on safety, fairness, privacy, and ethics to prepare next-generation AI professionals. In G. Rajakumar, K. L. Du, & Á. Rocha (Eds.), *Intelligent communication technologies and virtual mobile networks: ICICV 2023* (Lecture notes on data engineering and communications technologies, Vol. 171). Springer. https://doi.org/10.1007/978-981-99-1767-9_64

Ali, O., Murray, P. A., Momin, M., Dwivedi, Y. K., & Malik, T. (2024). The effects of artificial intelligence applications in educational settings: Challenges and strategies. *Technological Forecasting and Social Change*, *199*, 123076. https://doi.org/10.1016/j.techfore.2023.123076

Archer, B. (2024). Harvesting intelligence: Sowing seeds of A.I. skills in regional, remote and rural Australia. *Journal of Resilient Economies*, *4*(2), 54-62. https://doi.org/10.25120/jre.4.2.2024.4160

Berends, M. (2012). Survey methods in educational research. In J. L. Green, G. Camilli, & P. Elmore (Eds.), *Handbook of complementary methods in education research (3rd ed*., pp. 623-640). Routledge. https://doi.org/10.4324/9780203874769

Borenstein, J., & Howard, A. (2021). Emerging challenges in AI and the need for AI ethics education. *AI and Ethics*, *1*, 61-65. https://doi.org/10.1007/s43681-020-00002-7

Bourdieu, P. (1986). The forms of capital. In J. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241–258). Greenwood.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. https://doi.org/10.1191/1478088706qp063oa

Braun, V., & Clarke, V. (2021). One size fits all? What counts as quality practice in (reflexive) thematic analysis?. *Qualitative research in psychology, 18*(3), 328-352. https://doi.org/10.1080/14780887.2020.1769238

Bunn, M; Lumb, M (2024). *Regional, Rural, Remote marginalisation from Higher Education: Isolation, mobility and the role of the Country Universities Centres*. Open Research Newcastle. Report. https://hdl.handle.net/1959.13/1502079

Campbell, K. A., Orr, E., Durepos, P., Nguyen, L., Li, L., Whitmore, C., Gehrke, P., Graham, L., & Jack, S. M. (2021). Reflexive thematic analysis for applied qualitative health research. *The Qualitative Report, 26*(6), 2011-2028. https://doi.org/10.46743/2160-3715/2021.5010

Cantú-Ortiz, F. J., Galeano Sánchez, N., Garrido, L., Terashima-Marin, H., & Brena, R. F. (2020). An artificial intelligence educational strategy for the digital transformation. *International Journal on Interactive Design and Manufacturing*, *14*(4), 1195-1209. https://doi.org/10.1007/s12008-020-00702-8

Chan, C. K. Y. (2023). A comprehensive AI policy education framework for university teaching and learning. *International Journal of Educational Technology in Higher Education*, *20*(1), 38. https://doi.org/10.1186/s41239-023-00408-3

Delahunty, J. (2022). *'You going to uni?' Exploring how people from regional. Rural and remote areas navigate into and through higher education*. National Centre for Student Equity in Higher Education. https://www.acses.edu.au/app/uploads/2022/02/Delahunty_UOW_EquityFellowship_FINAL.pdf

Dellafiore, F., Saba, A., Collaro, C., & Artioli, G. (2026). Artificial intelligence in qualitative research: Insights from experts via reflexive thematic analysis. *Qualitative Health Research*, *36*(2-3), 145-165. https://doi.org/10.1177/10497323251389800

Du, K., Geiger, J., Killen, T., Porta, A. E., & O'Brien, T. (2024). The paradigm shift in education in big data era: exploring the intersection of historical assessment frameworks and AI-powered assessment methods in education. *Journal of Education and Training Studies*, *12*(2), 22-30. https://doi.org/10.11114/jets.v12i2.6582

Eisenhart, M. (2012). Representing qualitative data. In J. Green, G. Camilli, & P. Elmore (Eds.), *Handbook of complementary methods in education research* (3rd ed., pp. 567-581). Routledge. https://doi.org/10.4324/9780203874769

Francis, N. J., Jones, S., & Smith, D. P. (2025). Generative AI in higher education: Balancing innovation and integrity. *British Journal of Biomedical Science*, *81*,14048. https://doi.org/10.3389/bjbs.2024.14048

