Learning with ChatGPT: Awareness, Use and Ethical Readiness among Vietnamese High School Students

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***Abstract*—This study investigates Vietnamese high school students' perceptions and use of ChatGPT as a generative Artificial Intelligence (AI) learning tool. Based on a survey of 559 students from Quang Tri and Thua Thien Hue provinces, it offers early empirical insights into AI adoption in Vietnam's K–12 education. Awareness is high (88%), with over 80% using ChatGPT for learning tasks like writing, information search and language practice. Students valued its efficiency, comprehension support, and confidence gains but noted risks of misinformation, dependence, and reduced creativity. Logistic regression shows adoption influenced by grade, school type, social media, and perceived benefits, while perceived risk lowers use. Findings reveal balanced enthusiasm and ethical awareness, aligning with global trends. The study calls for AI literacy frameworks emphasizing critical thinking, ethics and teacher guidance, contributing to global discussions on responsible AI use in education.**

***Keywords*—ChatGPT, generative Artificial Intelligence (AI), secondary education, AI literacy, Vietnam**

I. Introduction

The emergence of generative Artificial Intelligence (AI) tools such as ChatGPT has rapidly transformed the global education landscape. Since its release by OpenAI, ChatGPT has been widely adopted across schools and universities as a tool for information retrieval, writing assistance, and interactive learning [1, 2]. Generative AI models, powered by Large Language Models (LLMs), are now capable of producing essays, explanations, and translations with near-human fluency, reshaping how students access, process and communicate knowledge [3, 4]. Scholars have described these technologies as both transformative and disruptive introducing new pathways for personalized learning while simultaneously challenging established pedagogical and ethical norms [5, 6]. In particular, the ability of ChatGPT to simulate dialogue and generate customized responses positions it as a potentially powerful educational partner, capable of supporting students' inquiry-based and self-directed learning [7]. Yet this potential also invites scrutiny: concerns have emerged over misinformation, overreliance and the erosion of academic integrity in AI-assisted learning [8, 9]. These tensions highlight the need to understand not only what generative AI can do for education, but how learners themselves interpret and adapt to its presence in their everyday studies.

Despite growing global interest in ChatGPT's educational impact, there remains a striking lack of empirical research on how high school students especially those in developing countries perceive and use such technologies. Much of the current scholarship has focused on higher education contexts, examining university students' acceptance and pedagogical experiences with AI [10, 11]. In contrast, K–12 students, who represent the first generation to encounter AI as an integrated part of schooling, have received comparatively little research attention [12, 13]. This gap is particularly relevant in Vietnam, where digital transformation policies are advancing rapidly, yet formal guidance on AI use in schools remains limited. While Vietnamese studies have explored ChatGPT in English language learning [11] and teacher ethics [14], there is almost no data on secondary students' experiences. As the adoption of generative AI outpaces educational policy, schools risk encountering a widening gap between students' informal experimentation with tools like ChatGPT and institutional readiness to guide such engagement responsibly. The significance of this study lies in its potential to fill this empirical void by documenting how Vietnamese high school students are already using, perceiving and evaluating ChatGPT in practice. Understanding these behaviors is essential for developing AI literacy programs that emphasize ethical reasoning, digital responsibility, and critical thinking [2, 5]. Moreover, insights from this context can contribute to global debates about how education systems in the Global South navigate the promises and perils of emerging technologies in conditions of unequal access and regulatory uncertainty [1, 3].

This study aims to explore Vietnamese high school students' perceptions, usage behaviors, and policy expectations regarding ChatGPT as a generative AI learning tool. Drawing on a quantitative survey of 559 students from Quang Tri and Thua Thien Hue provinces, the study provides one of the earliest empirical portraits of generative AI engagement within Vietnam's general education system. Specifically, it examines four interrelated dimensions: (1) students' awareness of ChatGPT and sources of information, (2) their frequency and purposes of use in learning activities, (3) perceived learning benefits and perceived risks associated with ChatGPT use, and (4) students' expectations for institutional or governmental guidance and regulation. In addition, the study investigates how individual and contextual characteristics—such as gender, grade level, school type, awareness channels, and perceived value judgments—are associated with students' likelihood of using ChatGPT for learning.

These aims are guided by two overarching research questions:

- How do Vietnamese high school students perceive and utilize ChatGPT in their learning activities?
- What individual and contextual factors predict their likelihood of adopting ChatGPT as a learning tool?

To align the analytic approach with Technology Acceptance Model–informed adoption research and emerging AI literacy concerns, the study further examines a

set of theoretically grounded propositions regarding actual ChatGPT use for learning (Yes/No). These propositions do not constitute a full causal model but serve to structure the examination of associations tested through multivariable analysis:

P1 (Perceived learning benefits): Students reporting higher perceived learning benefits are more likely to use ChatGPT for learning.

P2 (Perceived risks): Students reporting higher perceived risks are less likely to use ChatGPT for learning.

P3 (Grade level): Students in higher grade levels are more likely to use ChatGPT, reflecting increased academic demands and exam-oriented study practices.

P4 (School type): Students enrolled in specialized schools are more likely to use ChatGPT, reflecting stronger academic competition and access to digital learning resources.

P5 (Awareness channel): Awareness of ChatGPT through social media is positively associated with ChatGPT use, reflecting informal diffusion and peer-driven norms.

P6 (Gender, exploratory): Gender is examined as an exploratory predictor of ChatGPT use, given mixed evidence in prior research and potential differences in technology self-efficacy and experimentation opportunities.

These propositions are tested using binary logistic regression. The dependent variable is students' use of ChatGPT for learning (Yes/No). The independent variables include gender, grade level, school type, awareness via social media, perceived learning benefits, and perceived risks. By integrating descriptive analyses with predictor-based modeling, the study extends existing research on technology acceptance and AI literacy into the underexplored K–12 sector, offering empirically grounded insights for educators and policymakers. Ultimately, the findings aim to inform national strategies for responsible AI integration that balance innovation, ethical awareness, and educational equity within Vietnam's ongoing digital transformation.

