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Gender and academic-level variations in perceived effects of artificial intelligence on English majors' critical thinking

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ABSTRACT

Integrating artificial intelligence (AI) tools in English studies raises significant concerns about whether it would diminish critical thinking and cognitive skills. The research aims to analyze how English majors in Bangladesh perceive the impact of AI tools on their critical thinking skills with regard to gender and academic levels. A mixed-method approach was employed through a purposive sampling technique. Constructivist learning and the technology acceptance model (TAM) theories were used in the study. The research design employed two instruments: a survey administered to 245 students from the Bachelor of Arts (BA) and Master of Arts (MA) programs, and six in-depth interviews. The study analyzed quantitative data using descriptive statistics and an independent-samples t-test and qualitative interview data using thematic analysis. Key quantitative findings suggested that students widely recognized the usefulness of these tools across multiple academic areas, such as structuring writing, generating ideas, and goal setting (mean=4.31), indicating positive responses across all items. The t-test findings did not show statistically significant differences in gender or academic level; however, small effect sizes slightly favored male and MA students across all items. Additionally, AI tools helped students cope with cognitive stress by helping them meet deadlines. However, the interviewed participants expressed concern about ethical issues, including the potential for AI to plagiarize. Therefore, this study argues for a balanced approach to AI in education, highlighting its advantages while acknowledging its potential drawbacks and mitigating the challenges before implementation.

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1. INTRODUCTION

The implementation of artificial intelligence (AI) tools in higher education institutions modifies student learning outcomes while simultaneously prompting assessment of their influence on critical thinking, particularly within English studies. The adoption of AI tools, including ChatGPT, Gemini, QuillBot, and Grammarly, in educational institutions has undergone a rapid rise [1]. AI tools demonstrate the power to redefine educational practices and shape the way education is delivered and how students learn. AI tools continue to expand their presence in educational assistance, which students use to complete tasks and develop writing skills, receiving immediate feedback, especially in English studies. However, as these tools become more integrated into the academic environment, concerns have grown regarding the impact of AI on essential cognitive processes such as critical thinking skills. As English major students are expected to possess better

analytical abilities, these tools have the potential to impact them [2]. AI requires responsible use in educational settings because it should complement traditional teaching rather than replace it [2]. Educational institutions utilize AI tools, particularly for immediate feedback; however, research remains limited about their impact on critical thinking skills among Bangladeshi English major students throughout their course activities [3].

Students in the English major view AI technology as playing a crucial role in developing their critical thinking skills. The technology supports individualized learning experiences that are consistent with constructivist theory [4]. Students indicate that AI-based platforms increase interaction with texts through the analysis, evaluation, and synthesis of information. These processes are fundamental elements of critical thinking [5], [6]. This intellectual activity resonates with Piaget's active construction theory of knowledge, where AI tools serve as scaffolds for in-depth literary analysis [7]. The technology acceptance model (TAM) can explain student adoption of activities. Once AI tools are determined to be useful for fine-tuning arguments or are easy to use in writing essays, their usage increases significantly [8].

However, some students expressed concerns stating that AI-generated ideas can substitute for original thinking unless managed carefully [9]. As demonstrated by a given study, although ChatGPT simplified idea generation, students stressed the need to find a balance between AI support and personal evaluation [10]. Pedagogically, AI programs such as the adaptive critical thinking enhancement system (ACTES) are promising in that they turn critical thinking exercises into game-like modules that students find engaging and challenging [11]. Still, concerns persist regarding issues of academic honesty, as well as the potential for AI to normalize interpretation rather than encourage individual opinion [12]. For English majors, best practice involves the systematic incorporation of AI intended to enhance, rather than replace, critical interaction with textual content [13].

English majors need to use AI tools such as ChatGPT, Gemini, QuillBot, and Grammarly cautiously, as these tools either enable or limit the acquisition of essential academic skills in their coursework, which includes complex reading, discussions, and writing assignments [14]. The absence of empirical studies investigating English major students' perceptions of AI tools stands as a key problem, as these tools impact critical thinking. Scientific analysis in other domains indicates that overdependence on AI can decrease deep cognitive activity, as students rely heavily on technology for solutions and evaluations [15]. The need to rely on AI tools would negatively impact both the development of essential academic skills and the independence of thought required for English major programs.

