

Dynamic tensions: an AI-assisted critical scoping review of university students' qualitative experiences of GenAI

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Abstract

Purpose – This study presents a GenAI-assisted scoping review of interview-based studies exploring student experiences and perceptions of generative AI (GenAI) in international higher education. It aims to synthesise emerging insights into the implications of GenAI as a research tool in contrast to its use by students.

Design/methodology/approach – An AI-assisted scoping review was conducted of 39 qualitative interview studies from 20 countries, all published in 2023/24. Studies were identified through an extensive Boolean search of Web of Science (Arksey and O'Malley, 2003). We conducted in-depth readings, compiled bibliometric data and uploaded findings to Claude Projects for analysis. Thematic analysis (Braun and Clarke, 2006) identified patterns across studies, alongside a review of methodological and theoretical approaches.

Findings – The review highlights diverse analytical and theoretical framings of GenAI, ranging from technology acceptance models to student agency and motivation. Three key perceived benefits and three perceived drawbacks were identified. These represent dynamic tensions surrounding its use in higher education, providing insight into the evolving methodological landscape of GenAI-related research.

Research limitations/implications – Findings are limited to interview-based studies from a defined time period and by the need to rigorously check GenAI contributions to the analysis process. The ambitious scope of the paper lead to a challenge in bringing together the two research strands while maintaining necessary detail and nuance of the findings. Despite this, the findings have significant potential encouraging international collaboration with students and researchers to develop an ethical methodological approach to GenAI use for literature reviews.

Originality/value – This study offers a unique meta-perspective on the place of GenAI in higher education, contrasting student experiences with the process of its use for academic research. It underscores the rapidly evolving nature of GenAI, highlighting the fundamental dynamic tensions of GenAI in higher education and research. It explores whether GenAI is augmenting the human role or eroding it all together.

Keywords Generative AI, Higher education, Scoping review, Student perspectives, Interview studies, AI in research, Academic integrity, Automated writing, Plagiarism, Claude

Paper type Research article

Introduction

The impact of generative artificial intelligence (GenAI) on the landscape of higher education has been significant (Belkina *et al.*, 2025; Chan and Hu, 2023; Kasneci *et al.*, 2023). While the initial disruption is beginning to subside, the ongoing evolution and far-reaching implications of GenAI continue to leave institutions uncertain about how best to integrate the technology into educational practice. This scoping review offers a snapshot of the rapid growth in academic publishing on this topic during the first two years following the public release of ChatGPT in November 2022. Across late 2022 and 2023, there was a marked increase in opinion pieces, initial small-scale surveys and proposed policy responses to GenAI

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(Yusuf *et al.*, 2024). This study focuses on the early empirical and qualitative studies exploring student experiences of GenAI, viewed through the perspectives of academics working across global contexts to help students navigate and make sense of this emerging presence in the academic landscape.

Students, however, are not the only ones learning to use GenAI (see, e.g. Andersen *et al.*, 2025; Jeon *et al.*, 2025). Academics and professional services are too grappling with how to incorporate these tools into the research, teaching and administrative ecosystem of their institutions (Chiu, 2023). To better understand the challenges that students face in integrating GenAI into their studies and assessments, this study also considers its potential in the research process. As with teaching and learning, GenAI offers significant opportunities for research (Gately, 2024; Kumar and Gunn, 2024). Emerging studies suggest value for qualitative research. Cameron (2025) argues that GenAI tools may come to displace traditional data analysis software, offering greater efficiency, enhanced pattern recognition and the ability to surface implicit themes – thereby transforming researchers’ relationships with their data and enabling analysis at scale. Similarly, Perkins and Roe (2024), in their ChatGPT-supported thematic analysis of publisher guidelines, conclude that while bias and other limitations remain, a hybrid human–AI approach can mitigate many of these concerns. It appears that GenAI has significant metacognitive implications for students and staff alike (Fan *et al.*, 2025).

The proliferation of articles on GenAI presents a clear challenge for researchers trying to keep pace with the volume of emerging work. Beer (2019) highlights how data analytics and AI companies frame this problem: that humans can no longer stay on top of all available knowledge and must therefore turn to technology to accelerate comprehension. While AI may help provide overviews, Beer (2019) warns that such summaries are not neutral and risk narrowing research by bypassing unexpected avenues of enquiry. Chubb *et al.* (2022) echo these concerns, drawing on perspectives from leading academics in AI futures who caution against the erosion of the human element in research. They call for a more deliberative approach to conceptualising the responsible use of GenAI. This study takes such critiques seriously and is part of a growing literature seeking to retain the human element while using GenAI judiciously – both to engage with the breadth of literature and to open new possibilities for deeper understanding (Alshami *et al.*, 2023; Kumar and Gunn, 2024; Schryen *et al.*, 2025).

This study adopts a dual focus: first, to map and synthesise emerging interview-based research on student use of GenAI, and second, to reflect on the role that GenAI might play in the research process itself. These aims are captured in the following research questions:

RQ1. What is the scope and focus of existing interview-based studies exploring student use and perceptions of GenAI?

RQ2. In what ways can GenAI be used to support the process of conducting a scoping review?

Sample and methods

This scoping review investigates how students perceive and engage with GenAI in higher education. The review follows Arksey and O’Malley’s (2003) methodological framework for scoping studies as appropriate for rapidly developing areas of inquiry. They are not intended to assess the weight of evidence or synthesise findings across studies and instead provide an overview of available research and help identify gaps and trends. As such, while this review may inform future systematic reviews, its primary aim is exploratory and mapping focused. This study adopts a recursive and reflexive approach, shaped by the experimental use of GenAI tools during the review process. As a result, it moves beyond a purely narrative account to offer a more analytical synthesis of themes across interview-based studies. The inclusion and exclusion criteria applied during the screening process are summarised in Table 1.

Table 1. Inclusion and exclusion criteria for study selection

Criterion	Inclusion criteria	Exclusion criteria
Topic	Higher Education	Primary/secondary education; professional learners (e.g. doctors, nurses)
Focus	Taught students' use and perceptions of AI	Staff/teacher use; PhD/graduate students; research use of AI
Methods	Empirical studies involving students	Systematic reviews, bibliometric analyses, opinion pieces
Article types	Peer-reviewed journal articles, book chapters and preprints	Grey literature, non-academic sources, conference proceedings
Time period	January 2019–September 2024	Outside this period
Language	English	Non-English
Databases	Web of Science (WoS)	Articles not indexed in WoS
Limiters/ Filters	Interview-based studies (“Interview+”)	Quantitative-only studies

The review initially set out to explore peer-reviewed literature published between January 2019 and September 2024, aligning with the development and uptake of large language models (LLMs) such as GPT-2 (McKnight, 2021). A trial Boolean search was conducted across four databases – Scopus, EBSCO, Web of Science (WoS) and Google Scholar – producing over 23,000 results (see Table 2). Given this volume, and the need for integration with institutional analysis tools, the decision was made to focus solely on WoS.

The final search strategy was refined iteratively and based on inclusion/exclusion criteria, with a focus on interview-based studies. The Boolean operators used in WoS are presented in Table 3.

