

Gaps, Needs and Expectations: An Inquiry into Students' Perceptions on the Integration of Generative AI in Supporting Students with Special Learning Needs in Higher Education in Bangladesh

Lacunas, Necessidades e Expectativas: Uma Investigação sobre as Perceções dos Estudantes acerca da Integração da IA Generativa no Apoio a Estudantes com Necessidades de Aprendizagem Especiais no Ensino Superior no Bangladesh

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ABSTRACT: This study explored how university students with special learning needs (SSLNs) in Bangladesh perceived the integration of generative artificial intelligence (GenAI) as a support mechanism in higher education. Conducted at a private university, the research involved 28 undergraduates who had been formally diagnosed by physicians or psychologists prior to admission. A purposive sampling approach was adopted to ensure participants represented a range of learning disabilities, including dyslexia, ADHD, and mild autism. A mixed-method questionnaire comprising both quantitative and qualitative items was used to gather information on participants' demographics, experience with GenAI, understanding and evaluation of GenAI, practical applications, perceptions of AI-supported examination processes, ethical considerations, and expectations for AI-assisted learning. Findings revealed that

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students viewed GenAI as a potential personal tutor, academic coach, and technical assistant that can enhance accessibility, inclusivity, and adaptive learning experiences. Thematic analysis highlighted six key areas of student expectations: personalized and adaptive learning; enhanced feedback and learning support; accessibility and inclusivity; academic skill development; technical and resource support; and student agency through AI literacy and training. During data collection, a researcher was present, and students freely asked questions and shared relevant experiences in a comfortable and pressure-free environment. While the students expressed optimism about GenAI's capacity to bridge equity and inclusivity gaps, they also emphasized the need for institutional policies that ensured equal access, cultural localization, and ethical use. The study underscores the importance of collaboration between universities, policymakers, and developers to make GenAI a sustainable tool for inclusive higher education in Bangladesh.

KEYWORDS: Generative AI; learning disabilities; inclusive education; higher education; Bangladesh; accessibility; student perceptions; AI literacy; adaptive learning; educational technology.

RESUMO: Este estudo visou analisar como estudantes universitários com necessidades específicas de aprendizagem (SSLNs) no Bangladesh perceberam a integração da inteligência artificial generativa (GenAI) como mecanismo de apoio no ensino superior. Realizada numa universidade privada, a investigação envolveu 28 estudantes de licenciatura que tinham sido formalmente diagnosticados por médicos ou psicólogos antes da admissão. Foi adotada uma abordagem de amostragem intencional, de modo a assegurar que os participantes representassem um conjunto diversificado de dificuldades de aprendizagem, incluindo dislexia, perturbação de hiperatividade e défice de atenção (PHDA) e autismo ligeiro. Foi utilizado um questionário de método misto, composto por itens quantitativos e qualitativos, para recolher informações sobre os dados demográficos dos participantes, a sua experiência com GenAI, a compreensão e avaliação desta tecnologia, aplicações práticas, percepções sobre processos de avaliação apoiados por Inteligência Artificial (IA), considerações éticas e expectativas relativamente à aprendizagem assistida por IA. Os resultados revelaram que os estudantes consideraram a GenAI como um potencial tutor pessoal, orientador académico e assistente técnico, capaz de melhorar a acessibilidade, a inclusão e experiências de aprendizagem adaptativas. A análise temática destacou seis áreas principais das expectativas dos estudantes: aprendizagem personalizada e adaptativa; melhoria do feedback e do apoio à aprendizagem; acessibilidade e inclusão; desenvolvimento de competências académicas; apoio

técnico e de recursos; e autonomia estudantil através da literacia em IA e da formação. Durante a recolha de dados, esteve presente um investigador, e os estudantes colocaram livremente questões e partilharam experiências relevantes num ambiente confortável e isento de pressão. Embora tenham manifestado otimismo quanto à capacidade da GenAI para reduzir desigualdades e promover a inclusão, salientaram igualmente a necessidade de políticas institucionais que assegurassem acesso equitativo, contextualização cultural e uso ético. O estudo sublinha a importância da colaboração entre universidades, decisores políticos e programadores para tornar a GenAI uma ferramenta sustentável para um ensino superior inclusivo no Bangladesh.

PALAVRAS-CHAVE: Inteligência artificial generativa; dificuldades de aprendizagem; educação inclusiva; ensino superior; Bangladesh; acessibilidade; percepções dos estudantes; literacia em IA; aprendizagem adaptativa; tecnologia educativa.

Introduction

After the COVID-19 pandemic, the academic world has been fundamentally reshaped. We've navigated a rapid journey from in-person classrooms to fully online learning and then into a blended model. Though this digital transition was accelerated by the pandemic, it also unlocked a new, powerful force in education, artificial intelligence (AI). Now that AI tools are becoming increasingly popular, a central dilemma has emerged for both teachers and students: just how much access to AI is acceptable? Where do we draw the line between a supportive tool and a crutch?

Reid and Peer's (2018) explored the multifaceted challenges faced by students with special learning needs (SSLNs) and outlined evidence-based strategies for more inclusive education. The authors identified persistent academic difficulties in reading, writing, and mathematics, as well as executive functioning issues, including poor organization, attention, and self-regulation. Failure to achieve academic success often results in low self-esteem, anxiety, and social isolation, emphasizing the importance of emotional and social support in learning environments.

The pursuit of such inclusivity is not merely a technological aspiration but a national educational priority for Bangladesh. Guided by the National Education Policy (2010) and the Strategic Plan for Higher Education (SPHE: 2018–2030), the country's higher education sector is mandated to build an equitable, technologically advanced system that produces a competent, innovative, and morally responsible workforce. A genuine commitment to equity necessitates the deliberate inclusion of all students, including

those with learning disabilities. However, a significant gap exists between policy goals and classroom reality, particularly regarding the adoption and localization of assistive technologies.

Although much has been written about GenAI's potential in education, there is little research on its potential from the perspective of students with learning disabilities in the Global South, specifically Bangladesh. . This study aimed to investigate SSLNs' perceptions, expectations, and concerns regarding the integration of GenAI as an academic support mechanism in Bangladeshi universities. By centering the student voice, this research sought to identify the specific gaps, needs, and expectations that must inform future policy, pedagogical design, and technological development to ensure that the promise of GenAI contributes meaningfully to a more inclusive and equitable higher education landscape in Bangladesh.

1. Literature Review

This literature review synthesized key studies that discuss the ethical, pedagogical, and psychological implications of GenAI in education. It highlighted frameworks such as Universal Design for Learning (UDL), examined students' and educators' perceptions across global contexts, and explored how GenAI could support inclusive, equitable, and human-centered learning environments.

In higher education, the increasing reliance on AI-driven systems reflects broader shifts in adult learning paradigms, where flexibility, lifelong learning, and inclusive design are central to meeting the needs of diverse learners, particularly those with disabilities. AI is reshaping not only instructional delivery but also learners' expectations for autonomy, accessibility, and responsive feedback (Arju & Ho, 2026). Williamson and Eynon (2020) explained that the current use of AI in education is part of a long history of trying to automate and collect data about learning, often led by private companies. They warned that this trend can create new problems, especially for students with disabilities. Because AI systems learn from existing data, they may perpetuate old patterns of bias and inequality, resulting in unfair outcomes such as misdiagnosing learning needs or limiting access to certain courses. Another concern is data privacy, as companies collect large amounts of student data, there is a risk that students may become “test subjects” without providing real informed consent.

Conversely, Universal Design for Learning (UDL) promotes AI-integrated learning platforms that address diverse learning needs and protect individuals' human rights (Burgstahler, 2011; United Nations, 2006). UDL is an influential educational framework that seeks to remove barriers in the learning environment by promoting multiple means of representation, engagement, and expression (Rose & Dalton, 2009). The principles of UDL offer a strong pedagogical foundation for developing AI-based supports for

students with special needs. UDL emphasizes flexible learning environments that accommodate learner variability through multiple means of representation, engagement, and assessment (Al-Azawei et al., 2016). When compared with traditional settings, learners in UDL-based courses demonstrate higher completion rates and more positive attitudes (Courey et al., 2012). Although online educational tools are becoming more widely available, not all digital platforms meet the required standards of accessibility and inclusion (Smith & Harvey, 2014). Additionally, in the context of AI-assisted learning, UDL must be flexible, closely align with the content, and provide feedback tailored to individual needs. By integrating UDL principles into AI design, educators can ensure that technological innovation supports equity rather than “reinforcing exclusion,” a term that refers to situations in which technologies or educational practices unintentionally strengthen or perpetuate the marginalization of certain groups of learners, particularly students with disabilities or diverse learning needs.