II. Literature Review

A. Generative AI in Education

The introduction of Generative Artificial Intelligence (GenAI) into educational contexts has marked a turning point in how knowledge is produced, mediated, and consumed. Unlike earlier forms of educational technology that primarily supported information retrieval or automated grading, GenAI tools such as ChatGPT use Large Language Models (LLMs) to generate human-like responses, explanations, and creative outputs in real time. These models enable students to interact through conversational prompts, simulate dialogue-based learning, and receive instant, personalized feedback [1, 2]. As Mittal *et al*. (2024) [1] emphasize, this adaptive capability allows GenAI systems to customize instructional content to individual learners' profiles and preferences, fostering more engaging and dynamic learning experiences. The technology's potential extends beyond tutoring: it can assist in generating essays, summarizing complex texts, translating languages, and stimulating creativity across disciplines [3, 7].

At the global level, empirical and conceptual studies have identified both enthusiasm and skepticism regarding ChatGPT's educational value. In higher education, students have reported appreciating the tool's efficiency, interactivity, and accessibility, which can enhance self-directed learning and academic confidence [5, 10]. Similarly, studies in language education highlight its usefulness for vocabulary building, writing support, and error correction [11, 15]. However, several researchers warn that generative AI's capacity to produce coherent but inaccurate information introduces new epistemic and ethical challenges [4, 6]. The risk of overreliance on AI-generated content, diminished critical thinking, and the potential normalization of academic dishonesty are key issues that educators and policymakers must address [8, 9]. Moreover, cultural and institutional differences shape how students adopt and perceive these tools. For example, Lee *et al*. (2024) [9] found that high school learners in the United States used ChatGPT selectively for idea generation but rejected its use for completing full assignments, reflecting an evolving moral negotiation between efficiency and authenticity.

Recent scholarship has also begun to explore the pedagogical and ethical dimensions of AI in schooling. Sharples (2023) [4] proposes a model of "social generative AI," emphasizing that its educational success depends on fostering collaborative, human-centered applications rather than replacing teachers. Nguyen (2025) [5] similarly argues for integrating ethical literacy into AI education, ensuring that students not only learn with technology but also about its limitations, biases, and responsibilities. While these global studies illustrate a growing body of research in tertiary education, few have examined the secondary level where adolescent learners are developing cognitive autonomy but remain highly impressionable to technological influence. Understanding how high school students engage with ChatGPT is therefore crucial for shaping equitable and responsible AI practices in education, particularly in contexts such as Vietnam where AI literacy frameworks are still emerging.

B. Benefits and Learning Potentials

Generative Artificial Intelligence (GenAI) tools like ChatGPT have been increasingly recognized for their potential to enhance students' learning experiences by facilitating access to knowledge, stimulating idea generation, and improving efficiency in academic work. As Su and Yang (2023) [2] suggest, ChatGPT exemplifies "educative AI," capable of providing immediate explanations, structured feedback, and contextually relevant responses to learners' queries. These features can significantly support self-paced and inquiry-based learning by enabling students to clarify misunderstandings and explore topics beyond textbook limitations. Likewise, Mittal *et al*. (2024) [1] emphasize that GenAI's adaptive algorithms can analyze learners' needs and deliver customized learning pathways—making education more responsive, interactive, and inclusive. Such accessibility represents a major step toward democratizing knowledge in contexts where teacher resources or instructional materials remain limited.

In addition to facilitating knowledge access, ChatGPT functions as a cognitive partner that supports idea generation and critical engagement. Students can use it to brainstorm, summarize, and reorganize information into coherent structures, thereby strengthening cognitive processes related to synthesis and creativity [7]. In writing-focused and

language learning contexts, ChatGPT has been found to enhance learners' confidence and linguistic competence by providing real-time corrections, translations, and stylistic suggestions [5, 15]. Through such interactions, students develop not only language proficiency but also metacognitive awareness learning to evaluate, question, and refine AI-generated content. Giannakos *et al*. (2025) [3] note that this process reflects a new mode of "augmented cognition," where learning involves iterative dialogue between human reasoning and machine output. When guided appropriately, these exchanges can cultivate reflective and critical learning rather than passive consumption of information.

The pedagogical value of ChatGPT also aligns with established learning theories such as Self-Directed Learning (SDL) and cognitive scaffolding. SDL theory highlights learners' capacity to take initiative in diagnosing their learning needs, setting goals, and evaluating progress [16]. In this respect, ChatGPT acts as a facilitator, offering instant feedback that enables learners to regulate their own study behaviors and sustain motivation. From a sociocognitive perspective, the tool functions as a form of digital scaffolding temporarily supporting learners until they achieve independent competence [17]. Nguyen (2025) [5] similarly argues that AI-driven learning environments, when ethically guided, can nurture autonomy while maintaining human oversight. By combining immediacy, adaptability, and personalization, ChatGPT not only enhances cognitive efficiency but also transforms students into more active agents of their own learning. As such, its educational potential lies not in replacing teachers, but in extending human capacities for exploration, creativity and reflective inquiry within the evolving digital classroom.

C. Risks and Ethical Concerns

While Generative Artificial Intelligence (GenAI) presents considerable pedagogical potential, its integration into education has also raised substantial concerns about misinformation, over-reliance, creativity loss, and data privacy. As Zhou *et al*. (2024) [6] highlight, ChatGPT and similar Large Language Models (LLMs) operate primarily as "statistical correlation machines," generating plausible but not necessarily accurate information. This probabilistic nature means that AI-generated outputs can contain factual errors or fabricated sources, potentially misleading students who lack the critical literacy to verify information. In learning contexts where accuracy and conceptual understanding are central, this poses significant epistemic risks. Similarly, Giannakos *et al*. (2025) [3] warn that the pedagogical value of GenAI depends not merely on its efficiency but on learners' capacity to interpret, critique, and contextualize its responses. Without structured guidance, students may uncritically accept AI outputs as authoritative, undermining analytical thinking and self-evaluation [3].