The WoS search returned 4,635 articles. After abstract-level screening, 594 studies met the inclusion criteria. However, the volume and variation in study types led to a further narrowing of scope. Given the focus on rich, contextual insight, the review was refined to include only

Table 2. Initial search results across four major databases (as of 5 September 2024)

Database	Number of articles returned
Scopus	13,654
EBSCO	1,180
Web of Science	4,108
Google Scholar	4,190

Table 3. Final Boolean search terms used in Web of Science

Search field	Boolean terms
Abstract (AB)	(university OR academic OR institution OR “higher education” OR college) AND (“artificial intelligence” OR “generative artificial intelligence” OR ChatGPT OR GPT OR AI OR GenAI OR chatbot OR LLM OR “large language model” OR “language model”) AND (“student perce*” OR “student attitudes” OR student* OR learn*)
Exclusions	NOT ALL = (“elementary school” OR “primary school” OR “grade school” OR “middle school” OR “high school” OR “secondary school”)
Filters	Language = English; Document Types = Article, Book Chapter, Editorial Material, Book Review, Data Paper; Publication Years = 2019–2024

interview-based studies – either standalone or as part of mixed-methods designs – reducing the final dataset to 64 articles. This adjustment enabled deeper thematic engagement with the qualitative data and enhanced the feasibility of triangulating findings using GenAI tools. The choice of individual interviews was not only to reduce the number of studies but also to inform the next phase of the research project, in which individual interviews would take place with students. For this reason, other forms of qualitative research, such as focus groups or qualitative survey responses, were omitted from the search.

Following the refinement of the search strategy, the evidence selection and data extraction process were developed and implemented. This process involved multiple screening stages, beginning with abstract-level review and culminating in full-text analysis of interview-based studies. The complete workflow is illustrated in Figure 1, which maps the stages of inclusion and exclusion using both the criteria set out in Tables 1 and 3 and the analytical decisions made during review.

After initial screening in WoS, abstracts meeting the inclusion criteria were saved into a dedicated folder and exported into a .xls file for structured analysis. The file was organised across three spreadsheets:

- (1) *Abstract* – for initial abstract-level analysis; this included metadata (author, title, year, country, DOI), along with thematic tags (e.g. positive/negative themes), methodological approach and theoretical framing.
- (2) *Deep* – for detailed full-text review; this included article title, abstract, author names, year of study, key findings, context, methods, theoretical frameworks and noted limitations or recommendations were recorded.
- (3) *Removed* – for articles excluded at various stages of screening but retained for transparency and documentation purposes.

This structured approach enabled both human-led and GenAI-supported analysis and ensured consistency in reviewing a diverse and rapidly growing literature base.

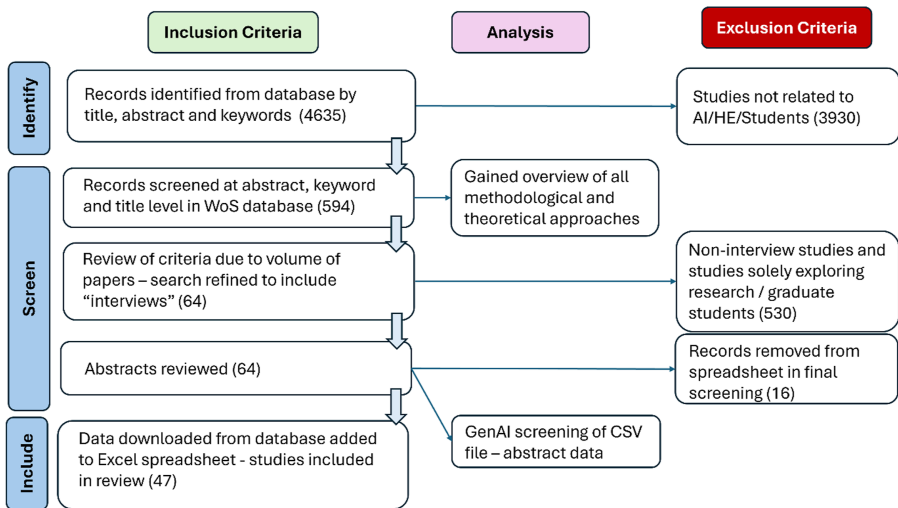


Figure 1. Screening and inclusion pathway for studies using interview-based methods, applying predefined inclusion and exclusion criteria and incorporating analytical judgement at key stages

GenAI-assisted scoping review analysis

This study had two research questions: to map interview-based literature on students' experiences of GenAI and to explore how GenAI might support the research process itself. As GenAI remains relatively new in academic practice, this offered an opportunity to reflect on its affordances and limitations as both a research tool and subject of study. In doing so, we adopted a reflexive approach, acknowledging that – like the students under review – we were also navigating unfamiliar digital terrain (Holmes, 2020). A key distinction is that researchers used GenAI to augment established research practices and academic skills, whereas students were often still acquiring them.

Both students and researchers are navigating a rapidly evolving GenAI landscape and must engage with an overwhelming “panoply of tools” (Zhao *et al.*, 2024, p. 2). Not only were there a great many tools to choose from but the capabilities of the tools were rapidly advancing and access to new features depended on regional and institutional license access. Early testing highlighted several practical barriers to their use. For example, at the time of tool selection (Sept–Dec 2024), Google Gemini integrated analysis of Google Sheets was not available in the UK, and Microsoft Co-pilot's Excel analysis feature was not available on the research team's institutional licence. During the same period, Claude released Claude 3.5 Sonnet in October 2024 and enabled .xls file analysis in December 2024, with notable improvement in analysis capabilities. Notably, a recent study carried by OpenAI found that Claude outperforms other LLM models with .xls and other file types (Patwardhan *et al.*, 2025). Table 4 outlines the main limitations encountered when trialling different models, especially within institutional and open-access settings.

An initial dataset of 594 abstracts was exported from WoS and stored in a Zotero library and spreadsheet. The intention was to use GenAI to assist with thematic analysis, but early trials revealed key limitations. At the time, even with a paid subscription, few tools could reliably handle this volume of data, and the time needed to manually verify GenAI output made it impractical. This prompted a revision of scope: in line with Figure 2, the dataset was narrowed to “interview+” studies, reducing the number of articles and allowing meaningful evaluation of GenAI's potential as an analytical assistant.

Importantly, full articles were not uploaded to GenAI. This was an ethical and legal decision, due to paywall restrictions and unresolved questions around copyright, fair use and data training (Elsevier, 2025). Although locally hosted models (e.g. Nomic's GPT4ALL) may offer more secure environments, these proved complicated to use on institutional devices and required significant computer power. Further research is urgently needed on the copyright concerns of LLM use and, if so, whether local models could provide a suitable and more environmentally friendly approach to GenAI usage.