The study of AI tools on the critical thinking skills of English major students requires a detailed evaluation to prevent unintended consequences that may lead to poor educational outcomes. The excessive use of AI tools has the potential to cause students to overlook a deep understanding of course material, as they begin to prioritize automation over self-directed thinking and critical reflection [7]. This could result in a decline in critical thinking abilities, which is a concern for students planning to enter professions that require analytical reasoning, such as education, literature, and communication, since critical thinking skills are essential for such careers. These current trends may have the potential to permanently affect the quality of English studies education, which can ultimately impact student work readiness [16]. Moreover, without a comprehensive understanding of the effects of AI tools, academic institutions may struggle to integrate these tools in a way that maximizes their benefits while minimizing potential harm.

Three groups affected by this issue are English major students, their teachers, and institutions. The use of AI tools directly affects the critical thinking abilities of English major students. Academic institutions must assess the extent to which AI tools support their educational objectives and foster essential student skills, particularly in English, where critical and independent thinking are crucial for success. The research focuses on how English major students in higher education view AI tools, including ChatGPT, Gemini, QuillBot, and Grammarly, and their impact on critical thinking abilities over the past two academic years. The research analyzed how students from English-related courses perceive the implementations of AI tools within their writing tasks, research activities, and overall academic support. Student opinions were studied to understand the ways AI tools influenced their ability to work with class material while developing academic competencies. The research focused on English majors because its primary goal was to identify specific barriers affecting their transition to AI-enhanced learning environments.

Therefore, the perceived impact of AI tools, including ChatGPT, Gemini, QuillBot, and Grammarly, warrants a thorough examination of the learning experiences of Bangladeshi English major students. The research investigated whether these tools assist or disrupt critical thinking and methodical approaches to resolving these issues. This research aims to develop pedagogical strategies for integrating AI curricula by enhancing the understanding of how AI tools impact English students' critical thinking, enabling them to improve academically. AI tools require appropriate implementation, which should motivate student independence, classroom engagement, and support educational objectives to enhance higher education success rates. The study is guided by the following research question: how do English major students perceive the effects of AI tools on their critical thinking skills with regard to gender and academic level?

2. METHOD

2.1. Research design

The study employed a convergent parallel mixed research design, which simultaneously gathered and analyzed both quantitative and qualitative data [17]. The interviews provided contextually detailed perspectives, while the survey yielded results with broad, universal applications.

2.2. Population and sampling

The study employed 245 undergraduate and graduate students from English departments across four private universities in Bangladesh [18]. To ensure equitable representation across universities and to capture a diverse range of responses, the researchers selected students through a purposive sampling technique. The four universities were purposively sampled as key, information-rich sites for observing AI use. A key bias is limited generalizability to dissimilar contexts. The researchers handpicked six students from survey participants for the interview process, as the participants demonstrated diverse levels of AI tool usage with different academic performances and varying attitudes toward AI. This selection process enhances the qualitative results because it ensures that interview data contains different perspectives. The demographic information is presented in Table 1.

Table 1 shows the demographic characteristics of the 245 participants in the study. Women comprised 72.2% of the total participants, while the remaining 27.8% consisted of men. A majority of 80% of participants were studying for their Bachelor of Arts (BA) in English, while the remaining participants were enrolled in a Master of Arts (MA) in English program (20%). Regarding AI tool usage, 40% reported using AI for more than one year, 31% for two years or more, and 29% for less than one year. These demographic characteristics were based on the six participants who took part in interviews to complement the survey data. The interviewees were selected through purposive sampling. The respondents consisted of four females and two males. Four of them were enrolled in a BA program in English, and the remaining two were from the MA program in English.

Table 1. Demographic characteristics of participants (N=245)

Category		Count	Percentage (%)
Gender	Male	68	27.8
	Female	177	72.2
Education level	BA in English	196	80.0
	MA in English	49	20.0
AI usage duration	Less than one year	71	29.0
	More than one year	98	40.0
	Two years or more	76	31.0

2.3. Instrument development and validation

2.3.1. Survey questionnaire

The survey questionnaire items were derived from past studies and were adapted adequately for the study process [19], [20]. The items underwent a careful selection process to meet the study's objectives. The research instrument consisted of the main component, including critical thinking skills. Each part of the study contained Likert-scale items, ranging from 1 (strongly disagree) to 5 (strongly agree), which measured student perceptions. For instance, "AI tools encourage me to question assumptions and explore alternative perspectives" was one item.