Recent literature positions the integration of Universal Design for Learning and AI as a transformative approach to inclusive education within contemporary higher education. Rather than functioning as separate innovations, researchers increasingly conceptualize UDL and AI as complementary frameworks that together support learner variability, accessibility, and autonomy. Saborío-Taylor & Rojas-Ramírez (2024) emphasized the synergistic relationship between UDL and AI in fostering inclusive and self-directed learning environments. Extending this perspective, Leon et al. (2025) conducted a systematic review of 41 peer-reviewed publications (2020–2025) on AI in STEM education, identifying three emergent themes: (1) the evolving role of student agency, (2) paradigm shifts toward adaptive, AI-mediated learning models, and (3) persistent ethical concerns. Their findings underscore UDL as a critical pedagogical framework for guiding the equitable design and implementation of AI-driven learning environments. Julien (2026) further highlighted that while AI technologies can significantly enhance UDL principles, these benefits are contingent upon addressing key ethical and implementation challenges, including transparency, bias, and data privacy. In the context of SSLNs, Hyatt & Owenz (2024) conducted a small-scale study demonstrating that AI-based assignments intentionally designed using UDL principles can lead to student satisfaction. Taken together, these studies suggest that the UDL–AI integration not only advances inclusive pedagogy but also requires careful ethical consideration and intentional instructional design to fully realize its potential in higher education contexts.

One of the primary reasons for the rapidly growing interest in GenAI in education is that these advanced tools enable researchers and educators to manage large amounts of information and complex ideas quickly and efficiently (Wang et al., 2022). GenAI can generate human-like text in response to

simple prompts or questions, making it a powerful tool for learning support. Zhou and Li (2024) noted that AI's capacity has transformed how people discover, share, and understand knowledge, creating new opportunities for learning and research.

Recent empirical research showed that students view GenAI as effective for learning and research. A study of 231 undergraduate students in the Czech Republic found that ChatGPT enhanced students' educational quality, consistent with their positive satisfaction ratings for AI use (Suchanek & Kralova, 2025). Chan and Hu (2023), in their study of 399 university students in Hong Kong, revealed that students found GenAI useful, particularly for tasks such as grammar checking, paraphrasing, idea generation, and writing papers. Chan and Hu's (2023) findings also supported the notion that students with more knowledge and experience in GenAI would be more likely to use it in the future. Similarly, in a study involving 555 students and 168 academics in higher education in Oman, Alshamy et al. (2025) found notable differences between students and academics in their perceptions of GenAI tools across Technology Acceptance Model (TAM) variables. Students reported frequent use of GenAI for academic support, including personalized learning, brainstorming, and completing assignments. Academics highlighted its role in developing learning materials, assessments, lesson plans, and customizing learning content. However, academics consistently expressed concerns about ethical issues, such as plagiarism, academic misconduct, and an over-reliance on GenAI. Using the TAM model, Megbowon (2025) examined students' perceptions of GenAI at a South African university and found that students generally held positive attitudes toward GenAI, appreciating its ability to enhance personalized learning and access to academic resources. However, this optimism was balanced by skepticism and ethical concerns, with students emphasizing the importance of critical evaluation, academic integrity, and personal accountability in its use. The research highlighted the urgent need for universities to provide clear guidelines, training, and awareness programs to ensure ethical and effective integration of GenAI.

Students' perceptions of GenAI tools are largely influenced by their academic disciplines rather than individual preferences (Tbaishat & Elfadel, 2025). The nature of coursework, the frequency of technology use, and the typical assessment formats across different fields shape how students view the usefulness, relevance, and appropriateness of GenAI in their learning. Students in the College of Natural and Health Sciences held more positive views of GenAI tools, whereas students in the Colleges of Business and Humanities and Social Sciences tended to report more cautious or moderate views of GenAI (Tbaishat & Elfadel, 2025).

In terms of assessment, Holmes et al. (2022) explored the integration of AI into formative assessment, metacognition, and self-regulated learning. Rather than traditional testing, the authors proposed AI-driven continuous assessment systems that monitor student learning in real time. Such systems could track progress across formal, non-formal, and informal learning experiences, creating a comprehensive learner profile or an AI-enabled e-portfolio that serves as an authentic record of a student's skills and development. Following the study, Fleming and Haigh (2023) argued that authentic assessment tasks are grounded in real-world contexts that mirror professional practice. They supported the use of GenAI-assisted assessments in higher education as an alternative to traditional assessments.

Interestingly, according to the participants (N = 1366) in Farinosi and Melchior's (2025) study with Italian university students, GenAI will become "the new normal" in educational and professional contexts. The study's findings revealed that students used GenAI tools both out of curiosity and for personal projects and university-related tasks (assignments, study help, etc.). However, a strong majority questioned the reliability and accuracy of AI-generated data. Besides, according to Nelson et al.'s (2025) study, academic dishonesty can be distinguished from legitimate use of AI. Additionally, students showed limited awareness of the academic consequences of unethical AI use, despite expressing strong beliefs that AI-assisted writing could increase instances of academic dishonesty. The study suggested that students acknowledged the pedagogical benefits of GenAI but lacked sufficient AI literacy and ethical clarity, warranting explicit instructional guidance and institutional policy support.

Additionally, Mhlanga (2023) acknowledged the benefits of GenAI in education while also highlighting the ethical and responsibility-related challenges it presents, such as safeguarding personal data and preventing the replacement of in-person instruction by qualified educators. He emphasized the importance of informing students about AI's limitations to foster critical thinking, promote ethical and responsible use, and equip them to navigate a rapidly evolving technological landscape. Building on these ethical considerations, recent empirical studies (Selwyn, 2023; Holmes et al., 2022) have examined how students across various contexts perceive and interact with GenAI tools in their learning. Findings revealed that, due to poorly balanced or disproportionate data, GenAI systems can exhibit bias and produce unfair or discriminatory outcomes in educational settings. For example, the limited representation of certain groups in training data may disadvantage students from underrepresented or marginalized backgrounds. If a student relies on such biased AI-generated information for a graded assignment, the teacher may award a lower grade, not because of the student's ability, but due to the AI's data bias, which unintentionally reinforces existing inequities in education.

Research on AI in education remains relatively emergent in Bangladesh, with limited empirical studies available. Md. Ataharul Islam (2025) investigates the use of AI in English education among undergraduates, employing a small, purposively selected sample of 10 participants from five universities across various social science disciplines. The findings suggest that AI tools enhance language learning through personalization, immediate feedback, and increased accessibility, thereby supporting more autonomous and efficient learning practices. However, the study also identifies limitations, particularly the lack of cultural contextualization and emotional engagement in AI-mediated learning. Participants emphasized that while AI tools are valuable for skill development, human instructors remain essential for fostering confidence, facilitating authentic communication, and providing culturally relevant guidance.

Similarly, Hasib and Islam (2026) explore university students' perceptions and practices of using ChatGPT through a qualitative design, based on semi-structured interviews with 20 students from Khulna University. Their findings reveal that students use ChatGPT for both academic and non-academic purposes, including assignment writing, idea generation, and everyday communication tasks. While ChatGPT is perceived as efficient and supportive of learning, concerns have been raised about inaccurate outputs, false references, and system limitations. Notably, ethical issues emerge as some students report using ChatGPT in ways that blur the boundary between academic assistance and misconduct.