The tools trialled were limited to the main US-based GenAI companies, such as ChatGPT, Gemini, Co-pilot, Claude and GPT4All. Reflecting on the reasons for this, at the time of conception of the scoping review, many of these tools had first mover recognition. One tool was trialled on the recommendation from an IT expert who was using a local LLM for research

Table 4. Limitations encountered during GenAI tool trialling

Category	Description
Institutional access	Tools often lacked spreadsheet analysis functions or full project capabilities
Geographic limitations	Advanced features were available in the US but not UK
Technical constraints	Offline models lacked power for document analysis
Copyright/IP	Concerns over uploading paywalled academic papers (Elsevier, 2025)
Ethical concerns	Bias, equity, environmental impact and unclear data use
Usability and access	Free tools hit usage limits; institutional systems were slow or unreliable
Tool evolution	Functions changed or disappeared mid-project (Hanson and Bolthouse, 2024)
Learning curve	Significant time was needed to test and master available tools

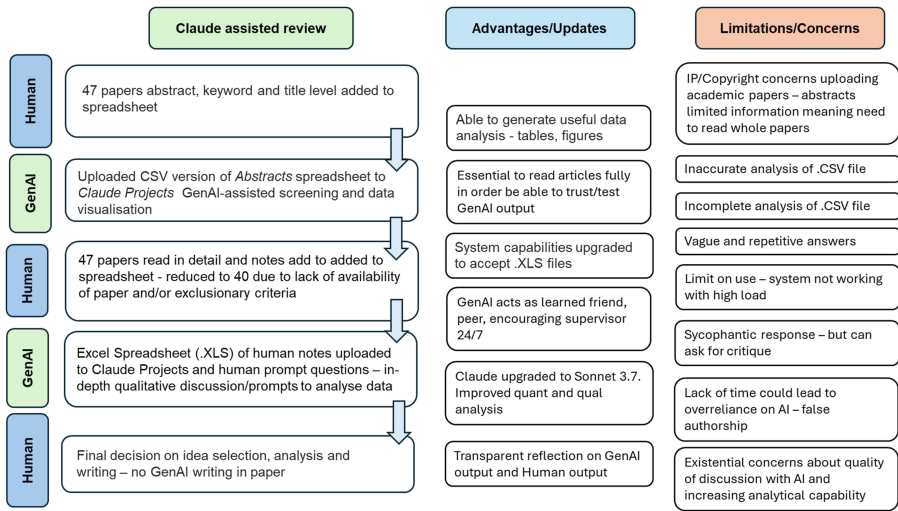


Figure 2. Summary of Claude-supported analysis stages, highlighting points of augmentation, caution and iterative improvement

(GPT4All). UK higher education institutions lean heavily to US-based technology companies due to their market dominance and the lack of homegrown or European alternatives. This is due to the clear cultural and linguistic connections between the UK and US but also regulatory alignment and integration with existing academic workflows (Fiebig *et al.*, 2022). It could also be that *digital colonialism* is not limited to the global South and GenAI highlights issues of digital sovereignty for the UK in the era of AI (Nothias, 2025).

Future studies of this nature will need to consider non-US GenAI models. After the tool selection phase, China re-entered the AI arms race with the release of DeepSeek and Mistral.AI, a French GenAI model, also performed well in benchmark tests against US counterparts (Gibney, 2025; Mistral, 2025). In the course of the project, Kimi.AI was briefly tested in Chinese and English as it was used in one of the papers under review (Jiang, 2024); however, the researchers had concerns about data privacy. While significant data concerns have been raised about Chinese GenAI models (DPO Centre, 2025), the recent political developments in the United States have raised significant questions about data security of GenAI companies there, with the EU-based tools potentially benefiting from more robust regulation and multilingual capabilities of their tools (Navajas Cawood *et al.*, 2025).

The expanding and evolving panoply of GenAI models makes tool choice a complex decision. In this way, the researcher’s choice of tools mirrors that the options facing students. Ultimately, Anthropic’s Claude Pro was selected based on its compatibility with .xls files and our prior experience with its use. Whilst we acknowledge that this is not a rigorous method for selecting the best tool, it does reflect how the majority of students and researchers may start to familiarise themselves with GenAI tools. Table 5 outlines the rationale for tool choice using the Unified Theory of Acceptance and Use of Technology (UTAUT) framework (Venkatesh *et al.*, 2003).

Claude was used to assist both Arksey and O’Malley’s (2003) scoping review methodology and Braun and Clarke’s (2006) six-phase thematic analysis. Initially, the Abstracts spreadsheet was uploaded to Claude to identify preliminary themes and produce visualisations of geographic and methodological patterns. This approach helped scope patterns quickly but also revealed the limitations of abstracts as standalone sources: many lacked detail on participant level, methods or findings.

Table 5. Claude Pro assessment using the UTAUT framework

UTAUT dimension	Claude pro observation
Performance expectancy	Marked improvement after .xls support added; allowed robust spreadsheet analysis
Effort expectancy	User-friendly interface; no coding required or significant cpu power to run local models
Social influence	Tool widely used and discussed (e.g. “Claude Boys” meme culture; Hamill, 2025)
Enjoyment	Researcher found interactions enjoyable and engaging
Price value	£18/month affordable for staff, though less so for students with multiple subscriptions
Habit	Consistent use encouraged through Claude Projects interface
Training data limitations	Lacked live Internet access and required periodic refresh of long conversations
Usage reliability	Minor service slowdowns during peak US/UK hours; generally reliable
Ethics and sustainability	Marketed as ethical and low impact; however, Amazon funding raises questions (Anthropic, 2024)
Environmental impact	Text-only GenAI analysis may be less carbon-intensive than human equivalents (Tomlinson et al., 2024)

To address this, a *Deep* spreadsheet was created following full-text reading of each included article. This file became the main point of collaboration between human and GenAI model. Claude’s early struggles with .csv formatting – such as misattribution of findings or incomplete tables – were resolved once .xls compatibility was introduced in December 2024. With the launch of Claude Sonnet 3.7 (February 2025), performance improved considerably by its hybrid reasoning model ([Anthropic, 2024](#)), allowing for more accurate and sustained analysis.

The final GenAI-assisted workflow is shown in [Figure 2](#), which summarises the key process stages, benefits and remaining limitations.

Once all selected articles had been read in full, we compiled detailed notes into the *Deep* spreadsheet and uploaded this to *Claude Projects*. This enabled a structured interaction grounded in our own perspective and interpretive lens. Claude immediately provided an overview of the data and suggested several types of analysis, including thematic patterns across articles, distribution of publication sources, common positive and negative findings and patterns of author collaboration. These suggestions offered a starting point for more targeted exploration in addition to the research team’s own lines of enquiry.

The initial focus was on methodological aspects – for example, identifying the geographical locations of studies and the theoretical or analytical frameworks used. As the analysis progressed, attention turned to findings, particularly the recurring tensions between the benefits and drawbacks of GenAI use reported by students. We were able to prompt Claude to examine specific elements of the dataset, such as searching for studies that aligned with particular themes or checking how a given pattern appeared across titles, abstracts and findings.

This iterative process alternated between inductive and deductive reasoning. Sometimes Claude was asked to identify patterns directly from the notes; at other times, we tested pre-identified categories across the dataset. Throughout, Claude functioned more like a critical peer than a passive tool – a kind of co-author or supportive supervisor, responsive to prompts and able to develop ideas in dialogue. This collaborative dynamic shaped the thematic synthesis that follows.

Findings

This scoping review includes 39 articles (see [Appendix A](#)). The initial timeframe spanned 2019 to 2024. The vast majority of studies ($n = 36$) were published in 2024, with just four from 2023, similar to findings by Yusuf *et al.*’s systematic mapping review ([2024](#)). This likely

reflects the time required for ethical approval, data collection and publication following the release of ChatGPT in late 2022. As [Rienties et al. \(2024\)](#) note, while AI in education has a longer history, students have only recently had direct access to AI tools. GenAI therefore marks a shift from “background” AI to a more visible, direct experience ([Illingworth and Gow, 2025](#)).

Claude was used to assist with data organisation and exploratory analysis, drawing on structured spreadsheet inputs developed by the research team. Outputs were reviewed for accuracy, and all tables were produced using data from Google Sheets which were converted to .xls files to upload to Claude.