The survey questionnaire was adapted from past literature [2], [3], [5]. Expert opinions are obtained from two experts in educational technology and AI in education who teach at the University of Liberal Arts Bangladesh and Illinois State University, respectively, Al Mahmud Rumman and Rashed Mahmud, to validate the research. The experts evaluated the questionnaire to confirm it was comprehensive and relevant. The survey items were slightly enhanced through modifications suggested by their evaluators. Thirty students participated in a pilot study of the survey to test its validity and reliability measures. Cronbach's alpha was computed for every segment, and the study results indicated strong internal coherence, with values exceeding the 0.70 cutoff for each segment [21]. To ensure thematic reliability, intercoder agreement was established. Two researchers independently coded a subset of transcripts, achieving a Cohen's Kappa of 0.82 after a consensus discussion.

2.3.2. Interview protocol

The interview protocol was designed and modified based on the studies to address the research questions of this study [19]–[22]. The open-ended questions in the protocol aimed to understand students' perspectives on the impact of AI tools on their critical thinking skills. One question in the protocol asked

participants, “In what ways do you think AI tools have helped you analyze complex ideas or topics in your English courses?” Two experts on educational technology and qualitative research evaluated the interview protocol to verify its reliability. Expert reviews enabled the improvement of questions, establishing their clarity and suitability for gathering detailed responses. Questions were modified based on expert opinions. A student participated in a pilot test as part of the process evaluation to identify structural problems, which led to essential modifications.

2.4. Data collection process

The survey questionnaire, created on Google Forms, aimed to answer the research question. The survey focused on how students of different academic levels and genders perceive the usefulness of AI tools in developing their critical thinking skills. Each part of the assessment included Likert-scale questions that utilized a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The survey was pilot-tested with 30 students to assess its reliability, and their feedback led to improvements. The researcher established internal consistency of the scales through Cronbach’s alpha calculation, with a threshold of ≥0.70 being acceptable [21]. The research conducted online interviews for more in-depth discussions. Each interview session spanned between 32 and 51 minutes. A student was pilot tested to validate the effectiveness and clarity of the questions. Permission was taken from the survey respondents and interview participants before data collection. They were assured about the anonymity of the collected data.

2.5. Data analysis

A combination of quantitative and qualitative research data was utilized to analyze the collected data. The researcher calculated descriptive statistics for the entire sample to determine students’ views on the impact of AI on their critical thinking abilities. This approach provided generalized information about standard public perceptions of AI tools. The assessment of Likert-scale items, “AI tools encourage me to question assumptions and explore alternative perspectives,” included mean and standard deviation calculations.

Independent sample t-tests were used to analyze the differences that emerged from gender variations and educational levels. Testing was conducted to compare male and female opinions on the improvement in critical thinking abilities between groups. Tests were conducted between BA students and MA students to determine whether AI tools benefited graduate students more than undergraduates. Reports indicate that researchers used effect sizes, including Cohen’s d, to demonstrate the worth of these variations. Student perceptions became clearer through the qualitative interview data. A thematic analysis was conducted on the interview transcripts to examine participants’ perceptions of the impact of AI tools on their critical thinking skills [23]. To validate and enhance the findings, triangulation involved comparing the survey results with the topics discussed in the interviews.

3. RESULTS AND DISCUSSION

3.1. Descriptive statistics for the impact of AI tools on critical thinking

Table 2 presents descriptive statistics that analyze students’ perceptions of how AI tools influence critical thinking skills across nine key dimensions. The data consistently reveal positive evaluations, with mean scores ranging from 4.14 to 4.33 on a 5-point Likert scale, indicating strong agreement about the benefits of AI for conceptual clarification (the highest-rated item at 4.33) and information recall. While all dimensions received favorable ratings, persistence in problem-solving skills showed the lowest mean score (4.14), which suggests some reservations about the role of AI in developing tenacity. The standard deviations between 0.76 and 0.86 predominantly demonstrate relatively homogeneous responses, except for concerns about overreliance (σ=0.89), which exhibited greater response variability. This pattern suggests consensus regarding the immediate utility of AI for learning support, but more divergent views about its potential long-term cognitive impacts. The findings demonstrate both the perceived value of AI as an educational support and highlight important areas for further investigation regarding its impact on the development of independent critical thinking. The tight clustering of most scores indicates robust agreement about the benefits of AI. At the same time, the outlier in response variation for overreliance concerns highlights a significant area of ongoing debate in technology-enhanced learning.