Another major concern is students' growing dependence on AI tools, which may reduce creativity and autonomy in learning. As Akgun and Greenhow (2022) [8] note, while AI can personalize instruction and automate feedback, excessive reliance on such systems can erode essential skills in reasoning, collaboration and problem solving. Sharples (2023) [4] similarly cautions that "social generative AI" must complement rather than replace human creativity and pedagogical judgment [4]. Evidence from high school and university settings suggests that some students use ChatGPT to bypass intellectual effort, generating essays or solutions without genuine understanding [9]. This behavioral shift, if left unchecked, risks fostering surface learning habits and weakening students' capacity for independent inquiry. In the Vietnamese context, teachers have expressed similar anxieties about plagiarism and the loss of authentic language development when students depend on AI-generated writing [14]. These concerns reflect a broader global tension between the efficiency promised by GenAI and the deeper human processes of creativity, reflection and ethical decision-making that education seeks to preserve.

Ethical challenges also extend to privacy, bias, and transparency. Zhou *et al*. (2024) [6] emphasize that AI systems collect and process vast amounts of user data, often without full awareness or consent, raising issues of surveillance and digital safety. Bias embedded in training data may reproduce inequities related to gender, race, or language, especially in contexts where cultural diversity is high but digital literacy remains uneven [13]. To address these challenges, scholars call for robust frameworks of digital ethics and responsible AI education that embed critical awareness into the curriculum [2, 5]. These frameworks advocate three key principles: transparncy in AI use, equitable access and human oversight. By integrating such principles into school policies and teacher training, education systems can move toward a balanced model one that acknowledges the promise of AI while safeguarding learners' intellectual and moral development. Ultimately, cultivating AI literacy must involve not only technical competence but also ethical discernment and social responsibility, preparing students to engage with technology critically and conscientiously in the digital age.

D. Factors Influencing AI Adoption among Students

The adoption of Generative Artificial Intelligence (AI) tools such as ChatGPT in educational settings is shaped by multiple interrelated factors including prior exposure to digital technologies, demographic characteristics, and perceived usefulness. Research grounded in the Technology Acceptance Model (TAM) has consistently shown that students' behavioral intention to use new technologies depends largely on two constructs perceived ease of use and perceived usefulness. Within the educational AI context, these constructs have been expanded to include additional psychosocial variables such as ethics, trust, and subjective norms [10, 18]. Students who are more familiar with digital platforms and online learning environments tend to adapt to AI-based tools more readily, as technological familiarity reduces cognitive barriers to experimentation and enhances confidence in using new systems [7, 10]. Similarly, prior exposure to self-directed or blended learning modalities increases learners' openness to AI integration, as such experiences foster digital literacy and self-regulated learning skills critical preconditions for effective AI adoption [5].

Empirical studies also indicate that gender, school type, and grade level play important roles in shaping students' engagement with AI technologies. Musttofa (2025) found no significant gender differences in university students' intention to use ChatGPT in Vietnam, whereas other studies

have reported that male students tend to show slightly higher confidence and experimentation with new technologies [18, 19]. School type and resource availability further influence access and attitude: students in specialized or urban schools often have more exposure to digital infrastructure and teacher support, enabling more frequent use of ChatGPT-like tools [20]. Grade level may also correspond with students' academic maturity and perceived utility of AI for exam preparation or research purposes, with upper-grade students typically exhibiting stronger motivation for efficiency-oriented technology use [7].

Beyond demographics, students' cognitive and affective perceptions remain central determinants of adoption. Studies applying TAM and its extensions in educational AI research show that perceived usefulness and perceived enjoyment strongly predict students' acceptance of ChatGPT [10, 18]. When learners view AI as a means to improve productivity, enhance understanding, or stimulate creativity, they are more likely to integrate it into daily learning activities. However, trust and ethical awareness also mediate these relationships. Nguyen (2025) [5] emphasizes that sustained adoption requires confidence in the technology's fairness, transparency, and alignment with educational values. Thus, AI acceptance is not merely a technological issue but an affective and moral process one embedded in students' prior digital experiences, learning environments, and cultural expectations of education. Understanding these factors is essential for designing inclusive, evidence-based policies that promote equitable and responsible AI use across diverse student populations.

E. Policy Landscape in Vietnam and Conceptual Framework

Vietnam's educational system is entering a pivotal stage in its digital transformation, marked by increasing attention to Artificial Intelligence (AI) integration in schools. The Ministry of Education and Training (MOET) has identified digital competency and technology literacy as core priorities under its 2018 General Education Curriculum reform, yet the institutionalization of AI education remains largely aspirational. While national strategies such as the "National Digital Transformation Program toward 2030" highlight AI as a driver of innovation and human capital development, policy guidance for its pedagogical application in K–12 contexts is still fragmented. Current MOET initiatives mainly focus on teacher training in digital pedagogy and the adoption of e-learning platforms, with limited frameworks for ethical AI use, student data protection, or curriculum integration [5]. As a result, schools and teachers often rely on informal experimentation rather than clear regulatory structures when encountering emerging tools such as ChatGPT. This gap between macro-level policy discourse and everyday school practice reflects what Giannakos *et al*. (2025) [3] describe as the "implementation lag" between technological capability and pedagogical readiness.

Recent Vietnamese studies echo these tensions. Cong-Lem *et al*. (2024) [14] found that English teachers viewed AI with both optimism and apprehension acknowledging its pedagogical value but fearing academic dishonesty and overreliance among students. Similarly, Vo and Nguyen (2024) [5] observed that university students embraced ChatGPT as a language-learning assistant but lacked formal guidance on ethical and critical use. Such findings reveal an emerging paradox: while AI use is growing rapidly in informal student practices, institutional frameworks for supervision, evaluation, and accountability remain underdeveloped. Addressing this requires policy models that move beyond simple regulation toward cultivating AI literacy a holistic combination of technical, ethical, and reflective capacities enabling learners to engage with AI responsibly [4, 7]. Embedding this form of literacy within the national curriculum would align with global recommendations for responsible AI education that emphasizes human-AI collaboration, transparency, and critical engagement [6, 7].