Sample sizes across the studies varied considerably. While the median was 14 participants and the mean 22, a small number of outliers had larger samples ($n = 50, 56, 74$ and 187). The largest study, by [Xu et al. \(2024\)](#), used a peer interview design in which student pairs interviewed one another. The smallest sample consisted of four students. One study included a single staff participant ([Duah and McGivern, 2024](#)), though findings were clearly separated from student data.

The reviewed studies represent a wide geographical spread (see [Figure 3](#)), though some regions – notably Spanish-speaking countries and parts of Europe – were underrepresented due to the English-language focus. China accounted for the highest proportion of interview-based studies, followed by the UK and Turkey. It is notable that there were only 2 US and 1 Australian-based interview studies with students. We can only hypothesise about the reasons for this, one being more rigorous and time-consuming ethical approval processes in these countries which could have delayed publication. Re-running the Boolean search in response to peer review of this article highlighted several studies in Australia and the United States which could have been included in the review, implying that it was not a problem with the search terms and demonstrates the rapid development of research in this area ([Lund et al., 2025](#); [Corbin et al., 2025](#)).

A significant number of studies focused on English language education, specifically within English as a Foreign Language (EFL), English as a Second Language (ESL), English for Academic Purposes (EAP) and academic writing courses. The English language focus may be due several factors. In addition to English as the academic lingua franca, there is a significant

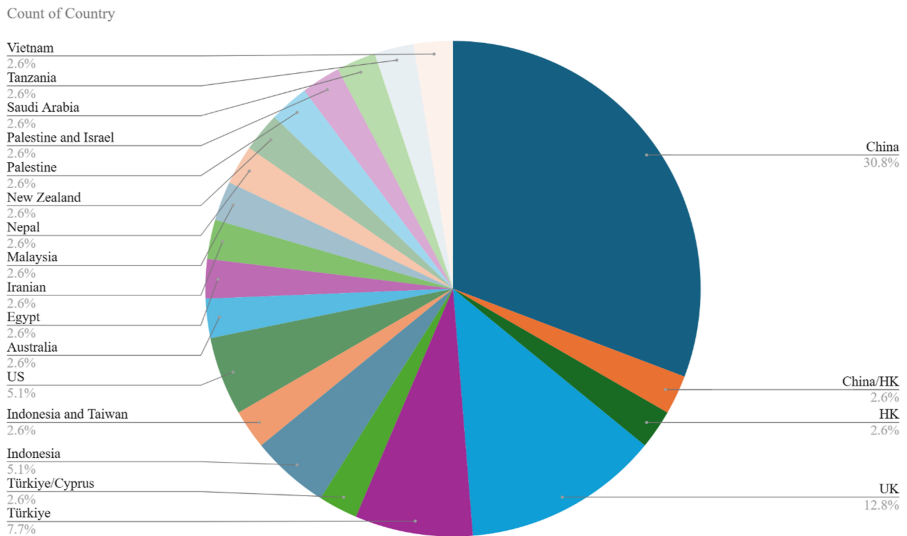


Figure 3. Country distribution of interview-based GenAI studies included in the scoping review

incentive for ESL staff to publish in international academic publications, particularly in China which has a highly competitive academic culture (Song, 2019). This disciplinary skew is evident in Figure 4, which shows that over a third of the studies focused on EFL/ESL contexts, followed by writing-focused studies and a smaller number spanning diverse or multidisciplinary cohorts.

Perhaps unsurprisingly, ChatGPT was by far the most commonly studied GenAI tool reflecting its rapid uptake following its public release. Of the 39 studies included in this review, 36 used ChatGPT as the primary focus. In several cases, researchers used indirect references or pseudonyms – such as “ChatGAI” (Kong *et al.*, 2024), “GreatGPT” (Yang *et al.*, 2024) or a general “AI writing assistant” – potentially reflecting institutional sensitivities, translation issues or platform restrictions (Dai and Liu, 2024; Rafida *et al.*, 2024).

Some studies explored locally adapted or alternative tools, including a Hong Kong-specific version of ChatGPT (Liu *et al.*, 2024), and OpenBuddy – an LLM developed using Falcon and LLaMA models (Li *et al.*, 2024). These variations reflect the geopolitical and infrastructural barriers to GenAI research, including VPN requirements, national restrictions and variable access (Fathi and Rahimi, 2024; Liu Park and McMinn, 2024). Tools such as Grammarly, Claude, Perplexity, Bard, Kimi.AI and Duolingo appeared in studies, albeit less frequently. This reflects on the growing diversity of tools but also the blurring of the lines between pre-existing AI and GenAI tools, with the former (for example Duolingo and Grammarly) now increasingly including GenAI features. One study (Wei, 2023), which was removed from the review, used Duolingo with English language students; however, it was determined that this was not GenAI at the time of writing. Nevertheless, Wei’s (2023) paper did share a lot of similarities with the findings of papers in this review, particularly in relation to student self-empowerment and personalisation of learning. Finally, one study used a hypothetical AIDA (Artificial Intelligence Digital Assistant) to scaffold student reflection in cases where direct student experience of GenAI was limited (Rienties *et al.*, 2024).

Across the sample, studies took one of two approaches. Half focused on a specific tool in a controlled or course-based context (closed tool use), while the other half invited broader reflections on GenAI (open tool use). In each case, the methodological framing shaped how tools were introduced and discussed by participants.

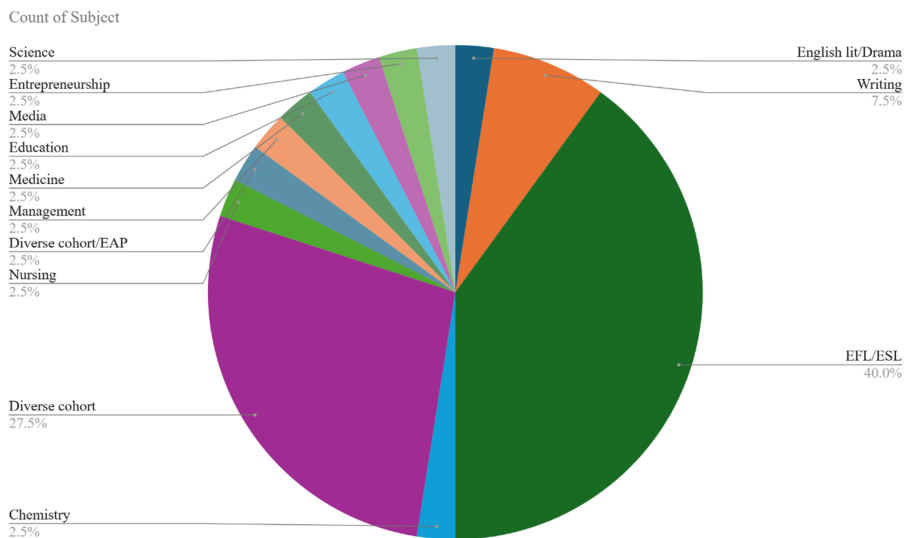


Figure 4. Subject area of interview-based GenAI studies, with a notable concentration in English language and writing contexts

The 39 studies reviewed were grouped into five broad methodological categories, outlined in Table 6. The most common approach was a single interview, used in 13 studies, typically focusing on either general perception of GenAI or its use in specific contexts. Twelve studies combined surveys with interviews, often adding elements such as scenario-based tasks (Dahri *et al.*, 2024) or GenAI usage logs (Ardyansyah *et al.*, 2024; Nguyen *et al.*, 2024). A further five studies adopted an experimental design followed by reflective interviews to compare student engagement with GenAI vs traditional methods. Five studies involved students participating in courses where GenAI tools were embedded, followed by interviews reflecting on their experiences. Finally, five studies employed observational or reflective methods, including self-reported logs, peer reflections or post-use feedback (e.g. Yan and Zhang, 2024; Zhao *et al.*, 2024).