Existing studies on the integration of GenAI in higher education mainly focus on general student populations in technologically advanced contexts. The availability of empirical studies examining how GenAI tools can support students with disabilities and address their unique learning needs in higher education remains limited, particularly in developing countries such as Bangladesh. Moreover, although frameworks such as Universal Design for Learning (UDL) have been applied to examine students' perceptions and attitudes toward GenAI, few studies have investigated the ethical, emotional, and cognitive implications of GenAI use among learners with disabilities. Therefore, this study aims to fill these gaps by examining how students with learning disabilities in Bangladesh perceive, experience, and expect GenAI integration in higher education and thereby contributing to a contextualized understanding of AI-supported learning that is inclusive, ethical, and sustainable. Therefore, the objectives of the present research were to explore students' perceptions, experiences, and expectations regarding the use of GenAI tools to address diverse learning needs in higher education, and to identify existing gaps, challenges, and institutional supports related to the accessibility, ethical use, and inclusivity of AI-assisted learning environments. Below are the research questions:

- How do SSLNs use GenAI tools in academic contexts?

- What factors influence SSLNs decisions to use or avoid GenAI for assessment preparation?
- What academic, emotional, and pedagogical benefits and challenges do SSLNs perceive from GenAI integration in higher education, and how do these perceptions shape their perceptions of AI-assisted curricula?
- What features and institutional supports do students expect from AI-based learning systems to enable effective, inclusive, and ethical GenAI use in academic assessment and learning?

2. Methodology

This study adopted an exploratory mixed-methods approach, combining limited quantitative data with qualitative insights derived from five open-ended questionnaire items, to examine current institutional support for students with specific learning needs (SSLNs) and to identify barriers and challenges to the effective implementation of GenAI-assisted learning in inclusive university environments in Bangladesh. Given the small sample size ($N = 28$), the study is primarily exploratory, and its findings are not intended to be generalized but rather to provide indicative insights into emerging practices and challenges.

2.1 Participants

The participants in this study were undergraduate students from the Faculty of Arts and Social Sciences at a private university in Dhaka, Bangladesh, with a sample size of $N = 28$, aged 19-22 years. The participants were selected purposively, and the ratio of male and female participants was 1:1. Among the participating students, there was representation of multiple types of learning needs: eight had dyslexia, two had speech difficulties, five had ADHD, seven had both dyslexia and speech problems, and six had both dyslexia and ADHD.

| Learning Need Category | Frequency (n) |
|------------------------------------|---------------|
| Dyslexia | 8 |
| Speech difficulties | 2 |
| ADHD | 5 |
| Comorbidity Type | Frequency (n) |
| Dyslexia + Speech-related problems | 7 |

| | |
|-----------------|----|
| Dyslexia + ADHD | 6 |
| Total | 28 |

Table 1. Distribution of Learning Needs Among Participants (N = 28)

Note. *N* = 28. Categories are not mutually exclusive; participants may be represented in more than one category due to comorbid learning needs.

All participants had been diagnosed with learning disabilities by either a physician and/or a psychologist prior to their admission to the university. Participants' self-reported information reveals that the most common challenges they faced were communication and social interaction challenges, including speech-related difficulties (n=9), group work problems (n=7), and difficulty organizing thoughts (n=5). Academic challenges were also common, including spelling confusion (n=5), trouble with math (n=5), short-term memory issues (n=5), and difficulty comprehending reading texts (n=4), which indicate struggles in literacy and cognitive processing. Additionally, time management (n=4), handwriting (n=4), and attention-related issues (n=3) highlight difficulties with executive functioning. Only one student (n=1) reported difficulty using technology, suggesting overall readiness for AI-based learning support. Additionally, among the 28 participants, most reported moderate-to-severe support needs. Nine students indicated moderate needs, while 14 reported severe challenges, including six who did not receive regular professional support. Only five students reported mild challenges. Overall, students' needs tended toward the moderate-to-severe range, highlighting a notable gap in access to professional support.

This demographic information indicates that Bangladeshi students with LDs experienced overlapping cognitive and emotional barriers that hindered their academic progress, consistent with international evidence that students with LDs often struggle with reading comprehension, written expression, and information retention (Reid & Peer, 2018; Alloway, 2020). We found that cognitive and communicative barriers were far more pronounced than technological barriers, with only one student reporting difficulty using digital tools. The mean severity score further indicated that most students experienced moderate-to-severe challenges requiring professional or institutional support. This pattern mirrored global findings (Al-Azawei et al., 2017; Burgstahler, 2021).

2.2 Instruments

A structured questionnaire survey was used as the primary instrument for data collection. The instrument was designed to generate both quantitative and qualitative data and consisted of seven sections. quantitative data that included items on the types of learning challenges, experience with technology and

AI tools, understanding of AI concepts, perceptions of accessibility and institutional support, preferred AI features, views on AI's role in assessment and feedback, and awareness of ethical concerns. The question format varied across 5-point Likert scales from 1 (strongly disagree) to 5 (strongly agree), multiple-choice questions with single responses, and multiple-choice questions with multiple responses. Additionally, Section G comprised five open-ended questions that invited participants to elaborate on their expectations, perceived barriers, and suggestions for the inclusive integration of GenAI in higher education.

The questionnaire was developed based on a review of relevant literature on inclusive education, GenAI in higher education, and students with specific learning needs (SSLNs). To ensure content validity, the instrument was reviewed by two experts in applied linguistics and inclusive education, and minor revisions were made for clarity and relevance. A pilot test was conducted with a small group of students ($n = 10$), leading to further refinement of item wording and structure. Cronbach's alpha was calculated to assess the internal consistency of the questionnaire's multi-item scales. scale-type items were included in the reliability analysis. Given the exploratory nature of the study and the modest sample size ($N = 28$), alpha values between .60 and .70 were considered acceptable for preliminary analysis (Taber, 2018). The AI Ethics and Awareness scale (3 items; e.g., ability to identify ethical issues in AI use, understanding of data privacy and security, and perceptions of institutional guidance on ethical AI use) demonstrated good internal consistency ($\alpha = .834$). The AI Understanding and Literacy scale (3 items; e.g., ability to explain AI's impact on education, perceived importance of understanding AI tools, and self-rated understanding of how tools like ChatGPT generate responses) showed acceptable reliability ($\alpha = .736$). And the Experience with Technology and AI scale (3 items; e.g., frequency of AI tool use, familiarity with different AI applications, and confidence in using AI tools for academic purposes) yielded a Cronbach's alpha of .629, indicating moderate internal consistency, which is acceptable for exploratory research (Taber, 2018).

Open-ended responses were collected in either Bangla (L1) or English (L2). Responses in Bangla were translated into English, and to ensure accuracy, translations were cross-checked by a second member of the research team.

2.3 Ethical Considerations

Prior to data collection, ethical considerations were carefully addressed. Participants were informed about the purpose of the study, the voluntary nature of their participation, and their right to withdraw at any stage without any negative consequences. Informed consent was obtained from all

participants before they completed the questionnaire. To ensure confidentiality and anonymity, no personally identifiable information was used.

Administrative approval for data collection was obtained from the relevant university authority. Following this approval, the questionnaire was distributed to eligible participants through an officially permitted channel (departmental coordination). Participants were given adequate time to complete the survey, and clarification was provided when necessary to ensure an accurate understanding of the questionnaire items. Completed questionnaires were securely stored and accessed only by the researchers.

2.4 Data Analysis Procedures

Quantitative data were analyzed using IBM SPSS Statistics (Version 26). Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize response patterns. Given the exploratory nature of the study and the small sample size ($N = 28$), no inferential analyses were conducted, and findings are interpreted as indicative rather than generalizable.

Qualitative data from open-ended responses were analyzed using thematic analysis (Clarke & Braun, 2017). Responses were read repeatedly, coded inductively, and grouped into themes. To enhance trustworthiness, a second researcher reviewed the data, and discrepancies were resolved through discussion. An audit trail was maintained to ensure transparency. Qualitative findings were integrated with quantitative results to provide contextual depth through triangulation.