Drawing on the Technology Acceptance Model (TAM) and recent scholarship on AI literacy and ethical readiness, this study conceptualizes Vietnamese high school students' adoption of ChatGPT as a learning tool as shaped by a combination of background characteristics, exposure channels, and value-risk judgments formed through everyday learning practices. Consistent with TAM, students are more likely to adopt ChatGPT when they perceive it as beneficial for learning operationalized in this study as perceived learning benefits whereas concerns related to misinformation, dependency, or reduced autonomy may discourage use.

Extending beyond core TAM constructs, the analytic orientation of the study incorporates awareness channels, particularly exposure via social media, and schooling context, including grade level and school type, as enabling conditions that structure access, peer norms, and opportunities for experimentation with generative AI. These contextual factors are especially salient in adolescent learning environments, where institutional guidance on AI use remains limited and informal diffusion often precedes formal pedagogical integration.

Importantly, the present study is not designed to test a full sequential, causal, or mediation model linking background characteristics, awareness, perceptions, and downstream outcomes. Rather, it adopts an exploratory analytic model of adoption in which demographic and contextual variables (gender, grade level, school type) and awareness channels are examined as direct predictors of ChatGPT use, while perceived learning benefits and perceived risks are treated as proximal judgment factors associated with students' adoption decisions. Policy expectations regarding regulation, guidance, and access are reported descriptively as an outcome domain reflecting how students interpret institutional responsibility in the absence of clearly articulated school-based AI policies.

Accordingly, the term conceptual framework is used here in a guiding and organizational sense rather than to denote a formally tested theoretical or mediation model. While TAM provides a parsimonious account of technology uptake, generative AI in schooling raises additional concerns related to authorship, algorithmic reliance, and epistemic trust that exceed traditional "usefulness-ease" logics. By foregrounding perceived risks and emerging ethical readiness alongside perceived benefits, this study offers an analytically cautious approach to understanding adolescent engagement with ChatGPT within a rapidly evolving and weakly regulated educational policy environment.

The framework serves an exploratory and organizational

function rather than a tested causal or mediation model.

III. Methodology

A. Research Design

This study employed a quantitative cross-sectional survey design to examine Vietnamese high school students' engagement with ChatGPT as a generative AI learning tool. A quantitative approach was selected to (a) document patterns of awareness, usage, and perceptions at scale, and (b) identify individual and contextual factors associated with students' likelihood of using ChatGPT for learning. Consistent with Technology Acceptance Model-informed research and recent AI literacy studies [10, 18], the design integrates descriptive analyses with multivariable modeling to examine associations between demographic characteristics, awareness channels, perceived learning benefits, perceived risks, and actual ChatGPT use. The study is exploratory–explanatory in nature and does not seek to establish causal relationships.

B. Participants and Sampling

The study surveyed 559 students enrolled in public, specialized, and private high schools in Quang Tri and Thua Thien Hue provinces, representing Vietnam's north-central region. These provinces were selected due to institutional access and to capture a mix of urban and semi-urban schooling contexts within a region undergoing active digital transformation. While not nationally representative, the sample provides an empirically grounded snapshot of secondary students' engagement with generative AI in a non-metropolitan setting.

Stratified random sampling was implemented using grade level (Grades 10–12) and school type (public, specialized, private) as the primary strata. Within each participating school, classroom lists provided by administrators were used to identify eligible classes in each grade, and classes were selected to approximate proportional representation across strata. All students in selected classes were invited to participate during scheduled administration periods, producing a classroom-based stratified sample suitable for between-group comparisons.

A total of 559 questionnaires were collected. Prior to analysis, responses were screened for completeness and internal consistency. Cases were excluded from inferential analyses (valid-case subset, n = 496) if they met one or more of the following criteria:

1) substantial missing data on key outcome or predictor variables (e.g., ChatGPT use indicator, perceived learning benefit items, perceived risk items);
2) patterned responding (e.g., straight-lining across Likert-scale items); or
3) incomplete demographic information required for stratified comparisons.

The excluded cases (n = 63; 11.3%) primarily consisted of incomplete questionnaires returned during classroom administration. Descriptive statistics on overall awareness and usage prevalence are reported using the full collected sample (N = 559), while demographic breakdowns, inferential tests, and regression analyses are conducted using the valid-case subset (n = 496), unless otherwise specified. This distinction is maintained consistently throughout the analysis to ensure transparency.

Among the valid responses (n = 496) used for inferential analyses, 47.1% identified as male, 51.6% as female, and 1.2% as other genders. Regarding grade distribution, 11.7% were in Grade 10, 39.6% in Grade 11, and 48.7% in Grade 12. Public school students comprised 80.6% of the sample, followed by specialized schools (13.7%) and private institutions (5.7%). This distribution enabled analysis of demographic and institutional factors associated with ChatGPT awareness and use.

C. Instruments

Data were collected using a structured questionnaire developed in Vietnamese and validated through expert review by scholars in educational technology and secondary education. The instrument consisted of five sections aligned with the study's research questions and analytic model:

- Awareness of ChatGPT and sources of information
- Usage behaviors, including frequency and purposes of ChatGPT use in learning
- Perceived learning benefits, focusing on comprehension support, efficiency, and confidence
- Perceived risks, addressing concerns such as misinformation, dependency, and reduced autonomy
- Policy expectations, capturing students' views on institutional guidance, regulation, and access

All attitudinal items were measured on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). Several items were adapted from established measures of educational technology acceptance and AI literacy [5, 10], with wording adjusted to suit the secondary education context.

During the pilot phase (n = 30), students were asked to flag unclear wording and to paraphrase selected items to confirm interpretability, following a brief cognitive-check procedure. Minor revisions were made to simplify phrasing and reduce ambiguity, particularly in benefit and risk statements. Example items included: (a) Awareness: "I have heard of ChatGPT"; (b) Usage frequency: "How often do you use ChatGPT for learning?"; (c) Perceived benefit: "ChatGPT helps me understand lessons faster"; (d) Perceived risk: "Using ChatGPT may expose me to misinformation"; and (e) Policy expectation: "Schools should have official usage guidelines for ChatGPT".