3.2. Gender differences in perceived critical thinking skills

Table 3 shows the independent samples analysis which revealed no statistically significant gender differences in the perceptions of English major students regarding the impact of AI tools on critical thinking skills (all $p>0.05$). Male students (n=68) demonstrated marginally higher mean scores across all nine perceived critical thinking (PCT) items compared to female students (n=177). However, these differences

were negligible in magnitude (Cohen's d range =0.07-0.13). The most pronounced difference emerged for PCT1 (analyzing complex ideas), where males (M=4.31, SD=0.78) scored slightly higher than females (M=4.21, SD=0.81), t(98)=1.02, p=0.310, d=0.13. Similarly, for PCT2 (clarifying concepts), males averaged 4.38 (SD=0.75) versus females' 4.31 (SD=0.76), t(98)=0.76, p=0.448. The remaining items showed even smaller disparities, with effect sizes below 0.10 (all p>0.49). Notably, both genders maintained consistently positive evaluations throughout, with all means exceeding 4.10 on the 5-point scale. This indicates shared recognition of the benefits of using AI regardless of gender.

Table 2. Descriptive statistics for the impact of AI tools on critical thinking

Item	Full item	Mean (μ)	SD (σ)
PCT1	AI tools help me to analyze complex ideas more effectively.	4.24	0.80
PCT2	AI tools serve as a helpful tool for clarifying concepts I find confusing.	4.33	0.76
PCT3	AI tools help me accurately recall information I have encountered earlier.	4.25	0.78
PCT4	AI tools help me recognize and understand the key concepts in my studies.	4.28	0.77
PCT5	I can confidently transfer the insights gained from AI tools to practical, real-world contexts.	4.19	0.83
PCT6	Using AI tools, I am persistent in solving challenging problems.	4.14	0.86
PCT7	I frequently reflect on my learning and any misunderstandings I may have had when using AI tools.	4.16	0.85
PCT8	AI tools encourage me to question assumptions and explore alternative perspectives.	4.26	0.82
PCT9	Overreliance on AI may hinder my ability to think critically without assistance.	4.17	0.89

Table 3. Independent samples t-test results for gender differences

Item	Full Item	Male M (SD)	Female M (SD)	t(df)	p	Cohen's d [95% CI]
PCT1	AI tools help me analyze complex ideas more effectively	4.31 (0.78)	4.21 (0.81)	1.02(98)	0.310	0.13 [-0.12, 0.38]
PCT2	AI tools serve as helpful tools for clarifying confusing concepts	4.38 (0.75)	4.31 (0.76)	0.76(98)	0.448	0.09 [-0.16, 0.34]
PCT3	AI tools help me accurately recall previously encountered information	4.29 (0.79)	4.23 (0.78)	0.62(98)	0.536	0.08 [-0.17, 0.33]
PCT4	AI tools help me recognize and understand key study concepts	4.33 (0.76)	4.26 (0.77)	0.76(98)	0.450	0.09 [-0.16, 0.34]
PCT5	I can confidently transfer insights from AI tools to real-world contexts	4.24 (0.84)	4.17 (0.83)	0.67(98)	0.502	0.08 [-0.17, 0.33]
PCT6	Using AI tools makes me persistent in solving challenging problems	4.18 (0.87)	4.12 (0.86)	0.56(98)	0.576	0.07 [-0.18, 0.32]
PCT7	I frequently reflect on learning when using AI tools	4.20 (0.86)	4.14 (0.85)	0.56(98)	0.577	0.07 [-0.18, 0.32]
PCT8	AI tools encourage me to question assumptions and explore alternatives	4.31 (0.82)	4.24 (0.82)	0.69(98)	0.492	0.09 [-0.16, 0.34]
PCT9	Overreliance on AI may hinder my unaided critical thinking	4.22 (0.89)	4.15 (0.89)	0.64(98)	0.525	0.08 [-0.17, 0.33]