Braun and Clarke’s thematic analysis framework (2006; 2012; 2019) dominated the analytical approaches (see Table 7), appearing in 21 of the studies, either directly or through references to prior work (e.g. Yan, 2023). Creswell and Creswell’s work on qualitative and mixed-methods research (2018) informed six studies, and Yin’s case study methodology (2011; 2013; 2015) was cited in five. Some studies combined these frameworks, particularly where mixed methods or case study designs were used. A few studies did not explicitly state their analytical approach, though all referenced relevant literature and framed GenAI use within the educational context.

Table 6. Overview of methodological groupings across the 40 studies included in the review

Method	No.	Articles
Single interview	13	Rafida <i>et al.</i> (2024), Liu and Zhang (2024), Summers <i>et al.</i> (2024), Du and Alm (2024), Ghimire <i>et al.</i> (2024), Alshammri (2024), Holland and Ciachir (2024), Kong <i>et al.</i> (2024), Komba (2024), Duah and McGivern (2024), Nugroho <i>et al.</i> (2024), Xiao and Zhi (2023), Xu <i>et al.</i> (2024) (Peer interview)
Survey and interview	11	Assad (2024), Daher and Hussein (2024), Dai and Liu (2024), Dahri <i>et al.</i> (2024), Kayali <i>et al.</i> (2023), Koltovskaia <i>et al.</i> (2024), Liu <i>et al.</i> (2024a, b), Zhou <i>et al.</i> (2024), Ardyansyah <i>et al.</i> (2024), Nguyen <i>et al.</i> (2024)
Experimental and interview	5	Ironsi and Ironsi (2024), Jiang (2024), Kim <i>et al.</i> (2024), Li <i>et al.</i> (2024), Wang (2024)
Course and interview	5	Fathi and Rahimi (2024), Karatas <i>et al.</i> (2024), Kurt and Kurt (2024), Yan (2023), Yang <i>et al.</i> (2024)
Observation, feedback and/or self/peer- reflection	5	Hamamra <i>et al.</i> (2024), Luo (2024), Rienties <i>et al.</i> (2024), Yan and Zhang (2024), Zhao <i>et al.</i> (2024)

Table 7. Primary analytical approaches employed across the reviewed studies

Approach	No.	Articles
Braun & Clarke	21	Alshammri (2024), Ardyansyah <i>et al.</i> (2024), Dahri <i>et al.</i> (2024), Creswell and Creswell (2018), Duah and McGivern (2024), Fathi and Rahimi (2024), Ghimire <i>et al.</i> (2024), Holland and Ciachir (2024), Jiang (2024), Kim <i>et al.</i> (2024), Komba (2024), Kong <i>et al.</i> (2024), Kurt and Kurt (2024), Liu <i>et al.</i> (2024a, b), Summers <i>et al.</i> (2024), Xiao and Zhi (2023), Xu <i>et al.</i> (2024), Yan (2023), Yan and Zhang (2024), Zhao <i>et al.</i> (2024), Zhou <i>et al.</i> (2024)
Creswell	6	Kayali <i>et al.</i> (2023), Liu <i>et al.</i> (2024a, b), Nguyen <i>et al.</i> (2024), Rafida <i>et al.</i> (2024), Wang (2024), Yan and Zhang (2024)
Yin	5	Alshammri (2024), Ardyansyah <i>et al.</i> (2024), Karatas <i>et al.</i> (2024), Nugroho <i>et al.</i> (2024), Yan and Zhang (2024)

Theoretical framing in the studies broadly fell into two camps: educational theories ($n = 23$) and technology acceptance theories ($n = 6$). This split reflects different orientations – viewing GenAI either as a pedagogical development or as a technological innovation within education. In some cases, alternative models such as the Voice of Customer approach were applied, where students were positioned as consumers within the educational context (Rienties *et al.*, 2024). Twelve studies did not explicitly reference a theoretical framework, though all grounded their research in relevant academic literature on GenAI and education.

To further analyse the studies' theoretical framing, Claude was used to support classification by cross-referencing titles, abstracts and researcher-identified theories. One theme identified early in the human reading process was a strong focus on automated writing and feedback. This prompted further categorisation and refinement of the data with Claude's assistance. The studies were ultimately grouped into five key categories, detailed in Table 8.

Seventeen studies focused on automated writing evaluation and feedback (AWE), a field with a long-standing research tradition since the 1960s (Lai, 2010). While earlier AWE studies often compared computer and human feedback, more recent work has investigated cognitive, emotional and behavioural responses to GenAI-supported feedback (Zhang and Hyland, 2018; Godwin-Jones, 2022). Several of these studies used broader theories of human–technology interaction, such as Human–Computer Interaction (Carroll, 1997) and Actor Network Theory (Latour, 1987), rather than AWE-specific frameworks.

Six studies explicitly employed technology acceptance theories – either the Technological Acceptance Model (TAM; Davis *et al.*, 1989) or the Unified Theory of Acceptance and Use of Technology (UTAUT; Venkatesh *et al.*, 2003) – to explore GenAI uptake. These frameworks position user behaviour as shaped by usability, social influence and expected performance (see Marikyan *et al.*, 2023).

A further six studies focused on student agency, motivation and metacognition, drawing on frameworks such as self-determination theory (Ryan and Deci, 2000), self-regulated learning, self-directed learning and experiential learning theory (Kolb and Kolb, 2009). Newer models such as epistemic agency (Damşa *et al.*, 2010) and AI-IDLE (AI informed digital learning of English) (Liu *et al.*, 2024a) also appeared. Three studies had academic integrity and trust as their central focus. While most studies touched on these issues, only a few treated them as primary research questions. Nine studies took a general approach, exploring students' experiences and perceptions of GenAI without applying a specific theoretical model, though all situated their work within the broader educational literature.

While these categories are distinct, there is considerable conceptual overlap. Many studies adopt multiple frameworks – for instance, Kim *et al.* (2024) and Ironsi and Ironsi (2024)

Table 8. Theoretical focus and frameworks applied in the reviewed studies

Focus/Theory	No.	Articles
Automated writing evaluation and feedback	17	Alshammri (2024), Fathi and Rahimi (2024), Ironsi and Ironsi (2024), Jiang (2024), Kim <i>et al.</i> (2024), Koltovskaia <i>et al.</i> (2024), Kurt and Kurt (2024), Li <i>et al.</i> (2024), Liu <i>et al.</i> (2024a, b), Nguyen <i>et al.</i> (2025), Nugroho <i>et al.</i> (2024), Rafida <i>et al.</i> (2024), Wang (2024), Yan (2023), Yan and Zhang (2024), Zhao <i>et al.</i> (2024)
Technological acceptance theories	5	Ardyansyah <i>et al.</i> (2024), Dahri <i>et al.</i> (2024), Holland and Ciachir (2024), Liu <i>et al.</i> (2024a, b), Xu <i>et al.</i> (2024)
Student agency, motivation and metacognition	6	Du and Alm (2024), Karatas <i>et al.</i> (2024), Liu <i>et al.</i> (2024a), Summers <i>et al.</i> (2024), Yang <i>et al.</i> (2024), Zhou <i>et al.</i> (2024)
Academic integrity/trust	3	Duah and McGivern (2024), Hamamra <i>et al.</i> (2024), Luo (2024)
General student experiences and perceptions	9	Assad (2024), Daher and Hussein (2024), Dai and Liu (2024), Ghimire <i>et al.</i> (2024), Kayali <i>et al.</i> (2023), Komba (2024); Rienties <i>et al.</i> (2024), Xiao and Zhi (2023)

explore academic writing using human–technology interaction theories. Although technological acceptance theories do not directly appear in studies of writing, they do intersect with agency and motivation frameworks. One example is [Dahri et al. \(2024\)](#), which combines an extended TAM with self-regulated learning. These intersections reflect a spectrum from task-specific research to broader pedagogical and psychological models.