D. Data Collection and Ethics

Data collection took place between April and May 2024 in collaboration with participating high schools. Permission to administer the survey was obtained from school administrators, and questionnaires were completed voluntarily during class time. The survey was anonymous: no names, student identification numbers, phone numbers, or other personally identifiable information were collected. Students were informed that participation was optional, that they could skip any question, and that they could withdraw at any time without penalty.

Regarding ethics clearance, formal institutional ethics review was not applicable for this study, as the participating institutions do not require ethics board approval for anonymous, minimal-risk educational survey research conducted within regular school settings. The questionnaire did not collect any personally identifiable information, and

participation posed no foreseeable risk to students. To safeguard minor participants, school-based ethical procedures were followed. School administrators and teachers were informed of the survey purpose and schedule, and students completed the questionnaire under supervised classroom conditions to ensure a non-coercive environment. Participation was voluntary, students could skip any question or withdraw at any time without consequence, and no incentives were provided. Where required by school policy, parents or guardians were informed through existing school communication channels prior to data collection. The study adhered to widely recognized principles of educational research ethics, including voluntary participation, anonymity, and confidentiality.

E. Data Analysis

Data were analyzed using SPSS version 28.0 following a sequence of descriptive, bivariate, and multivariable procedures aligned with the study's analytic framework and research propositions.

Descriptive statistics including frequencies, percentages, means, and standard deviations were first computed to summarize students' awareness of ChatGPT, usage patterns, perceived learning benefits, perceived risks, and policy expectations.

To examine group differences in ChatGPT usage frequency by gender, chi-square tests of independence were conducted. Effect size was reported using Cramér's V to distinguish statistical significance from practical magnitude, given the relatively large sample size.

To assess the underlying structure of students' perception items, an Exploratory Factor Analysis (EFA) was conducted using principal axis factoring with varimax rotation. Sampling adequacy was evaluated using the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity, confirming the suitability of the data for factor analysis. Factors were retained based on eigenvalues greater than 1.0, inspection of the scree plot, and theoretical interpretability. Items were retained if they demonstrated primary factor loadings ≥ 0.40 with minimal cross-loadings. The EFA results supported a multidimensional structure, distinguishing perceived learning benefits, perceived risks and limitations, and usage-related skills. Internal consistency of each factor was assessed using Cronbach's alpha, with coefficients exceeding the recommended threshold of 0.70, indicating acceptable reliability.

Based on the EFA results, composite indices for perceived learning benefits and perceived risks were constructed using mean scores of items loading on each factor, with higher values indicating stronger endorsement.

To identify predictors of students' use of ChatGPT for learning (Yes/No), binary logistic regression analysis was performed. Independent variables included gender, grade level, school type, awareness via social media, perceived learning benefits, and perceived risks, corresponding directly to the study's propositions (P1–P6). Model adequacy was evaluated using Nagelkerke's R^2, the Hosmer-Lemeshow goodness-of-fit test, and overall classification accuracy. Multicollinearity among predictors was assessed using Variance Inflation Factors (VIF), with all values falling below conventional thresholds, indicating no serious collinearity concerns. Regression results are reported as odds ratios (Exp(β)) with corresponding p-values, facilitating interpretation of the relative strength and direction of associations.

IV. Results and Discussion

A. Sample Profile

A total of 559 responses were collected; 496 valid cases were retained for demographic and inferential analyses. Table 1 summarizes key demographic characteristics. The gender distribution was relatively balanced, with 47.1% male, 51.6% female, and 1.2% identifying as other genders. In terms of grade level, 11.7% of respondents were in Grade 10, 39.6% in Grade 11, and 48.7% in Grade 12. Regarding school type, 80.6% of participants attended public schools, 13.7% studied at specialized schools, and 5.7% were enrolled in private institutions. This distribution reflects a diverse cross-section of upper-secondary students in the participating provinces, where public schools predominate while specialized and private institutions represent smaller but academically distinctive segments of the local education system.

Table 1. Demographic characteristics of participants

Variable	Category	*N*	%
Gender	Male	234	47.1
	Female	256	51.6
	Other	6	1.2
Grade	10	58	11.7
	11	196	39.6
	12	242	48.7
School type	Public	399	80.6
	Specialized	68	13.7
	Private	29	5.7
Total		496	100

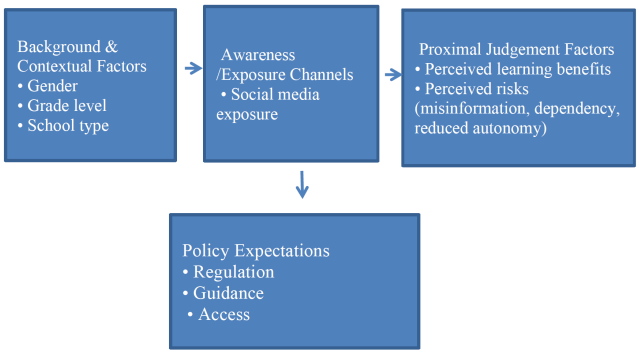

Fig. 1. Exploratory analytic framework of ChatGPT adoption among Vietnamese high school students.

Fig. 1 indicate a diverse sample, enabling meaningful comparative analyses of ChatGPT awareness and usage across school types and demographic variables.

B. Awareness of ChatGPT

Unless otherwise noted, awareness and usage rates are reported on the full survey sample (N = 559); demographic breakdowns and inferential tests use the valid-response subset (n = 496). As shown in Table 2, an overwhelming majority of students 88.0% (n = 492) reported that they had heard of ChatGPT, whereas only 12.0% (n = 67) had not. This high awareness level underscores ChatGPT's rapid diffusion among Vietnamese youth within a short time since

its global release.

Table 2. Awareness of ChatGPT

Response	*n*	%
Yes	492	88.0
No	67	12.0
Total	559	100

When asked about sources of information (Table 3), students most frequently cited social media (43.7%), followed by friends (28.0%), traditional media such as television and newspapers (17.0%), and teachers (11.3%). These findings illustrate that informal digital networks play a central role in introducing AI technologies to young learners, whereas formal educational channels remain marginal in disseminating information about emerging tools like ChatGPT.