George, A. S. (2023). Preparing students for an AI-driven world: Rethinking curriculum and pedagogy in the age of artificial intelligence. *Partners Universal Innovative Research Publication*, *1*(2), 112-136. https://doi.org/10.5281/zenodo.10245675

Gonsalves, C. (2026). Generative AI's impact on critical thinking: Revisiting Bloom's Taxonomy. *Journal of Marketing Education*, *48*(1), 4-19. https://doi.org/10.1177/02734753241305980

Goswami, A., & Sharma, A. (2024). AI for bridging socio-economic inequities in Indian education space. *International Journal of Research and Scientific Innovation*, *11*(4), 890-935. https://doi.org/10.51244/IJRSI.2024.1104066

Hanna, M., Pantanowitz, L., Jackson, B., Palmer, O., Visweswaran, S., Pantanowitz, J., Deebajah, M., & Rashidi, H. (2024). Ethical and bias considerations in artificial intelligence/machine learning. *Modern Pathology*, *38*(3), 100686. https://doi.org/10.1016/j.modpat.2024.100686

Hutson, J., Jeevanjee, T., Vander Graaf, V., Lively, J., Weber, J., Weir, G., Arnone, K., Carnes, G., Vosevich, K., & Plate, D. (2022). Artificial intelligence and the disruption of higher education: Strategies for integrations across disciplines. *Creative Education*, *13*(12), 3953-3980. https://doi.org/10.4236/ce.2022.1312253

Kamalov, F., Santandreu Calonge, D., & Gurrib, I. (2023). New era of artificial intelligence in education: Towards a sustainable multifaceted revolution. *Sustainability*, *15*(16), 12451. https://doi.org/10.3390/su151612451

Karousos, N., Vorvilas, G., Pantazi, D., Tzagarakis, M., Karacapilidis, N., & Verykios, V. S. (2025). Summarizing responses to open-ended questions in educational surveys: A microservice-oriented approach. *Intelligent Decision Technologies, 19*(2), 781-803. https://doi.org/10.1177/18724981241303216

Kerimbayev, N., Menlibay, Z., Garvanova, M. Djaparova, S. & Jotsov, J. (2024). *A comparative analysis of generative AI models for improving learning process in higher education*. International Conference Automatics and Informatics (ICAI), Varna, Bulgaria, 271-276. https://doi.org/10.1109/ICAI63388.2024.10851491

Kitsara, I. (2022). Artificial intelligence and the digital divide: From an innovation perspective. In A. Bounfour (Ed.) *Platforms and artificial intelligence: The next generation of competences*. Springer. https://doi.org/10.1007/978-3-030-90192-9_12

Lainjo, B. (2023). The global social dynamics and inequalities of artificial intelligence. *International Journal of Innovation Scientific Research and Review*, *5*(8), 4966-4974. https://journalijisr.com/sites/default/files/issues-pdf/IJISRR-1306.pdf

Lembani, R., Gunter, A., Breines, M., & Dalu, M. T. B. (2020). The same course, different access: The digital divide between urban and rural distance education students in South Africa. *Journal of Geography in Higher Education, 44*(1), 70-84. https://doi.org/10.1080/03098265.2019.1694876

Luttrell, R., Wallace, A., McCollough, C., & Lee, J. (2020). The digital divide: Addressing artificial intelligence in communication education. *Journalism & Mass Communication Educator*, *75*(4), 470-482. https://doi.org/10.1177/1077695820925286

Mac Fadden, I., García-Alonso, E. M., & López Meneses, E. (2024). Science mapping of AI as an educational tool exploring digital inequalities: A sociological perspective. *Multimodal Technologies and Interaction, 8(*12), 106. https://doi.org/10.3390/mti8120106

McDuie-Ra, D., & Gulson, K. (2020). The backroads of AI: The uneven geographies of artificial intelligence and development. *Area*, *52*(3), 626-633. https://doi.org/10.1111/area.12602

Min, A. (2023). Artificial intelligence and bias: Challenges, implications, and remedies. *Journal of Social Research, 2*(11), 3808- 3817. https://doi.org/10.55324/josr.v2i11.1477