3.3. Academic-level variations in perceptions

In Table 4, a comparative analysis between BA (n=196) and MA (n=49) students showed a consistent and non-significant trend favoring graduate students across all PCT items (all p>0.17). The most substantial difference appeared for PCT8 (questioning assumptions), where MA students (M=4.37, SD=0.78) scored higher than BA students (M=4.23, SD=0.83), t(98)=-1.36, p=0.175, d=-0.17. Similar patterns emerged for PCT2 (concept clarification; BA: M=4.31, MA: M=4.42, t=-1.18, p=0.239) and PCT5 (real world application; BA: M=4.17, MA: M=4.28, t=-1.05, p=0.295). Effect sizes ranged from d=-0.12 to -0.17, suggesting small but consistent benefits for graduate students. Notably, both groups showed strong agreement about the positive impact of AI, with all means remaining above 4.10. Although not statistically significant, the pattern of higher MA ratings across all dimensions may indicate a more advanced engagement of graduate students with critical thinking tasks in their coursework.

3.4. Findings from interviews

3.4.1. AI as a supportive tool for ideation and refinement

The perceived impact of AI on critical thinking skills among the interviewees revealed a mix of positive and negative responses. This showed both benefits and concerns regarding its influence. Firstly, interviewee-1, a female BA student with more than a year of AI experience, shared:

> "*Before using AI, I (would) stress about coming up with a creative solution for an assignment, but now knowing that AI can provide feedback and suggestions, I find my workload (has) lessened. It does not mean I just take ideas from AI. Rather, I present my ideas and ask for feedback, [and] it helps me refine them.*"

This perspective suggests that while AI can reduce pressure, students still value their critical thinking and use AI as a support tool rather than a replacement. Interviewee-3, a male BA student, shared a similar perspective:

> "*I integrate suggestions from AI with my ideas so the final product is a mix of both. The tool(s) help me in generating ideas, and allow complete creative control of the final work.*"

This demonstrates that students implement AI as a supporting tool, rather than relying on it for complete work completion.

There exist multiple concerns regarding how AI tools influence both creative processes and artistic creative expression. Interviewee-5, a female BA student, said:

> "*I'm an artist, and AI make(s) me feel demotivated to paint. The ability for someone to produce duplicate work (using) AI tools make(s) me feel demotivated*."

The statement highlights the discontent that students experience because modern AI tools have reached a level where they can create artwork identical to that of human artists.

Table 4. Independent samples t-test results for education level differences

Item	Full item	BA M (SD)	MA M (SD)	t(df)	p	Cohen's d [95% CI]
PCT1	AI tools help me analyze complex ideas more effectively	4.22 (0.81)	4.34 (0.75)	-1.26(98)	0.209	-0.16 [-0.41, 0.09]
PCT2	AI tools serve as helpful tools for clarifying confusing concepts	4.31 (0.77)	4.42 (0.72)	-1.18(98)	0.239	-0.15 [-0.40, 0.10]
PCT3	AI tools help me accurately recall previously encountered information	4.23 (0.79)	4.32 (0.75)	-0.93(98)	0.353	-0.12 [-0.37, 0.13]
PCT4	AI tools help me recognize and understand key study concepts	4.26 (0.78)	4.37 (0.73)	-1.16(98)	0.247	-0.15 [-0.40, 0.10]
PCT5	I can confidently transfer insights from AI tools to real-world contexts	4.17 (0.84)	4.28 (0.79)	-1.05(98)	0.295	-0.14 [-0.39, 0.11]
PCT6	Using AI tools makes me persistent in solving challenging problems	4.12 (0.87)	4.23 (0.83)	-1.03(98)	0.305	-0.13 [-0.38, 0.12]
PCT7	I frequently reflect on learning when using AI tools	4.13 (0.86)	4.25 (0.82)	-1.12(98)	0.264	-0.14 [-0.39, 0.11]
PCT8	AI tools encourage me to question assumptions and explore alternatives	4.23 (0.83)	4.37 (0.78)	-1.36(98)	0.175	-0.17 [-0.42, 0.08]
PCT9	Overreliance on AI may hinder my unaided critical thinking	4.15 (0.90)	4.26 (0.85)	-1.01(98)	0.314	-0.13 [-0.38, 0.12]

3.4.2. The limitations of AI for complex critical thinking

On the other hand, interviewee-4, a female MA student, expressed a contrasting idea:

> "*I use AI tools (to) reduce the workload. For instance, I ask AI tools to give feedback on my essays. I do not think AI can help with critical thinking because its ideas (are) too generic. Instead of asking AI tools to provide ideas, I prefer (to) brainstorm.*"

The ethical use of AI tools is a growing concern. According to interviewee-2, a male BA student:

> "*AI helps (me) create innovative ideas, which I value, but I am worried about ethical AI implementation. My concern remains about the benefits of AI usage, but we should also be aware of the ethical implications of using AI. The boundary between AI usage for creative output and total dependency stands precisely between these two applications. Over-relying on AI requires people to establish a proper balance between AI assistance and human responsibility*."