Table 3. Sources of ChatGPT awareness

Source	*n*	%
Social media	427	43.7
Friends	274	28.0
Teachers	110	11.3
Television/Press	166	17.0
Total	977	100

Note. Students were allowed to select more than one source of awareness. As a result, the total number of responses exceeds the total number of participants.

C. Usage Behavior

As shown in Table 4, 80.8% of respondents reported having used ChatGPT for learning purposes, while 19.2% had not. This rate of engagement demonstrates that ChatGPT has already become an integral part of students' informal learning practices in Vietnam, even in the absence of structured classroom integration.

Table 4. Use of ChatGPT in learning

Response	*n*	%
Yes	451	80.8
No	108	19.2
Total	559	100

D. Purpose of Use and Factor Analysis

Students reported diverse purposes for using ChatGPT in their academic routines. As presented in Table 5, a majority used ChatGPT regularly, with significant variation by gender. Among male students (n = 212), 23.6% reported daily use compared with 17.6% of female students. A larger proportion of both groups 37.7% of males and 36.4% of females used ChatGPT several times per week. Occasional use was also common (31.5%), while only 11.1% reported rare or no use. The chi-square test indicated a statistically significant association between gender and usage frequency ($\chi^2 = 4.72$, $df = 3$, $p = 0.029$). However, the observed differences were modest in magnitude (e.g., a 6-percentage-point gap in daily use), and effect size (Cramér's V) should be considered when interpreting practical significance.

Table 5. Frequency of ChatGPT use by gender and chi-square test

Usage Frequency	Male (n=212)	% Male	Female (*n* = 239)	% Female	Total (*n* = 451)	% Total
Daily	50	23.6	42	17.6	92	20.4
Several times per week	80	37.7	87	36.4	167	37.0
Occasionally	63	29.7	79	33.1	142	31.5
Rarely/Never	19	9.0	31	13.0	50	11.1
Total	**212**	**100**	**239**	**100**	**451**	**100**
Chi-square					**$\chi^2 = 4.72$, $df = 3$, $p = 0.029$**	

In terms of usage purposes, analysis of 1,172 responses indicated that students most frequently used ChatGPT for searching for knowledge (26.4%) and completing assignments or problem-solving tasks (24.3%), followed by translation and English practice (17.4%), writing essays or reports (14.2%), and generating outlines or creative ideas (12.9%) (Table 6). These results reflect the flexible and task-oriented ways in which students integrate ChatGPT into their everyday learning practices. Multiple responses were permitted for this item, as students commonly reported using ChatGPT for more than one learning purpose.

Table 6. Purposes of ChatGPT use for learning (multiple response)

Purpose	*n*	%
Searching for knowledge	310	26.4
Completing assignments / problem-solving	285	24.3
Translation and English practice	205	17.4
Writing essays or reports	167	14.2
Creating outlines or ideas	152	12.9
Other purposes	53	4.5
Total responses	**1,172**	**100**

Note. Percentages are based on total responses. Multiple responses were allowed.

To examine the underlying structure of students' perceptions related to ChatGPT use, an Exploratory Factor Analysis (EFA) was conducted on Likert-scale items measuring perceived learning benefits, perceived risks and limitations, and usage skills (Table 7). Sampling adequacy was confirmed (KMO = 0.82), and Bartlett's test of sphericity was significant ($\chi^2(66) \approx 1245$, $p < 0.001$), indicating that the data were suitable for factor analysis. Three factors with eigenvalues greater than 1.0 were retained, together explaining 68.3% of the total variance. Factor 1 (Learning Benefits) had an eigenvalue of 3.21 and accounted for 35.6% of the variance; Factor 2 (Risks and Limitations) had an eigenvalue of 1.84 and explained 20.3%; and Factor 3 (Usage Skills) had an eigenvalue of 1.12 and explained 12.4%. Internal consistency was satisfactory for all factors, with Cronbach's alpha coefficients of 0.86 for Learning Benefits, 0.81 for Risks and Limitations, and 0.78 for Usage Skills

Table 7. Exploratory factor analysis of perception items

Item	Learning Benefits	Risks & Limitations	Usage Skills
ChatGPT helps me understand lessons faster	0.78	–	–
ChatGPT saves time in problem-solving	0.74	–	–
Using ChatGPT may expose me to misinformation	–	0.81	–
Using ChatGPT reduces self-learning ability	–	0.76	–
I know how to ask effective questions when using ChatGPT	–	–	0.69
I can distinguish correct from incorrect information	–	–	0.72

Based on the EFA results, Factor 1 (Learning Benefits) indicates that students primarily view ChatGPT as a cognitive accelerator that supports faster comprehension and time-efficient problem-solving. This pattern suggests that students employ generative AI pragmatically as a learning scaffold rather than as a substitute for intellectual effort, reflecting an instrumental orientation toward AI-supported learning.

Factor 2 (Risks and Limitations) highlights students' awareness of potential drawbacks, particularly exposure to misinformation and reduced self-learning capacity. The prominence of these items suggests that students are not naïvely dependent on ChatGPT but maintain a degree of epistemic vigilance, recognizing the need to verify and critically evaluate AI-generated outputs.

Factor 3 (Usage Skills) captures students' emerging competence in interacting effectively with AI systems. The ability to formulate appropriate prompts and to distinguish accurate from inaccurate information reflects a developing form of AI interaction literacy that extends beyond technical operation to include metacognitive regulation and digital discernment.

E. Perceived Benefits and Risks

Students' perceptions of ChatGPT in learning reveal a nuanced balance between perceived benefits and perceived risks (Table 8). As summarized in Table 8, a substantial proportion of students reported positive educational value, particularly in terms of saving time in finding learning materials (76.4%), helping them understand lessons faster (71.2%), and supporting more effective review (68.5%). More than half also agreed that ChatGPT helps generate ideas for assignments and writing (62.1%) and increases confidence in learning (59.3%).