3. Results

3.1 SSLNs' Use and Experiences of GenAI in Academic Learning

The respondents had their personal preferences about GenAI. In response to the question “Which of the following AI-based tool/s did you use last month?”, Table 1 shows that ChatGPT and Google Gemini are the most popular GenAI tools. Although respondents were allowed to select all that apply, all chose only one option, indicating they are comfortable with the specific tool. This dataset also suggests that students primarily rely on general-purpose AI platforms for learning, while specialized tools are used sparingly.

| AI -based Tool/s | Frequency- (n) |
|------------------|----------------|
| ChatGPT | 11 |
| Google Gemini | 11 |

| | |
|----------------|-----------|
| QuillBot | 2 |
| Canva AI | 2 |
| Speechify | 1 |
| Magic School | 1 |
| DeepSeek | 0 |
| Notion AI | 0 |
| Claude | 0 |
| Brisk Teaching | 0 |
| Midjourney | 0 |
| Other | 0 |
| Total | 28 |

Table 2. AI-Based Tools Used by Students in the Last Month (N = 28)

Participants generally held positive perceptions of GenAI in education, with ratings ranging from 3.68 to 4.49 (see Appendix Table A1). Our data indicate that students used GenAI tools for a variety of academic purposes (see Table 2). Students primarily relied on GenAI as a learning support mechanism rather than as a substitute for traditional academic processes.

| Purpose of Using GenAI Tools | n |
|---|----------|
| To better understand or simplify course content | 16 |
| To generate ideas/support critical thinking | 12 |
| To get quick answers or feedback | 10 |
| To improve writing and communication | 8 |
| To manage academic tasks and time | 6 |
| To reduce stress or boost motivation | 4 |

Table 3. Students' Use of GenAI Tools in Academic Studies (N = 28)

Note. Participants were allowed to select multiple responses.

This data is also supported by the qualitative data, which showcase the participants' responses to the inquiry, "*How will your academic challenges be minimized if your university's curriculum is AI-assisted?*" The responses revealed several recurring themes regarding students' expectations. The most prominent theme was that it enhanced learning and understanding, as students anticipated that GenAI would simplify difficult topics, generate concise summaries, and break down complex content into

smaller, manageable parts. One participant (S-5) expressed, “*It will assist me in understanding the hard topics clearly.*” Next, students valued GenAI for its learning support and memory aid, expecting features such as personalized study plans and reminders to reinforce key points during examinations. For example, participant S-12 stated, “*It will help me in remembering the points during examination,*” while S-27 added, “*It will help me make my study plan and take preparation for the examination.*” Such expectations reflected the growing relevance of GenAI in high-stress academic contexts, particularly in Bangladesh. Access to resources and efficiency emerged as another key theme. Students believed GenAI could reduce reliance on printed materials and provide faster access to multiple sources of information, thereby saving time and increasing creativity. As S-21 noted, “*I don’t necessarily have to go through finding books for information — I can get information from multiple sources within a shorter period. It will increase my creativity and minimize dependency on printed books.*” Additionally, one student mentioned GenAI as a stress-reducing and motivating tool that could make academic tasks easier and more engaging, as well as a means to develop academic skills, especially in writing and grammar. However, it was also emphasized that GenAI should complement rather than replace teachers. As S-10 pointed out, “*Though in some cases AI can help me, teachers’ assistance is also needed sometimes rather than AI.*”

3.2 Factors that Influence Students’ Decisions to Use or Avoid GenAI for Assessment Preparation

Although students reported regular use of GenAI tools, their engagement varied significantly across academic contexts. As shown in Table 3, participants reported high levels of general GenAI use in the last month, with the majority indicating *very frequent* use ($n = 17$), followed by occasional use ($n = 5$) and rare use ($n = 4$). Only a small proportion reported as *frequent* users ($n = 2$), and none reported never using. The mean score for general use was relatively high ($M = 4.14$, $SD = 1.18$), indicating regular engagement with GenAI tools.

In contrast, the use of GenAI for assessment preparation was notably lower. A substantial proportion of participants reported *never* ($n = 9$) or *rarely* ($n = 7$) using these tools for this purpose. Smaller percentages reported *occasional* ($n = 6$), *frequent* ($n = 3$), and *very frequent* ($n = 3$) use. The mean score ($M = 2.43$, $SD = 1.35$) reflects comparatively limited use in assessment contexts. Overall, these findings indicate a clear disparity between general and assessment-related use, suggesting that while students are active users of GenAI tools, they remain cautious or selective in applying them to evaluative academic tasks.

| Usage Category | Never n | Rarely n | Occasionally n | Frequently n | Very Frequently n | M | SD |
|-------------------------------|---------|----------|----------------|--------------|-------------------|------|------|
| General use (last month) | 0 | 4 | 5 | 2 | 17 | 4.14 | 1.18 |
| Use in Assessment preparation | 9 | 7 | 6 | 3 | 3 | 2.43 | 1.35 |

Table 4. Frequency of GenAI Tool Use in General and for Assessment Preparation (N = 28)
 Note. Response options ranged from 1 (Never) to 5 (Very Frequently).

Qualitative data also shows a wide range in explanations of assessment-related GenAI use, with no consistent pattern between general GenAI use and the rationale for GenAI use in assessment preparation (see Appendix A, Table A3).

3.3 Perceptions Regarding GenAI Integration

Students also agreed that GenAI could help manage academic stress ($M = 3.86$) and support diverse learning needs ($M = 3.68$) (see Appendix Table A1). Qualitative analysis shows students' strong call for AI-assisted emotional and motivational support. Several respondents emphasized that GenAI should relieve mental stress or increase creativity (see Appendix Table A2). This expectation suggests that learners perceive GenAI not only as a cognitive aid but also as an *affective* one, mirroring the growing recognition of emotional well-being as central to inclusive education (Florian & Beaton, 2018). But nearly all participants expressed that AI should not replace teachers, emphasizing the need for empathetic human mediation alongside technology.

3.4 Perceived Gaps in AI Training and Ethical Guidance

Table 4 shows students' perceived risks and concerns regarding GenAI in education, highlighting several critical issues. These findings highlight that while students engaged with GenAI tools, they were aware of the ethical and systemic risks involved. Concerns related to data security or privacy, academic dishonesty or plagiarism, and over-reliance on AI were among the top risks reported by at least half of the participants.

| Perceived risk or concern | N |
|--|----|
| Data security or privacy | 17 |
| Academic dishonesty or plagiarism | 15 |
| Over-reliance on AI | 14 |
| Lack of transparency in AI decision-making | 7 |
| Unequal access to AI tools | 6 |
| Bias in AI systems ^a | 3 |

Table 5. Students' Perceived Risks Related to the Use of GenAI in Education (N = 28)

Note. ^aBias means that for some subject areas, GenAI cannot give much information. GenAI may contain and support more popular information than the unexplored or less-explored branches of knowledge and populations.

Qualitative data reveal that students encountered multiple barriers when attempting to use GenAI or digital tools to support their learning, encompassing knowledge gaps, infrastructural constraints, and ethical concerns. A major issue was the lack of AI literacy and training, leaving many students unsure of how to use these tools effectively or what support to expect from their institutions. Infrastructural limitations, including unequal access to reliable internet, devices, and paid platforms, further widened the digital divide. As S-11 noted, *"Paid wall barriers... a lot of people don't have access to pay overseas,"* and *"Disruption or limit of free version."* Language barriers also emerged as a significant challenge, as many AI tools operated primarily in English. S-5 explained, *"AI operation is not in my LI,"* and S-13 added, *"Some find English hard."* Such issues hindered usability for Bangladeshi students, many of whom preferred local-language interfaces. Additionally, ethical concerns regarding data privacy, plagiarism, and the lack of transparency in AI systems contributed to mistrust. S-18 mentioned, *"I'm concerned about data privacy,"* while S-10 remarked, *"It is not possible to understand from where the data was accessed by AI; therefore, the allegation of plagiarism occurred."* Another notable concern raised is how GenAI can unintentionally limit deeper cognitive engagement. One participant reflected: *"As we can use AI, teachers reduce our working time, but because of the time constraint, we cannot think properly. We are always in a hurry to meet the deadline. Due to this, sometimes we depend too much on AI and stop thinking, but it creates an obstacle to my personal growth."* (S-24). This comment reveals that the efficiency afforded by GenAI tools can paradoxically suppress reflective thinking.