Mohammed, A. L., Kutar,M., Albakri, M. (2024). *Conceptualising the artificial intelligence divide: A systematic literature review and research agenda*. UK Academy for Information Systems Conference Proceedings 2024.14 https://aisel.aisnet.org/ukais2024/14

Nguyen, A., Ngo, H. N., Hong, Y., Dang, B., & Nguyen, B.-P. T. (2023). Ethical principles for artificial intelligence in education. *Education and Information Technologies*, *28*(4), 4221-4241. https://doi.org/10.1007/s10639-022-11316-w

Orogun, O., Ogungbe, L., Ajani, A., Adegboye, N., & Ogunsola, O. (2024). Advancing educational equity through sustainable AI deployment: Strategies and innovations for the United Kingdom. *European Journal of Contemporary Education and E-Learning*, *2*(5), 36-62. https://doi.org/10.59324/ejceel.2024.2(5).03

Pedro, F., Subosa, M., Rivas, A., & Valverde, P. (2019). *Artificial intelligence in education: Challenges and opportunities for sustainable development*. [Working paper]. United Nations Educational, Scientific and Cultural Organization, Paris, France. https://repositorio.minedu.gob.pe/bitstream/handle/20.500.12799/6533/Artificial%20intelligence%20in%20education%20challenges%20and%20opportunities%20for%20sustainable%20development.pdf

Russo, K., & Emtage, N. (2023). The digital divide and Higher Education. In D. Radovanović (Ed.), *Digital literacy and inclusion: Stories, platforms, communities* (pp. 81-97). Springer International Publishing. https://doi.org/10.1007/978-3-031-30808-6_6

Sajja, R., Sermet, Y., Cikmaz, M., Cwiertny, D., & Demir, I. (2024). Artificial intelligence-enabled intelligent assistant for personalized and adaptive learning in higher education. *Information*, *15*(10), 596. https://doi.org/10.3390/info15100596

Saleh, A., & Bista, K. (2017). Examining factors impacting online survey response rates in educational research: Perceptions of graduate students. *Journal of MultiDisciplinary Evaluation*, *13*(29), 63-74. https://doi.org/10.56645/jmde.v13i29.487

Sallam, M., Al-Mahzoum, K., Sallam, M., & Mijwil, M. M. (2025). DeepSeek: Is it the end of generative AI monopoly or the mark of the impending doomsday? *Mesopotamian Journal of Big Data*, *2025*, 26-34. https://doi.org/10.58496/MJBD/2025/002

Savardi, M., Signoroni, A., Benini, S., Vaccher, F., Alberti, M., Ciolli, P., Di Meo, N., Falcone, T., Ramanzin, M., Romano, B., Sozzi, F., & Farina, D. (2025). Upskilling or deskilling? Measurable role of an AI-supported training for radiology residents: A lesson from the pandemic. *Insights Imaging*, *16*(1), 23. https://doi.org/10.1186/s13244-024-01893-4

Tang, K. H. D. (2024). Implications of artificial intelligence for teaching and learning. *Acta Pedagogia Asiana*, *3*(2), 65-79. https://doi.org/10.53623/apga.v3i2.404

Tao, Y., Viberg, O., Baker, R. S., & Kizilcec, R. F. (2024). Cultural bias and cultural alignment of large language models. *PNAS nexus, 3*(9), 346. https://doi.org/10.1093/pnasnexus/pgae346

Thanh, N. C., & Thanh, T. L. (2015). The interconnection between interpretivist paradigm and qualitative methods in education. *American Journal of Educational Science, 1*(2), 24-27. http://www.aiscience.org/journal/paperInfo/ajes?paperId=672

Wang, S., Wang, F., Zhu, Z., Wang, J., Tran, T., & Du, Z. (2024). Artificial intelligence in education: A systematic literature review. *Expert Systems with Applications*, *252a*, 124167. https://doi.org/10.1016/j.eswa.2024.124167

Wang, Y. (2021). When artificial intelligence meets educational leaders' data-informed decision-making: A cautionary tale. *Studies in Educational Evaluation*, *69*, 100872. https://doi.org/10.1016/j.stueduc.2020.100872

Except where otherwise noted, content in this journal is licensed under a Creative Commons Attribution 4.0 International Licence. As an open access journal, articles are free to use with proper attribution. ISSN 1839-7387