Thematic analysis and discussion

While the studies reviewed present a wide range of findings, they are not beyond categorisation. Despite differences in geography, methodology and theory, common themes emerged across the data. This review prioritises the qualitative elements of the studies, though in some mixed-methods research, the qualitative findings were shaped by the broader methodology and are still relevant here.

This section provides a thematic overview of the perceived advantages and disadvantages of GenAI use as reported by students. These findings are not neatly divided. Rather, the benefits and drawbacks are interwoven, revealing underlying dynamic tensions – points where the perceived strengths of GenAI may also introduce risks to learning or long-term development. In conversation with Claude, we developed this framing to better capture the complex, often contradictory nature of students’ experiences with GenAI in higher education.

Perceived benefits of GenAI

Productivity and performance. Most studies emphasised how students found GenAI helpful in supporting their learning and improving their understanding of course content. However, a closer reading reveals that these perceived benefits are often linked to specific tasks. Students commonly used GenAI for smart searching, verifying information, generating ideas during brainstorming and enhancing their writing through proofreading or drafting support. Others relied on it for summarising complex texts, synthesising sources, receiving feedback on written work, or translating and paraphrasing content. These task-based uses reflect how students are integrating GenAI into the practical, day-to-day processes of academic work.

The instantaneous, 24/7 access to GenAI leads to a strong focus on its perceived productivity and performance benefits for students. As [Liu and Zhang \(2024\)](#) point out, students will use a technological tool if it saves them time and effort. Resultantly, efficiency is a key benefit listed in the studies ($n = 29$). The students interviewed appear to focus on accomplishing tasks and performance rather than learning specifically. This highlights the challenge of specifying the impact of such tools for learning in general. For example, it is difficult to quantify language learning which is the focus of nearly half of the studies reviewed. One aspect where learning is quantified is assessment, particularly writing.

As a result of the need to quantify the impact of GenAI, academic writing is a focus of a significant number of the studies under scope of the review. The tasks described above relate to all stages of the multidimensional writing process and output, as in [White and Arndt’s \(1991\)](#) process writing approach. As [Wang \(2024\)](#) highlights in their study, these span brainstorming, outlining, revising and editing. GenAI offers either iterative, continuous feedback or feedback on the end product of writing. Additionally, translation, paraphrasing and shortening texts may be completed. Ultimately, the students perceive this as improving the efficiency and efficacy of their writing, in a limited number of cases this was highlighted as helping for students to clarify their thoughts and overcoming writer’s block ([Holland and Ciachir, 2024](#)). The time saved on tasks provided the opportunity for deep thinking, freeing thoughts and leaving students better able to express themselves, achieving more authentic work ([Hamamra et al., 2024](#); [Wang, 2024](#)). This moves the focus away from lower-level tasks and assessments which focus on rote learning and memorisation ([Hamamra et al., 2024](#)). In terms of feedback and proofreading, it enabled students to optimise their performance (grades) and present more professional work ([Du and Alm, 2024](#); [Zhou et al., 2024](#)).

Personalisation and equity. The effect of the efficiency and efficacy of using GenAI is that students perceive greater possibilities for equity and the personalisation of their learning (Rafida *et al.*, 2024). Students like the customisation of learning that GenAI offers with the opportunity to get feedback at any time and in a tailored style. As one participant notes in Jiang's (2024, p. 9) study, AI is "a more knowledgeable peer than classmates and a more relaxed guide than teachers", allowing students to independently learn at their own pace and in their own style. This was seen of particular benefit from the perspective of self-directed learning (Zhou *et al.*, 2024), self-regulated learning (Dahri *et al.*, 2024) and self-determination theory (Du and Alm, 2024) as well as in addressing learners perceived needs (Koltovskaia *et al.*, 2024).

As many of the studies provided students with access to GenAI, this offered an equitable, consistent and accessible system of support. Whereas teaching, peer and other third-party support (family/tutors) are finite and resource dependent, free access to GenAI tools may give students their undivided attention (Ironsi and Ironsi, 2024). It may also provide equity to underdeveloped regions by augmenting existing teaching resources (Jiang, 2024) or free up staff from administrative tasks to focus on teaching. It could also present more equitable and flexible access to students with working and caring responsibilities. Due to the language focus the translation and feedback capabilities of GenAI were also seen to provide equity for non-native English speakers (Wang, 2024).

Emotional empowerment. The perceived benefits of the previous two themes have a relationship with the theme of emotional empowerment. This theme encompasses the perceived impact that GenAI has on students' confidence, motivation, enthusiasm and joy of learning. While there may be a novelty effect involved in students' positive reaction to GenAI (Liu *et al.*, 2024a; Yang *et al.*, 2024; Zhou *et al.*, 2024), it is clear that students found using GenAI to have a positive emotional impact on their studies. This could be a circular relationship with emotional empowerment resulting from improvements in performance, productivity and personalisation. As Liu and Zhang (2024) suggest, GenAI can act as a catalyst for intrinsic motivation where students embrace technological development. This aligns with other studies that highlight its positive impact on students' self-efficacy (Du and Alm, 2024; Fathi and Rahimi, 2024; Kim *et al.*, 2024; Kurt and Kurt, 2024).

Many of the studies report the relief of pressure, anxiety and stress related to emotional empowerment (Koltovskaia *et al.*, 2024; Zhao *et al.*, 2024). Stress relief seems to stem from the constant access to feedback which builds confidence and reduces uncertainty (Jiang, 2024; Wang, 2024). One source of pressure is time and the efficiency of GenAI is seen to relieve this issue. A second pressure comes from being judged or criticised: assessment is the form of quantifying learning and is judgemental by its nature. Some students seem to prefer feedback from GenAI over from peers and teachers as it is less embarrassing and face saving (Yan and Zhang, 2024). As Jiang's (2024) participant noted, GenAI is more relaxed than a teacher and acts as a non-judgemental supportive partner. There is also the advantage that staff are then freed up from "low-level" marking tasks, such as spelling and grammar, especially when they are perceived as being overworked (Jiang, 2024).

Perceived drawbacks of GenAI

Agency, dependency and purpose. Despite the benefits highlighted in the themes above, there is significant concern from the students in the studies relating to the overdependence on GenAI. The tools are so powerful that they straddle the line between intrinsic and extrinsic motivation (Ryan and Deci, 2000), with significant repercussions for student agency and purpose. Student agency may be defined as "the fundamental capacity to act autonomously, make responsible decisions, and take charge of their educational paths, all of which shape their learning experiences" (Yang *et al.*, 2024, p. 828). Self-regulation of using GenAI tools is a challenge as the tools are capable of completing many of the tasks students are asked to do, particularly the low level, foundational learning tasks. While GenAI may be used positively to

intrinsically motivate students, it may also have the opposite effect of causing students to lose agency through using GenAI as an external motivator (Ryan and Deci, 2000).