According to interviewee-6, a female MA student:

> "*Students become overdependent on using AI. We enjoy AI support; however, I am concerned about human laziness. And this is increase(d) because of this technology support. People have lost their brain working ability, which presents (a) serious threat (to) future implications.*"

Furthermore, this idea addresses the future scenario of decreased critical thinking skills because of overreliance on AI. Although AI offers benefits such as organizing ideas and reducing stress, people remain uncertain about its impact on creativity, dependency issues, and ethical practices. Students need to develop skills for combining AI support in their work with their own independent creative thinking abilities.

3.5. Discussion

The comprehensive analysis of English majors' perceptions regarding the impact of AI tools on their critical thinking skills yields several significant insights that both confirm and extend current understanding of technology integration in the humanities discipline. When analyzed holistically, the results reveal important patterns about how different student groups engage with AI for literary analysis and critical inquiry. The complete absence of meaningful gender differences across all nine critical thinking dimensions ($p>0.05$ for all comparisons, with effect sizes ranging from $d=0.07$ to 0.13) presents a particularly noteworthy finding that contrasts with much of the existing literature on technology adoption in education. While previous studies in science, technology, engineering, and mathematics (STEM) disciplines have frequently identified gender gaps in students' engagement with educational technologies, the results of this study suggest English departments may benefit from more uniform adoption patterns [24]. This disciplinary distinction could stem from several factors: the interpretive rather than technical nature of literary AI tools, the collaborative traditions of humanities pedagogy, or the different ways male and female students approach textual analysis when aided by technology. The uniformly positive evaluations from both genders (all means >4.1/5) indicate that AI tools are perceived as equally valuable for developing the core critical thinking skills essential to literary studies, regardless of gender identity.

When examining academic level differences, the consistent trend of graduate students rating the benefits of AI as slightly higher than undergraduates, although not statistically significant, offers important qualifications to existing models of technology integration across educational stages. Prior research has established that advanced students typically demonstrate greater sophistication in using digital tools for complex tasks, and the findings of this study align with this pattern [25]. However, the specific nature of the observed differences provides novel insights for English studies. The most pronounced gap appeared in students' perceptions of AI's capacity to support questioning assumptions and exploring alternative perspectives (PCT8), where graduate students ($M=4.37$) rated the value of technology notably higher than undergraduates ($M=4.23$). This suggests that the more theoretically sophisticated work characteristic of MA programs may benefit disproportionately from the capacity of AI to surface competing interpretations and challenge established readings, a finding with important implications for curriculum design.

The uniformly positive evaluations across all demographic groups (with no mean scores below 4.1 on the 5-point scale) represent perhaps the most significant contribution to ongoing debates about the role of AI in the humanities discipline. Contrary to concerns raised by some humanists about AI tools diminishing critical thinking, the results of this study indicate that English majors perceive AI tools as enhancing, rather than replacing, human interpretation [2], [10]. Even the item assessing concerns about overreliance (PCT9) maintained relatively high scores ($M>4.15$ across groups). This suggests the students recognize the value of AI while remaining appropriately cautious about its limitations. This balanced perspective is particularly encouraging for literature education, where critical thinking involves nuanced interpretation that students believe AI supports without compromising independent analysis. This is also supported by a past study [10].

Both quantitative and qualitative data provide a comparable assessment of English majors' perceptions of the influence of AI on their critical thinking abilities. However, some contradictions can be seen in the data. All survey participants gave high scores to AI tools, indicating positive outcomes (above 4.1 out of 5) without any exceptional differences across different gender or student level groups. Students mostly recognize that using AI enables them to think more critically. Several interviewees discussed how AI affects their learning routines and motivational levels. The interviewees explained how AI tools assist drafting and editing, but students may use them to replace critical thinking tasks by depending heavily on AI-generated content. Interviewee-6 pointed out that students face a risk of impaired deep-thinking skills when AI is used excessively, as it often delivers quick responses. Students are concerned that the improper use of AI may negatively impact human creativity, potentially diminishing original thinking over time [26]–[28].