3.5 Expectation of Institutional Support

In response to the question, *"What kind of AI-based assessment or feedback support would help you demonstrate your learning more effectively?"* students expressed a clear preference for rapid, targeted,

and incremental feedback. Participant S-7 emphasized the need for “*quick feedback on tests, tips for improvement,*” while S-16 highlighted the importance of “*appropriate feedback.*” Similarly, S-9 noted, “*Give me step-by-step feedback with a small amount of corrections at a time.*” These responses indicate students’ desire for feedback that is both manageable and continuous rather than overwhelming or delayed. Students also showed interest in integrated writing support, including grammar, vocabulary, and plagiarism detection, alongside worked examples to aid problem-solving. Additionally, they valued study-skill scaffolds such as time management tools, reminders, and guidance on evaluating information sources. As S-2 requested, “*Finding reliable sources for topic-wise information... sources that can give strong references from easily accessible websites.*” Several participants emphasized that effective feedback should reduce stress, remain relevant to assessment criteria, and support exam preparation through retrieval practice. For instance, S-28 stated, “*Give the answer that I need... will not puzzle with ideas... not relevant.*” A small subset of students, however, preferred minimal intervention, highlighting the importance of personalization controls that allow learners to choose the level of AI support they receive.

3.6 Expected GenAI Features

To better understand students’ expectations and ethical concerns regarding the use of GenAI in education, participants were asked about their preferred GenAI features and perceived risks associated with its integration in academic settings (see Table 5). Overall, findings suggest that students have already moved past using basic assistive features of GenAI and expected more support, accessibility, and data privacy from GenAI.

| Expected Configuration in GenAI Tool | Frequency (n) |
|---|------------------|
| Multilingual support | 19 |
| Voice input and output | 14 |
| Offline accessibility | 15 |
| Easy-to-use interface | 12 |
| Strong privacy and data protection | 13 |
| Handwriting recognition | 4 |
| Accessibility features (e.g., for visually or hearing-impaired users) | 15 |

Table 6. Preferred GenAI Features for English Studies Students

Note. Participants are allowed to choose as many options seem relevant

Participants' qualitative responses were collected on the same issue by asking the question, “*If your institution developed an AI-based system to support your learning style, what features would you want it to include?*” This question reveals that students envisioned an AI-based learning support system that was personalized, inclusive, interactive, and aligned with their classroom learning. One participant (S-4) expressed this clearly: “*I want AI to give me the simplest version of the text, an easy-to-follow lesson plan, and guide me with information on what is going on in the class.*” Another strong expectation concerns learning support and feedback, with several students describing GenAI as a “*private tutor*” (S-1, S-9, S-11) that provides “*regular practice activities*” (S-A5, S-20), “*reminders*” (S-16), and “*practice tests with feedback*” (S-26, S-28). Such responses highlight students’ desire for GenAI to serve as an interactive learning companion that reinforces understanding through consistent, adaptive feedback.

Students also emphasized the importance of accessibility and inclusivity, seeking multilingual options, voice input/output features, and free access to ensure equal opportunities for all learners. As one student (S-11) stated, “*I want AI to give me an answer in multiple languages... I want equal access to the facilities.*” In addition, participants emphasized the importance of developing academic skills, including grammar checking, paraphrasing, referencing, and plagiarism detection, as well as technical support features such as software guidance, cloud-based storage, and rapid access to digital materials. These preferences underline students’ expectations that GenAI should bridge both academic and technical gaps. Finally, several students recognized the importance of AI literacy and proper training, expressing a desire to “*get appropriate training on how to use AI and when to use it*” (S-4). Collectively, these findings suggest that students expect GenAI systems to be both personalized and accessible, capable of supporting cognitive, linguistic, and technical needs while ensuring that human guidance and institutional support remain integral to their learning experience.

4. Discussion

4.1 Disparity Between General Use and Assessment-Related Use of GenAI

Students mentioned several reasons for not using GenAI in examination preparation. Many expressed concerns about academic integrity and emphasized the need to demonstrate their own knowledge in exams rather than relying on GenAI-generated content. Others reported mistrust in the accuracy and reliability of GenAI outputs, as GenAI does not always provide correct or contextually

appropriate answers, particularly in discipline-specific subjects such as literature. Some students felt that GenAI responses were overly generic, confusing, or misaligned with exam requirements, while a few stated that GenAI sometimes complicates learning rather than supports it. Practical constraints also emerged, including limited access to premium versions, limited technical resources, and uncertainty about how to use GenAI effectively for assessment. Overall, our findings revealed that despite frequent general use, students remained cautious and selective in their use of GenAI in high-stakes assessment contexts.

4.2 Multidimensional Barriers to Equitable GenAI Use

Despite the optimism, students with LDs face multiple intersecting barriers when attempting to use GenAI effectively. A primary concern is digital literacy and awareness; many students admitted to a limited understanding of GenAI capabilities and how to utilize these tools productively. This gap highlights the need for targeted education and training to enhance digital competence among students with LDs. Students also reported the quality of the instruments in the university computer labs and demanded regular servicing.

Language barriers emerged as another critical issue, as most GenAI interfaces operate predominantly in English. Students with an academic background in L1 (Bangla) found these tools difficult to navigate, emphasizing the importance of linguistic accessibility in GenAI design. Economic and access inequalities further compound these challenges. In Bangladesh, internet services are expensive³. Students from lower-income backgrounds reported difficulties affording necessary devices or premium GenAI features. Purchasing the premium version of GenAI requires payment by credit card, which the majority of the population does not have and thereby exacerbating the digital divide. These barriers align with the concept of the “second-level digital divide” (Hargittai, 2002), which posits that mere access to technology does not guarantee effective or equitable use. For students with LDs, accessibility must extend beyond hardware availability to include linguistic, cognitive, and pedagogical adaptations. Addressing these multifaceted challenges is crucial to ensuring that GenAI serves as an inclusive and empowering tool for all learners.

Participants also expressed concerns about the accuracy and reliability of GenAI outputs. Reports of incorrect or confusing responses generated anxiety, especially for students already vulnerable due to their learning disabilities. Such issues highlight that access alone does not ensure effective use; the quality

³ The daily per-head income for Bangladeshis is approximately \$7.53 based on the most recent figures for fiscal year 2023-24, and the price of 1 GB of internet for 2 hours is \$0.5 (Business Post, 2023).

and dependability of GenAI tools are essential for meaningful engagement. Ethical considerations also feature prominently. Moreover, data security and privacy, academic dishonesty and over-reliance on GenAI were found to be top concerns of SSLNs. These concerns align with emerging international debates on academic integrity and AI ethics (Luckin et al., 2022; Williamson & Eynon, 2020).

Other controversies regarding incorporating GenAI in Education involves the impact on student's critical thinking skills (Larson et al., 2024). Our finding resonates with concerns raised in contemporary literature that automation of thinking tasks may limit metacognitive development and creative reasoning (Holmes et al., 2022; Selwyn, 2022; Williamson & Eynon, 2020). SSLNs often need extended processing time and scaffolded reflection, which may burden their cognitive load. This "time compression effect" (Luckin et al., 2022) may make students feel perpetually hurried, diminishing opportunities for reflection, self-regulation, and original thought. While GenAI improves functional access, it may particularly be challenging for students who benefit from slow, deliberate learning processes. With GenAI becoming ubiquitous in education, training on critical thinking skills for SSLNs should be the priority. Researchers believed that students should treat GenAI as a tool but not as the primary source of information. Therefore, educators should aim to use technology to challenge students' creative thinking, analytical thinking and self-efficacy skills (Lee & Low, 2024).

Beyond practical and ethical concerns, several students expressed a deeper anxiety about how GenAI might undermine their personal learning identity. They reported that over-reliance on AI-generated content could lead to lower marks as instructors might perceive AI-assisted work as impersonal or lacking originality. This perception highlighted a tension between support and critical thinking. While students with learning disabilities valued GenAI for simplifying content and guiding structure, they were also aware that excessive dependence would risk erasing their academic voice. Such fears echo wider debates on *authorship, creativity, and student agency* in AI-assisted learning (Selwyn, 2022; Luckin et al., 2022). This finding also suggests that inclusive AI design must balance *support* with *self-agency*, allowing users to co-create rather than merely consume content (Holmes et al., 2022). Universities, therefore, should train students and educators to use GenAI as a *scaffold* for thinking, not as a *substitute* for originality.