At the same time, students demonstrated notable awareness of potential drawbacks. Concerns were highest regarding the risk of misinformation (74.5%) and overreliance on ChatGPT (69.8%), followed by worries about declining self-learning and creativity (58.4%) and reduced social communication or interaction (53.7%). Taken together, these patterns suggest that students do not perceive ChatGPT as an unproblematic learning aid; rather, they simultaneously recognize its instrumental benefits and its ethical and cognitive risks, reflecting an emerging but cautious form of AI literacy.

Table 8. Perceived benefits and risks of ChatGPT in learning

Dimension	Item	Agree (%)	Neutral (%)	Disagree (%)
Perceived Benefits	Helps understand lessons faster	71.2	18.7	10.1
	Supports more effective review	68.5	21.3	10.2
	Saves time in finding materials	76.4	15.8	7.8
	Generates ideas for assignments and writing	62.1	24.6	13.3
	Increases confidence in learning	59.3	25.1	15.6
Perceived Risks	Risk of misinformation	74.5	14.2	11.3
	Overreliance or excessive dependence	69.8	16.1	14.1
	Decline in self-learning and creativity	58.4	22.6	19.0
	Reduced communication/social interaction	53.7	24.9	21.4

F. Policy and Expectation Insights

Students demonstrated strong interest in regulatory and institutional guidance for AI use in education. As shown in Table 9, 82.3% supported the implementation of official school guidelines, 77.6% agreed that the government should regulate ChatGPT content, and 69.4% believed that students should receive free or subsidized access to the tool. The small proportion of disagreement indicates a high level of collective endorsement for structured and equitable AI governance within schools.

Table 9. Students' opinions on policy and usage guidelines for ChatGPT

Proposed Policy / Guideline	Agree (%)	Neutral (%)	Disagree (%)
Schools should have official usage guidelines	82.3	12.4	5.3
The state should regulate ChatGPT content	77.6	15.2	7.2
Students should receive free or subsidized access	69.4	19.6	11.0

G. Predictors of ChatGPT Use (Logistic Regression Analysis)

A binary logistic regression analysis was conducted to identify factors predicting whether students used ChatGPT for learning purposes (Yes/No). Six independent variables were included in the model: gender, grade level, school type, awareness via social media, perceived learning benefits, and perceived risks. The results are presented in Table 10.

Table 10. Logistic regression model predicting ChatGPT use for learning

Independent Variable	β	SE	Wald	p-value	Exp(β) (OR)	95% CI (Lower)	95% CI (Upper)
Gender	0.42	0.18	5.44	0.020	1.52	1.08	2.14
Grade level	0.67	0.21	10.18	0.001	1.95	1.29	2.94
Specialized school	0.83	0.25	11.04	0.001	2.29	1.41	3.72
Awareness via social media	0.58	0.20	8.41	0.004	1.79	1.21	2.65
Perceived learning benefits	1.12	0.29	14.96	<0.001	3.05	1.73	5.38
Perceived risks	–0.34	0.17	3.95	0.047	0.71	0.51	0.99

The model demonstrated acceptable overall fit, with a Nagelkerke R^2 of 0.41, indicating that approximately 41% of the variance in ChatGPT use was explained by the included predictors. The Hosmer–Lemeshow goodness-of-fit test was non-significant ($\chi^2 = 6.18$, $df = 8$, $p = 0.63$), suggesting good model calibration. The model correctly classified 78.6% of cases, indicating satisfactory predictive accuracy.

Several variables emerged as significant predictors of ChatGPT use. Students in higher grade levels were significantly more likely to use ChatGPT (OR = 1.95, 95% CI

[1.29, 2.94]), as were students enrolled in specialized schools (OR = 2.29, 95% CI [1.41, 3.72]). Awareness of ChatGPT through social media was also positively associated with use (OR = 1.79, 95% CI [1.21, 2.65]), underscoring the role of informal digital networks in technology diffusion among adolescents. Perceived learning benefits showed the strongest positive association with adoption (OR = 3.05, 95% CI [1.73, 5.38]), indicating that students who viewed ChatGPT as educationally useful were substantially more likely to integrate it into their learning practices. In contrast, higher perceived risks were associated with a reduced likelihood of use (OR = 0.71, 95% CI [0.51, 0.99]), suggesting that ethical and cognitive concerns may temper students' engagement with generative AI tools.

Overall, these findings indicate that ChatGPT adoption among Vietnamese high school students is shaped by a combination of demographic characteristics, institutional context, exposure channels, and value risk judgments, reflecting a nuanced balance between enthusiasm for learning support and caution regarding potential drawbacks.

V. Discussion

By integrating quantitative evidence from 559 students in central Vietnam with insights from current global research on generative AI in education, the discussion below situates the findings within three overarching themes: patterns of awareness and use, educational potentials versus affective risks, and predictors of inequality in AI adoption.

A. Patterns of Awareness and Use

The first major finding revealed that 88% of students were aware of ChatGPT, and 80.8% had used it for learning purposes (Tables 2–4), indicating that the tool has already entered the mainstream of Vietnamese secondary education even without formal curricular integration. This trend aligns with global patterns showing the rapid diffusion of generative AI among youth populations, where informal digital ecosystems particularly social media networks serve as the dominant channels of exposure [3, 9]. The predominance of social media (43.7%) and peer influence (28.0%) as sources of awareness reflects what Su and Yang (2023) [2] describe as "bottom-up diffusion," where technological adoption is driven by curiosity and peer exchange rather than institutional policy.