Several novel contributions are presented in this study, as it is situated within the broader literature on educational technology. First, the disciplinary specificity of the findings, particularly the gender-neutral adoption patterns, suggests that humanities teachers may need different implementation strategies than their STEM counterparts. Second, the identified academic-level trends show previously underexplored opportunities for using AI to support advanced literary theory and criticism. Third, the robust positive perceptions across demographics provide empirical counterevidence to common skepticism about AI in the humanities discipline. These outcomes reveal important implications for both pedagogy and future research. For teaching practice, they suggest department-wide AI integration can proceed without special

accommodations for gender differences. However, instructors may want to develop targeted approaches to help undergraduates maximize the potential of AI for advanced critical thinking tasks.

This research, based on constructivist learning theory and the TAM demonstrates that English majors utilize AI tools to enhance their knowledge and critical thinking. It asserts how perceived usefulness drives adoption and offers insights into students' learning behaviors, guiding future educational practices and AI integration in curricula [29]–[31]. Based on the discussion, this study proposes the following framework, as shown in Figure 1, for AI integration for English major students.

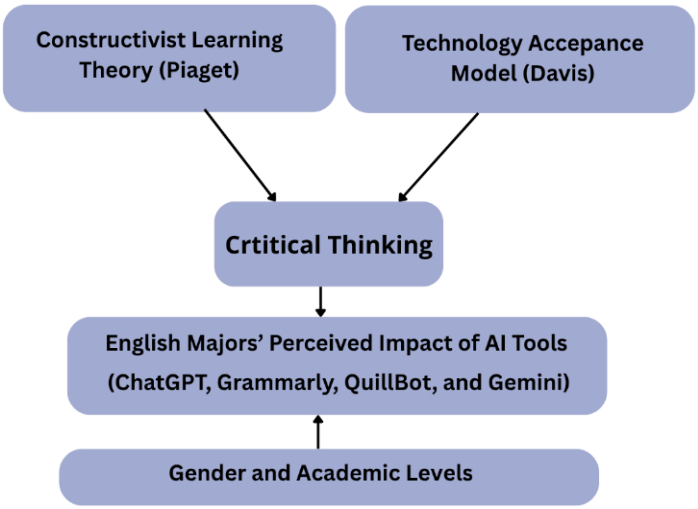

Figure 1. Proposed framework

4. CONCLUSION

The analysis examined the perceptions of Bangladeshi English major students regarding the effects of AI tools on their critical thinking skills. Students view AI tools favorably for their role in understanding complex material, organizational help, and enhancing writing. However, they express concern about creative decline and diminished authentic learning due to excessive use of these tools. A similar level of AI influence was detected among both male and female students, as well as those studying at different academic levels, in the area of English. The research expands existing AI education studies, particularly in humanities subjects, because the humanities remain understudied in this area. The research examines both conventional views on technological acceptance and offers valuable insights into the implementation of AI tools in university learning settings. Research results demonstrate the necessity for purpose-built educational methods that utilize AI as a thinking assistant, rather than making the system autonomous. Both teachers and students should be trained to use AI tools properly and understand their ethical use.

The sample limits generalizability to public universities and other fields, as the focus is only on English majors from selected private universities. Moreover, respondents' prior digital literacy was not assessed. This research emphasizes the need for further longitudinal studies or cross-national comparisons of AI implementation in higher education, particularly in the field of English, which requires creative and engaging teaching methods. This study lays the groundwork for long-term academic development research on AI, providing suggestions to enhance the implementation of educational technology and improve student learning outcomes.

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C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

CONFLICT OF INTEREST STATEMENT

The authors state no conflict of interest.

INFORMED CONSENT

We have obtained informed consent from all individuals included in this study.

ETHICAL APPROVAL

The research is being conducted in accordance with strict ethical guidelines, including obtaining informed consent with complete information about the study's purpose and the participant's right to withdraw.

DATA AVAILABILITY

The data that support the findings of this study are available on request from the corresponding author, [MMH]. The data, which contains information that could compromise the privacy of research participants, is not publicly available due to certain restrictions.

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