4.3 Implications for Inclusive GenAI Design and Institutional Policy

Students' responses helped to determine their expected interface with GenAI. They wished to have GenAI as a *personal tutor, academic coach, and technical assistant*. They envisioned GenAI systems capable of personalized, adaptive learning; enhanced feedback; multilingual accessibility; and support for

writing and referencing. These expectations are consistent with inclusive design principles (Rose & Dalton, 2009). Additionally, the preference for offline accessibility and multilingual interfaces highlights infrastructural realities in Bangladesh where internet instability and linguistic diversity shape students' digital experiences. Such expectations underlined the importance of localizing GenAI systems to the sociotechnical environment (Mhlanga, 2023). Students' expectations also extended to institutional responsibility. Structured training programs and clear ethical policies governing AI use are necessary. These findings echo global calls for AI literacy and institutional accountability to ensure equitable access (UNESCO, 2023; Selwyn, 2022). This reflects a balanced awareness of AI's potential and its pedagogical limits.

Conclusion

The study shows that GenAI assisted students with LDs in their academic activities and helped reduce stress. At the same time, participants identified several barriers that create a gap between their needs and expectations, including language constraints, limited access to technical resources and stable internet connectivity, lack of training in using GenAI, and insufficient access to relevant data. Concerns were also raised regarding digital bias and ethical issues embedded in GenAI systems. These findings highlight the need to minimize the gap between existing institutional support and students' expectations. The study offers insights into two key dimensions: current patterns of GenAI use among students with learning disabilities and potential institutional directions for more inclusive implementation. Overall, the findings suggest that students with specific learning needs (SSLNs) are pragmatic adopters of AI, actively using it to manage learning challenges while navigating ethical uncertainties and limited institutional support. Their expectations are clear: they seek ethical, inclusive, and supportive GenAI tools, alongside policies that enable confident and effective use.

From a theoretical perspective, this study contributes to the emerging discourse on inclusive AI in higher education by highlighting the gap between students' actual use of GenAI and their limited awareness of its potential to support diverse learning needs, particularly in resource-constrained contexts. Practically, the findings suggest that universities should move beyond providing access to AI tools and instead offer targeted training, clear ethical guidelines, and inclusive digital infrastructure to support responsible and effective use. However, given the exploratory nature of the study, the small sample size ($N = 28$), and the reliance on descriptive analysis, the findings should be interpreted with caution. They

are indicative rather than generalizable and point to the need for larger-scale, methodologically robust research in similar contexts.

REFERENCES

Al-Azawei, A., Serenelli, F., & Lundqvist, K. (2016). Universal Design for Learning (UDL): A content analysis of peer-reviewed journal papers from 2012 to 2015. *Journal of the Scholarship of Teaching and Learning*, 17(3), 67–81.

Alloway, T. P. (2020). *Improving working memory: Supporting students' learning*. Sage Publications.

Alshamy, A., Al-Harathi, A. S. A., & Abdullah, S. (2025). Perceptions of Generative AI Tools in Higher Education: Insights from Students and Academics at Sultan Qaboos University. *Education Sciences*, 15(4), 501. <https://doi.org/10.3390/educsci15040501>.

Arju, S. & Ho, J.CS. (2026). Towards Inclusive Higher Education: Curriculum Innovation through Optional Subject Integration for Students with Special Needs. *European Scientific Journal*. 22(38), 1. <https://doi.org/10.19044/esj.2026.v22n38p1>

Business Post. (2023, February 14). *Internet costs almost 7 times higher in Bangladesh: Report*. <https://businesspostbd.com/news/2023-02-14/internet-costs-almost-7-times-higher-in-bangladesh-report-2023-02-14>.

Burgstahler, S. (2021). *Creating inclusive learning opportunities in higher education: A universal design toolkit*. Harvard Education Press.

Courey, S. J., Tappe, P., Siker, J., & LePage, P. (2012). Improved lesson planning with Universal Design for Learning (UDL). *Teacher Education and Special Education*, 36(1), 7–27.

Chan, C.K.Y., Hu, W. (2023). Students' voices on generative AI: perceptions, benefits, and challenges in higher education. *Int J Educ Technol High Educ* 20, (43). <https://doi.org/10.1186/s41239-023-00411-8>.

Clarke, V., & Braun, V. (2017). Thematic analysis. *The journal of positive psychology*, 12(3), 297–298.

DeVellis, R. F. (2017). *Scale development: Theory and applications* (4th ed.). SAGE Publications.

Fleming, J., & Haigh, N. (2023). Student authenticity and assessment in the age of AI. *Assessment & Evaluation in Higher Education*, 48(5), 709–723.

Farinosi, M., & Melchior, C. (2025). *To adopt or to ban? Student perceptions and use of generative AI in higher education*. *Humanities and Social Sciences Communications*, 12, Article 1684. <https://doi.org/10.1057/s41599-025-05982-7>.

Florian, L., & Beaton, M. (2018). Inclusive pedagogy in action: Getting it right for every child. *International Journal of Inclusive Education*, 22(8), 870–884.

Goodfellow, I. J., Pouget-Abadie, J., Mirza, M., Xu, B., Warde-Farley, D., Ozair, S., Courville, A., & Bengio, Y. (2014). Generative adversarial nets. *Advances in Neural Information Processing Systems*, 27, 2672–2680.

Government of the People’s Republic of Bangladesh, Ministry of Education. (2010). *National Education Policy 2010*. Secondary and Higher Education Division. https://planipolis.iiep.unesco.org/sites/default/files/ressources/bangladesh_national_education_policy_2010.pdf.

Hasib M, Islam MS (2026). Correction: How University students in Bangladesh engage with ChatGPT: A qualitative study. *PLOS ONE* 21(3): e0344589. <https://doi.org/10.1371/journal.pone.0344589>

Hargittai, E. (2002). *Second-level digital divide: Differences in people’s online skills*. *First Monday*, 7(4). <https://doi.org/10.5210/fm.v7i4.942>.

Hyatt, S. E., & Owenz, M. B. (2024). Using universal design for learning and artificial intelligence to support students with disabilities. *College Teaching*, 1-8.

Holmes, W., Bialik, M., & Fadel, C. (2022). *Artificial intelligence in education: Promise and implications for teaching and learning*. Center for Curriculum Redesign.

Islam, M. A. (2025). *AI in English education: Insights from social science students at the tertiary level in Bangladesh*. <http://hdl.handle.net/10361/26825>

Julien, G. (2026). The Role of Artificial Intelligence in the Establishment of Inclusive Learning Environments: A Conceptual Synthesis. *Journal of Creative Research in English Literature & Culture*. 2(2).

Larson, B. Z., Moser, C., Caza, A., Muehlfeld, K., & Colombo, L. A. (2024). Critical thinking in the age of generative AI. *Academy of Management Learning & Education*, 23(3), 373-378.

- Lee, C. C., & Low, M. Y. H. (2024). Using genAI in education: The case for critical thinking. *Frontiers in Artificial Intelligence*, 7, 1452131.
- Leon, C., Lipuma, J., & Oviedo-Torres, X. (2025, July). Artificial intelligence in STEM education: A transdisciplinary framework for engagement and innovation. In *Frontiers in Education* (Vol. 10, p. 1619888). Frontiers.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage Publications.
- Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. B. (2022). *Intelligence unleashed: An argument for AI in education*. Pearson.
- Megbowon, F. K. (2025). Generative AI in Higher Education: Perception and Attitude of Students from a University in South Africa. *Studies in Learning and Teaching*, 6(2). <https://doi.org/10.46627/silet.v6i2.641>.
- Mhlanga, D. (2023). Open AI in higher education: Opportunities, challenges, and policy implications. *Education and Information Technologies*, 28, 14567–14587.
- Nelson, A. S., Santamaría, P. V., Javens, J. S., & Ricaurte, M. (2025). *Students' perceptions of generative artificial intelligence (GenAI) use in academic writing in English as a foreign language*. *Education Sciences*, 15(5), 611. <https://doi.org/10.3390/educsci15050611>.
- Pinto, C., Baines, E., & Bakopoulou, I. (2018). The peer relations of pupils with special educational needs in mainstream primary schools: The importance of meaningful contact and interaction with peers. *British Journal of Educational Psychology*, 88(4), 499–519. <https://doi.org/10.1111/bjep.12223>.
- Reid, G., & Peer, L. (2018). *Multidisciplinary perspectives on learning disabilities*. Routledge.
- Rose, D. H., & Dalton, B. (2009). Learning to read in the digital age. *Mind, Brain, and Education*, 3(2), 74–83.
- Saborío-Taylor, S., & Rojas-Ramírez, F. (2024). Universal design for learning and artificial intelligence in the digital era: Fostering inclusion and autonomous learning. *International Journal of Professional Development, Learners and Learning*, 62, ep2408. <https://doi.org/10.30935/ijpdll/14694>
- Selwyn, N. (2022). *Education and technology: Key issues and debates* (3rd ed.). Bloomsbury Academic.
- Smith, F., & Harvey, L. (2014). Evaluating accessibility in digital learning environments:
- Suchanek, P., & Kralova, M. (2025). *Generative artificial intelligence expectations and experiences in management education: ChatGPT use and student satisfaction*. *Journal of Innovation & Knowledge*, 10(5), Article 100781.

Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, 48(6), 1273–1296.

Tbaishat, D. M., & Elfadel, M. W. (2025). *Exploring students' perceptions of GenAI tools in higher education: A case study*. *Cogent Education*, 12(1), Article 2560613. <https://doi.org/10.1080/2331186X.2025.2560613> DOI:10.1016/j.jik.2025.100781

UNESCO. (2023). *Guidance for generative AI in education and research*. UNESCO. <https://www.unesco.org/en/articles/guidance-generative-ai-education-and-research>.

United Nations. (2006). *Convention on the Rights of Persons with Disabilities*. <https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities.html>.

Wang, X., Lund, B. D., Marengo, A., Pagano, A., Mannuru, N. R., Teel, Z. A., & Parnell, J. A. (2022). *Exploring the potential of generative artificial intelligence models in education: Applications, challenges, and future directions*. *Journal of Educational Technology Development and Exchange*, 15(1), 1–16. <https://doi.org/10.18785/jetde.1501.01>

Williamson, B., & Eynon, R. (2020). Historical threads, missing links, and future directions in AI in education. *Learning, Media and Technology*, 45(3), 223–235.

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education. *International Journal of Educational Technology in Higher Education*, 16(1), 39.

Zhou, J., & Li, F. (2024). *Artificial intelligence and the transformation of knowledge creation and learning: Opportunities and challenges for higher education*. *Computers & Education: Artificial Intelligence*, 5, 100165. <https://doi.org/10.1016/j.caeai.2023.100165>.

Appendix A

| | N | Min | Max | Mean | Std. Dev |
|--|----|-----|-----|------|----------|
| AI can support students with different learning needs in universities. | 28 | 3 | 5 | 3.68 | .819 |
| AI helps you become more efficient or manage academic stress. | 28 | 2 | 5 | 3.86 | 1.145 |
| I can explain at least one way AI impacts educational practices. | 28 | 1 | 5 | 3.71 | .9766 |
| My institution provides adequate training or support in using AI tools for academic assistance. | 28 | 1 | 5 | 3.18 | 1.124 |
| AI tools (e.g., auto-feedback systems, adaptive testing, plagiarism checkers) can help make assessments more inclusive and fairer. | 28 | 2 | 5 | 3.89 | 1.066 |
| I can identify the ethical issues that may arise when using AI tools in learning environments. | 28 | 1 | 5 | 3.36 | 1.162 |
| I understand why data privacy and security are important when using AI applications. | 28 | 2 | 5 | 4.18 | .905 |
| Universities should give more critical guidance on the ethical use of AI. | 28 | 3 | 5 | 4.39 | .629 |

Table A1. Students’ awareness, experiences, and ethical perspectives on AI in higher education

Note. *N* = 28. Min = minimum; Max = maximum; *M* = mean; *SD* = standard deviation. All items were measured on a Likert scale from 1 (strongly disagree) to 5 (strongly agree), with higher scores indicating more positive perceptions of GenAI. Values are based on valid responses only.

| Theme | Representative Quotes | Interpretation |
|--|---|--|
| Enhanced Learning & Understanding | <i>“It will assist me in understanding the hard topics clearly.” / “AI can break down a large item into small components for quicker and easier understanding.” (S-5;S-9;S-19,S-27)</i> | Students believe GenAI can make complex content more accessible by simplifying, summarizing, and providing structured explanations, thereby enhancing comprehension. |

| | | |
|---|---|---|
| Learning Support & Memory Aid | <i>“It will help me remember the points/arguments during the examination.” / “It will help make my study plan and take preparation for the examination.”(S-12,S-21,S-25,S-27)</i> | AI is viewed as a cognitive and organizational support tool that aids memory retention, exam readiness, and structured study planning. |
| Access to Resources & Efficiency | <i>“I don’t necessarily have to go through finding a book for information; I can get information from multiple sources within a shorter period.” / “It will increase my creativity and minimize dependency on printed books.”(S-2,S-4,S-21)</i> | Students value GenAI for providing quick and diverse access to information, reducing reliance on limited resources, and improving efficiency. |
| Reduced Stress & Motivation | <i>“Because it will make the task easier and learning less stressful.” / “It will increase my creativity.”(S-1,S-15,S-21,S-23)</i> | AI is expected to ease academic pressure, reduce stress, and promote motivation and creativity in learning. |
| Academic Skills Development | <i>“AI can check grammar errors and assist my writing.”(S-2,S-3,S-17,S-19,S-26,S-28)</i> | Students expect GenAI to enhance academic skills, particularly in writing and language accuracy. |
| Role of Teachers | <i>“Though in some cases AI can help me, teachers' assistance is also needed sometimes, rather than AI.”(S-8,S-10)</i> | Students see GenAI as a complement, not a replacement, for teacher guidance—highlighting the enduring importance of human support in education. |

Table A2. *How Will Your Academic Challenges Be Minimized If Your University's Curriculum Is AI-Assisted?*

| Student Profile | General GenAI Use | Use of GenAI for Taking Preparation for Assessment | Rationale (from qualitative data) |
|------------------------|--------------------------|---|---|
| S-1 | V. frequently | Occasionally | <i>“I use it for explaining concepts, but I need to prove my own knowledge in exams.”</i> |

| | | | |
|------|---------------|-----------------|---|
| S-2 | Never | Never | <i>“Good for brainstorming assignments, but I write the final answer myself.”</i> |
| S-3 | Occasionally | Never | <i>“Worried about academic integrity; don’t want to depend on it for grades.”</i> |
| S-4 | V. frequently | Occasionally | <i>“It helps me structure my revision and create practice questions.”</i> |
| S-5 | Occasionally | Never | <i>“It does not always give the right answers.”</i> |
| S-6 | Occasionally | Never | <i>“I don’t understand what it says. It makes things complicated.”</i> |
| S-7 | V. frequently | Never | <i>“It cannot give the information I exactly want or in the way I want.”</i> |
| S-8 | V. frequently | Never | <i>“I don’t find it useful for the exam.”</i> |
| S-9 | V. frequently | Occasionally | <i>“I don’t have access to the pro version, so I try to use AI, but cannot.”</i> |
| S-10 | V. frequently | Occasionally | <i>“I’m a student of literature. I need comprehensive answers. I get support from AI, but I don’t want to be guided by it.”</i> |
| S-11 | Occasionally | Very frequently | <i>“Because it will make the task easier and learning less stressful.”</i> |
| S-12 | Occasionally | Very frequently | <i>“I study only what I get from AI.”</i> |
| S-13 | Never | Occasionally | — |
| S-14 | Rarely | Occasionally | <i>“I don’t use it regularly because I don’t need it much. I only use it to check grammar.”</i> |
| S-15 | Occasionally | Rarely | <i>“It misguides me with unnecessary or concrete information. It’s just a waste of time.”</i> |
| S-16 | Occasionally | Rarely | <i>“Strong reference to the earlier works or research to generate a better idea.”</i> |
| S-17 | Occasionally | Rarely | <i>“I don’t find it that useful. It cannot solve the problem even though I give it an image.”</i> |
| S-18 | Occasionally | Occasionally | — |
| S-19 | Occasionally | Occasionally | — |
| S-20 | Occasionally | Rarely | <i>“I become confused about what help I can get from AI.”</i> |

| | | | |
|------|-----------------|---------------|---|
| S-21 | Very frequently | Occasionally | — |
| S-22 | Rarely | V. frequently | — |
| S-23 | Occasionally | Never | <i>“It doesn’t give the real information. I’m a student of literature, and I found it gives absolutely wrong info... when I wrote in the chat box to correct the data, it says, Yes, you are right and the given information was just an assumption.”</i> |
| S-24 | Very frequently | V. frequently | <i>“Minimize dependency on printed books.”</i> |
| S-25 | Occasionally | Occasionally | <i>“To get quick answers or feedback.”</i> |
| S-26 | Occasionally | V. frequently | <i>“AI can check grammar errors and assist my writing.”</i> |
| S-27 | Occasionally | Occasionally | — |
| S-28 | Rarely | Occasionally | — |