Rather than encouraging autonomy through personalisation and performance improvement, students may become lazy and over-dependent. Students like the simplicity and speed of GenAI combined with 24/7 access which can help efficiency of learning. As Rafida *et al.* (2024) highlight, however, these same factors can lead to passive dependency for task completion if learning is equated with performance. This echoes the theories of technological acceptance that students will use a tool if it makes their work faster and easier to complete (Liu and Zhang, 2024). Students may feel they have more personalised learning and autonomy from reliance upon peers and teachers; however, there is the concern that students may unintentionally become dependent on GenAI. Not only that but there is a fear that the equity of student having access to the same GenAI tools may in fact lead to the homogenisation and depersonalisation of a student's own thinking and writing (Wang, 2024).

Academic integrity: trust and fairness. Since the release of ChatGPT, alarms have been raised related to the impact on GenAI on academic integrity (Eke, 2023). The students in multiple studies in this review share those concerns, with three studies focusing specifically on academic integrity. The fundamental concern of students in the studies reviewed is whether they are completing the work themselves or whether GenAI is doing the work for them. This is closely related to the previous theme and can be seen as a continuum of the spectrum of concerns regarding loss of agency, dependence on GenAI and the purpose of education. Passively accepting the output of GenAI is a particular problem, as not only does it hinder learning, but it lacks critical thinking and may be plagiarism (Jiang, 2024; Zhao *et al.*, 2024).

Academic misconduct may be intentional or unintentional, especially where traditional definitions of offences and academic norms are being questioned by GenAI use (Duah and McGivern, 2024; Wang, 2024). It is also context dependent. Proofreading, for example, may be considered academic misconduct if learning outcomes relate to assessment of English language learning however may be permitted in a discipline-specific assessment where English is the medium of instruction. Therefore, students on a EFL programme claiming that AI tools help them to express their own writing style may not be meeting learning outcomes and hindering their own learning. If students were using a peer to assist them in the same manner that they admit to using GenAI, it may be considered collusion, or if they used a non-student for this sort of support it could be considered plagiarism or contract cheating.

The impact on human relationships in education presents a more holistic challenge for academic integrity than the focus on individual acts of academic misconduct. Luo's (2024) study is unique in exploring how GenAI effects teacher–student relationships using Hoy and Tschannen-Moran's (1999) definition of trust. Lack of trust leads to a lack of transparency, with students either being dishonest about GenAI usage or stopping using it, both due to fear of punishment where they lack certainty about acceptable usage. They also highlight the hypocrisy of staff using GenAI while forbidding students from doing the same, which results in a further impact on trust. The fact there is no reliable method of detecting GenAI adds to distrust between staff and students (Liu, Park and McMinn, 2024). Trust is also a significant issue between peers, with studies highlighting suspicions of other students using GenAI for group work and the fear of challenging peers on their use (Holland and Ciachir, 2024) or the unfair advantage due to lack of detection (Yan, 2023). This also raises concerns about digital inequity and fairness, as unequal access to advanced tools risks reinforcing – or even widening – existing biases and inequalities (Du and Alm, 2024).

Data: ethics, accuracy and security. Trust issues are not limited to direct human relationships, with significant concerns around input and output data of GenAI. A primary concern was the accuracy, bias and quality of the responses which GenAI would provide for students. Hallucinations, defined as “content which is either unfaithful to the input, or nonsensical” which often a result from a low-quality data input, are a well-known challenge for LLMs (Filippova, 2020, p. 1). Students are highly aware of the inaccuracies which GenAI may output and the lack of citations for sources, which leads to difficulties in checking the accuracy

of information (Alshammri, 2024; Hamamra *et al.*, 2024; Nugroho *et al.*, 2024). Furthermore, the studies show that GenAI models may be more accurate for some disciplines and tasks, such as English language learning (Fathi and Rahimi, 2024; Karatas *et al.*, 2024; Rafida *et al.*, 2024; Wang, 2024). It may make mistakes in certain subjects, especially scientific subjects at university level, such as mathematics (Ardyansyah *et al.*, 2024) or chemistry (Ardyansyah *et al.*, 2024). Despite accuracy concerns, the technological acceptance models note a trade-off between positive usability impressions (Ardyansyah *et al.*, 2024; Kayali *et al.*, 2023). Theories of student agency and metacognition highlight that students may mitigate problems of inaccuracy by critically evaluating GenAI outputs (Yang *et al.*, 2024).

Students also expressed concerns about how GenAI models are trained and how their own input data is handled. Copyright issues related to the training of LLMs led to apprehensions that these systems may have been developed using unethical or even illegal methods (Zhao *et al.*, 2024). Several studies highlighted how biases in training data can lead to biased outputs, reinforcing existing social inequalities (Du and Alm, 2024; Kim *et al.*, 2024). Security risks also emerged, particularly around students uploading personal or sensitive information via chat interfaces (Liu and Zhang, 2024; Xu *et al.*, 2024). While some studies offered guidance on data privacy (Kayali *et al.*, 2023; Xu *et al.*, 2024), Luo (2024) raised further concerns about power imbalances if educators or tech companies gain access to student data through GenAI platforms. Broader ethical issues were also noted, especially where students felt pressured to use GenAI, limiting their ability to opt out (Yang *et al.*, 2024).

Limitations of the studies under review. Authors across the studies acknowledged working within a fast-moving, transitional period for GenAI in higher education and were transparent about their limitations. The most common limitation was small sample size: 24 studies had a mean of 20 interview participants, typically over 4–6 weeks, often within a single classroom or institution. Only three studies involved multiple institutions (Rafida *et al.*, 2024; Daher and Hussein, 2024; Liu and Zhang, 2024), and only four studies involved institutions in multiple countries/territories (Rafida *et al.*, 2024; Daher and Hussein, 2024). Several studies noted technological and geographical barriers to GenAI access, affecting participant engagement (Zhao *et al.*, 2024; Yang *et al.*, 2024). Timeframe constraints also emerged as a common issue, with many authors expressing interest in future longitudinal work. The novelty of GenAI was also raised as a factor shaping findings, potentially reflecting the “novelty effect” in human–computer interaction, where initial enthusiasm may not persist over time (Xiao and Zhi, 2023; Yang *et al.*, 2024; Shin *et al.*, 2019). A final limitation noted was the reliance on self-reported data in interviews, though this was sometimes mitigated through observational or experimental methods that captured direct GenAI use.

Discussion: evaluating GenAI-assisted scoping review

Consolidating the findings of the scoping review with using GenAI to conduct a scoping review reveals further fundamental questions at the heart of dynamic tensions for both students and researchers. These in large part are a result of GenAI being a general purpose technology with many uses, rather than a specific use tool (Crafts, 2021). The researchers found that working with GenAI was a qualitatively different experience to working with another tool, such as Nvivo (Cameron, 2025). Though we must be careful not to anthropomorphise the technology (Kurian, 2024), GenAI, by design, is more like working with a research assistant or colleague due to the number of tasks it can complete and chat interface. There is a significant challenge therefore, in evaluating to the extent GenAI improved or influenced the outcomes of the research. In terms of efficiency, GenAI proved more efficient than existing tools for APA reference generation and general information searching. In the research process, however, having to navigate the panoply of evolving tools and to learn how to use them meant that using GenAI was not more efficient. This is the result of the productivity paradox where learning to use a new technology may not end up in productivity gains (Brynjolfsson *et al.*, 2019).