Table A3. Patterns of GenAI Use and Rationale for Assessment Preparation (Qualitative Cases)

Note. Dashes (—) indicate cases where respondents did not provide an explicit qualitative rationale. Frequency labels reflect self-reported patterns of GenAI use. Pseudonyms (S-1 to S-28) are used to ensure participant anonymity.

| Theme | Representative Quotes | Interpretation |
|---|--|---|
| Limited digital literacy/lack of awareness | <i>“Not having a sound idea about using AI”, “Lack of knowledge of how AI works”, “Confused about what help I can get from AI.”(S-26,S-28)</i> | Many students have not received adequate training; they lack clarity on what GenAI can or cannot do. |
| Access barriers (devices, internet, cost) | <i>“Some students don’t have internet or a device...”, “Paid wall barriers... a lot of people don’t have access to pay overseas”, “Need to purchase the software.”(S-1,S-10,S-11,S-27)</i> | Economic and infrastructural inequalities hinder equal access to AI. Students from disadvantaged groups are at risk of exclusion. |
| Language barriers | <i>“AI operation is not in my LI. “Some find English hard.(S-5, S-13,S-18,S-22)</i> | Non-English-speaking students struggle because most GenAI interfaces are predominantly English- |

| | | |
|--|---|---|
| | | dominant, reducing their usability in Bangladesh. |
| Data privacy and trust issues | <i>“I’m concerned about data privacy. “It is not possible to understand from where the data is accessed by AI; therefore, the allegation of plagiarism occurred.”(S-6,S-9,S-10,S19)</i> | Students are concerned about the misuse of personal data, opaque sourcing, and plagiarism risks. |
| Reliability and accuracy problems | <i>“It often gives unsatisfactory answers or wrong answers, “...not always does it give correct answers. So... if any use AI-supported data or text directly, he may make a serious blunder.”(S-4,S-18)</i> | Students perceive GenAI outputs as unreliable and error-prone, which can negatively impact grades if used uncritically. |
| Limited free versions / functional restrictions | <i>“Disruption or limit of free version”, “AI does not always support providing appropriate information if a picture or image is given”(S-17,S-18,S-20)</i> | Free-tier limits and incomplete multimodal support constrain effective use. |
| Equity concerns | <i>“Not every student gets equal access to AI.”(S-13,S-14)</i> | Reinforces digital divide — universities risk widening inequalities if access is left to individual capacity. |

Table A4. *Students’ Perceived Challenges in Using GenAI to Support Academic Learning*

| Theme | Representative Quotes | Interpretation |
|---|--|---|
| Timely, formative feedback & actionable tips | <i>“Quick feedback on tests, tips for improvement...”, “Appropriate feedback”, “Give me step-by-step feedback with a small amount of corrections at a time.”(S-7,S-16,S-19,S-25)</i> | Students want <i>fast, specific, bite-sized</i> guidance that tells them exactly what to do next (incremental, low-load corrections). |
| Writing & language support | <i>“Feedback on writing task like grammar editing...”, “Spelling, vocabulary related”, “...grammar check, plagiarism check”(S-2,S-3,S-17,S-19,S-26,S-28)</i> | Expect robust support for mechanics and academic integrity (including grammar, vocabulary, and plagiarism), integrated into feedback. |

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|--|---|--|
| Study skills & self-regulation | <i>“Study reminders, help with time management”, “Time management”</i> | Desire for metacognitive scaffolds (planning, reminders, pacing) alongside content feedback. |
| Stress reduction & wellbeing | <i>“Something that can relieve mental stress”(S-5,S-7,S-13)</i> | Feedback should be motivational, confidence-building, and not overwhelming—supporting wellbeing. |
| Problem solving with worked examples | <i>“Support in problem solving, provide lots of examples or samples.”(S-1,S-19,S-20,S-23)</i> | Preference for exemplars, step-by-step solutions, and analogy/examples to model high-quality work. |
| Research support & source quality | <i>“Finding reliable sources for topic-wise information...”, “Sources that can give strong references... from easily accessible websites.”(S-2,S-6,S-15,S-24)</i> | Students want help locating trustworthy sources and citing them correctly. |
| Memory aid & retrieval | <i>“Remind me of the points if I forget during the exam.”(S-8,S-27)</i> | Desire for recall supports—best implemented as <i>pre-exam</i> retrieval practice and cueing (not during exams). |
| Relevance & focus | <i>“Give the answer that I need... will not puzzle with ideas... not relevant.”(S-26,S-28)</i> | Feedback must be concise, on-task, and filtered to the assignment criteria. |
| Opt-out/minimal feedback | <i>“I don’t need feedback support.”(S-9)</i> | A minority prefers autonomy; therefore, the system should allow adjustable feedback intensity. |

Table A5. Kinds of AI-Based Assessment or Feedback Support that Promote Students’ Effective Learning

| Theme | Representative Student Quotes | Interpretation |
|--|---|--|
| 1. Personalized and Adaptive Learning | <i>“I want it to include features like personalized learning based on learners’ weaknesses and strengths and a quick summary of the topic.” “I want AI to give me the simplest version of the text, an easy-to-</i> | Students seek GenAI systems that adapt to individual needs, present content in a simplified format, and remain aligned with classroom instruction. |

| | | |
|--|---|---|
| | <i>follow lesson plan, and guide me with information on what is going on in the class.”(S-4,S-16,S-19)</i> | |
| 2. Enhanced Learning Support and Feedback | <i>“It will be able to give a PPT on any subject supported by oral discussion. I want it will as my private tutor.” “AI must provide regular practice activities for me.” (S-1, S-9, S-11, S-A5, S-20, S-26, S-28)</i> | AI is expected to function as a private tutor, offering practice exercises, explanatory resources, and feedback to enhance independent learning. |
| 3. Accessibility and Inclusivity | <i>“I want AI to give me an answer in multiple languages.” “I want equal access to the facilities... free access and voice input and output options.”(S-1,S-7,S16,S-24)</i> | Students highlight the importance of inclusivity and request free access, multilingual support, and voice-based interaction to reduce barriers. |
| 4. Academic Skill Development | <i>“It must have editing tools to support me with spellings, grammar, and paraphrasing.” “I want AI to give references and study support with information appropriate for academia and real life.” ”(S-2,S-3,S-17,S-19,S-26,S-28)</i> | Students expect GenAI to enhance their academic skills, particularly in writing, paraphrasing, referencing, and plagiarism detection. |
| 5. Technical and Resource Support | <i>“Able to guide any software-related problems. Able to give online access to study materials in a short time.” “Strong reference to the earlier works or research to generate a better idea. It must have a strong cloud.”(S-25,S-27)</i> | Students envision GenAI as a technical assistant, capable of solving software issues, storing resources, and providing quick access to digital materials. |
| 6. Student Agency and Training | <i>“I want to get appropriate training on how to use AI and when to use it.” “I want AI to give me the right answer when I ask it any question.”(S-4,S-11,S-19,S-23)</i> | Students recognize the need for GenAI literacy and emphasize the importance of reliable, accurate system responses. |

Table A6. Students’ Expectations of AI-Based Learning Support Systems