Once the learning curve has been overcome, there are still significant obstacles to the efficient and effective use of GenAI tools for research. Researchers found that Claude was able to augment human memory by locating themes and cross-referencing themes between papers. Yet, this study was unable to significantly increase the total number of studies under review, as the researchers had to be intimately aware of the contents of the articles in order to vouch for the accuracy of the outputs of Claude. While the use of Claude *Projects* to focus on particular documents and tasks helped with accuracy, Claude was still prone to mistakes or hallucinations. In addition, Claude could be “lazy”, not fully carrying out requests. Outputs had to be rigorously checked on the spreadsheet provided. This accuracy issue would need to be addressed to carry-out larger scale reviews of papers. Despite this, similarly to the students’ trade-off between positive usability impressions (Ardyansyah *et al.*, 2024; Kayali *et al.*, 2023), the researchers will certainly use the tools in future for their work. There is the expectation that continued use of these tools will improve efficiency and efficacy but only if tools accuracy is improved.

Trust in the tools’ capabilities and the companies that own them, therefore plays a significant role in whether or not these tools may be used effectively and ethically for learning or research. As with the students in the study, the researchers experienced the emotional empowerment of instant 24/7 access to Claude to explore thoughts and find connections in the data in a unique way. This was akin to an Internet search as a conversation but without the need to wait for a colleague or be subjected to their judgement. Viewing GenAI simply as a tool, this could provide more personalisation for those using it, however the researchers using Claude felt that it was acting more as an epistemic agent in the review process (Coeckelbergh, 2025). Integrity, therefore, plays a significant role in the tension between the advantages of empowerment due to personalisation and equity with the disadvantages for agency of overdependence of GenAI.

The danger is that what GenAI users may be viewing as personalisation and independence could be the loss of agency and epistemic intrusiveness of GenAI doing the cognitive work for them, known as cognitive offloading (Dawson, 2020). Even experienced researchers must be fully aware of the limitations of the outputs and have a strong focus on their own expertise, research goals and questions in the process. Additionally, the tension with the issue of equity is that if students or researchers all have access to the same GenAI tool, this could lead to the replacement of human collaboration and communication and the homogenisation of ideas (Wang, 2024). This could result in the erosion of the heterogeneity and nuance of views which individual humans may bring to the research (Beer, 2019); however, this area needs further research to be fully substantiated. On the other hand, the panoply of tools and payment packages means that equity is unlikely with tool access and those with better resources will have access to higher level tools, resulting in further digital inequality. Other matters to be addressed are whether researchers could upload whole academic papers to GenAI tools, while the tools may state that these papers would not be included in the training data, there seems to be a lack of legal and ethical clarity on this matter (Perkins and Roe, 2024).

Conclusion

This GenAI-assisted scoping review set out to address two research questions: What is the scope and focus of existing interview-based studies exploring student use and perceptions of GenAI? And in what ways can GenAI be used to support the process of conducting a scoping review?

In response to the first question, the analysis of 39 interview-based studies published across 20 countries in 2023–24 offers an empirical foundation for understanding how students are engaging with GenAI in higher education. The studies reveal a wide range of methodological approaches and theoretical framings, with notable clusters around automated writing support, technological acceptance, student agency and academic integrity. A consistent thread across the studies is the experience of dynamic tensions – where perceived benefits such as

productivity, personalisation and emotional empowerment sit alongside concerns about dependency, fairness and trust. Rather than presenting GenAI as uniformly positive or negative, these studies portray it as a complex and often contradictory presence within the academic lives of students. The research team is developing a framework of dynamic tensions which will be explored in forthcoming qualitative and quantitative studies.

In answering the second question, this study also trialled the judicious use of GenAI – specifically Claude – as a research assistant within the scoping process. The study sought to use a deliberative and responsible use of GenAI for research. This was in order to not simply to keep up with competitive academic culture but to provide new depth of qualitative analysis, enhancing human analysis rather than diminishing it (Alshami *et al.*, 2023; Chubb *et al.*, 2022). The model supported early-stage organisation, thematic prompts and cross-referencing across data. While useful for exploratory analysis and visualisation, its limitations were equally instructive. Issues of accuracy, transparency and the need for human oversight reinforced the argument that GenAI is best viewed as a supplementary tool rather than a neutral co-author. This reflexive experience of the researchers mirrors the findings within the reviewed studies: both students and researchers are reflecting on metacognitive process in order to learn how to work with GenAI, and both must negotiate its possibilities and constraints.

Taken together, this review underscores the rapidly evolving nature of GenAI in education and research. It should also be noted that the capabilities of GenAI were rapidly evolving during the process of research heightening the dynamic tensions. This paper therefore provides a foundation for more targeted empirical work on student experiences of GenAI, including longitudinal and mixed-methods studies. It raises further questions about how best to support students and staff in navigating this shifting terrain. Maintaining the human element, specifically trust – in both pedagogy and research – will be essential in realising the full potential of GenAI maintaining a balance between these dynamic tensions without losing sight of the values underpinning higher education.

The fundamental dynamic tension, therefore, is whether GenAI is augmenting the human role in the research/learning process or whether it is eroding it all together (Chubb *et al.*, 2022). The different user contexts of the two research questions, with students learning (in a variety of subjects) and researchers carrying-out research, point to a difference in the goals and expertise of the user as to how the tools may hinder or help their process. At the time of writing this hinges on the accuracy paradox of GenAI: the more accurate GenAI becomes the less human intervention is necessary for its use. Therefore, the lack of accuracy creates space for hybrid human–AI collaboration. The question is, if GenAI is able to match or surpass high-level human research analysis, what will be the impact on research and student motivation and what consequences will this have for universities?

Limitations and recommendations

Combining a scoping review with a methodological experiment using GenAI is an ambitious task for a journal paper. As a result, whilst the fusion of our findings provides a unique insight, it was a challenge to bring together the two research questions and some detail may have been lost in the process. Due to the learning curve with GenAI, the study was unable to scale up the scoping review process; however, the study is of use value as it mirrors the challenges which students and researchers are facing. Furthermore, the researchers acknowledge the cultural and linguistic bias of limiting the study to US-based English language GenAI tools. Finally, the study was limited to scoping interview studies and there is a need to broaden out the research to other methodological approaches.

We therefore recommend the need for significant international collaboration on establishing consistent and systematic evaluation of the ethical use of GenAI tools for scoping reviews and a mapping of findings of research on student use of GenAI. Future research could extend to longitudinal and cross-methodological designs with international comparative cohorts. The experimental studies analysed in the scoping review were highly enlightening on the

quantifiable and qualitative difference between human only and hybrid human–GenAI approaches to GenAI use in higher educational contexts. There is also significant potential to carry out a follow-up scoping review on use of GenAI in research replicating this study, particularly if GenAI can be used to access multilingual content. Future research should establish benchmarking of GenAI tools for learning and research, evaluating capabilities, accuracy and building trust in the use of GenAI tools. Finally, there is significant potential for utilising the findings of this study in workshops with students and researchers on establishing workflow for using GenAI in literature reviews to improve breadth and depth of reviews.

Declaration

Generative AI was used in line with the key principles of use set out on the [AIIE Author Guidelines](#). In addition to Claude, Co-pilot and Perplexity AI were used as smart search engines.

Supplementary material

The supplementary material for this article can be found online

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