Students' usage purposes were equally diverse, with the highest frequencies for knowledge search (26.4%) and assignment completion (24.3%), followed by language practice and creative writing patterns that echo findings from global reviews identifying ChatGPT as a flexible cognitive assistant supporting knowledge retrieval, summarization, and writing [1, 7]. The factor analysis further revealed three underlying dimensions learning benefits, risks and limitations, and usage skills resonating with Mao *et al.*'s (2024) [21] AI literacy framework encompassing technical proficiency, ethical awareness, and critical evaluation. Although the association between gender and usage frequency reached statistical significance ($\chi^2 = 4.72$, $p = 0.029$), the magnitude of the difference was modest and should not be overstated. Rather than implying a fixed gender-based tendency, this pattern may reflect differences in opportunity structures such as peer norms, confidence in experimenting with new tools, or uneven encouragement for technology exploration reported in prior studies [10, 18]. Reporting effect size alongside p-values helps distinguish detectability in a large sample from substantively meaningful differences. Nonetheless, the high overall adoption rate across both genders underscores a widespread normalization of AI use in learning, suggesting that generative AI is becoming an integral part of Vietnamese adolescents' everyday educational practices a "mainstreaming effect" similarly observed in higher education contexts worldwide [3, 11], where ChatGPT is transitioning from novelty to necessity.

B. Educational Potentials and Affective Risks

The findings on perceived benefits and risks reveal an ambivalent relationship between enthusiasm and caution a duality well-documented in global AI education research. A large majority of students identified ChatGPT's advantages in efficiency (76.4%), faster comprehension (71.2%), and confidence building (59.3%), aligning with Su and Yang's (2023) [2] argument that generative AI can personalize and accelerate learning processes. These results corroborate Vo and Nguyen's (2024) [11] observation that Vietnamese EFL learners regard ChatGPT as a supportive and motivational language partner that enhances productivity and engagement . Yet, students simultaneously expressed concerns about misinformation (74.5%), dependency (69.8%), and creativity decline (58.4%), reflecting patterns reported by Nguyen (2025) and Zhou *et al.* (2024) [5, 6] regarding ethical, cognitive, and affective risks. This coexistence of optimism and skepticism indicates an emerging critical awareness uncommon in earlier waves of educational technology adoption. It also supports Giannakos *et al.*'s (2025) [3] notion of "skeptical optimism," where learners are captivated by AI's potential but remain wary of its impact on authorship, learning autonomy, and integrity.

The dual awareness of promise and peril underscores the need for AI ethics and digital literacy education in secondary schooling. As Akgun and Greenhow (2022) [8] contend, AI literacy must extend beyond operational skills to include ethical reasoning, bias detection, and responsible engagement. Cong-Lem *et al.* (2024) [14] similarly caution that overreliance on AI may compromise students' originality and critical thinking risks particularly salient in high-stakes learning environments. The Vietnamese students' reflective caution therefore represents an emerging form of affective literacy, defined by Sharples (2023) [4] as the ability to navigate emotional responses such as trust, anxiety, and dependence in human AI interaction [4]. Furthermore, their strong endorsement of institutional regulation 82.3% supporting school guidelines and 77.6% favoring state oversight demonstrates recognition that ethical use requires collective governance rather than individual self-control. This aligns with global advocacy for systemic frameworks that balance accessibility with accountability [5, 22] and reinforces Pei *et al.*'s (2025) [7] call for equitable AI integration where innovation is pursued alongside safety, inclusivity, and ethical clarity.

Beyond misinformation and dependency, these patterns can be read through the lens of algorithmic reliance, where repeated successful outputs may gradually shift students'

epistemic trust from teachers/textbooks toward AI-generated authority. This raises questions of post-digital authorship in schooling: students may increasingly experience writing and problem-solving as a co-produced activity with AI, blurring traditional boundaries between assistance, collaboration, and substitution. These tensions also foreshadow assessment challenges, as educators must differentiate between AI-supported learning processes and AI-substituted performance, suggesting the need for assessment designs that value reasoning traces, reflective justification, and in-class demonstration of understanding.

C. Predictors and Inequalities

The logistic regression results illuminate how demographic and perceptual factors collectively shape patterns of AI adoption. Among the six predictors, grade level, school type, social media exposure, and perceived learning benefits emerged as the strongest positive determinants. Senior students and those attending specialized schools typically with stronger digital infrastructure and academic orientation were more inclined to experiment with ChatGPT, aligning with global patterns of digital stratification where resource-rich institutions advance AI readiness while others lag behind [7, 12]. The influence of social media exposure (β = 0.58, p = 0.004) further underscores the cultural dynamics of diffusion: as Mustofa *et al*. (2025) [10, 18] note, subjective norms and peer trust strongly shape willingness to adopt new technologies. In Vietnam's highly networked youth culture, social media functions as both an entry point and amplifier for AI adoption raising awareness but also circulating unverified information [5]. This dual effect highlights the need to pair AI literacy with critical media literacy so students can navigate algorithmic information flows responsibly.

Meanwhile, the negative relationship between perceived risks and usage (β = –0.34, p = 0.047) suggests that apprehension over misinformation and ethical concerns can moderate adoption reflecting patterns seen in higher education [5, 10]. Yet this resistance represents not fear but ethical hesitation [4, 6, 21]: a form of self-regulated caution that signals growing moral awareness in AI use. The gender effect (β = 0.42, p = 0.020) similarly reveals ongoing disparities in confidence and access, reinforcing calls for inclusive pedagogies that empower female and marginalized learners to engage with AI tools without bias or stigma [8, 13]. Collectively, these predictors show that AI engagement in Vietnamese secondary education is not purely technical but socially stratified shaped by cultural norms, institutional opportunity, and emotional perception. Addressing these inequalities requires coordinated interventions across teacher training, school policy design [7]; and national AI literacy initiatives [5, 22].

In comparative perspective, Vietnam's findings both converge with and diverge from global trends in educational AI integration. Students' enthusiasm for ChatGPT's learning benefits enhanced efficiency, creativity, and personalization echoes global optimism described by Su and Yang (2023) [2] and Mittal *et al*. (2024) [1]. Yet their stronger ethical awareness and preference for formal regulation mark a distinct cultural orientation toward collective governance and cautious innovation, consistent with Sharples (2023) and Zapata-Rivera *et al*. (2024) [4, 22]. Unlike in Western contexts where debates often focus on plagiarism or authorship anxiety [5, 7, 9]. Vietnamese students framed ChatGPT as a supportive learning aid rather than a substitute for effort. This collectivist sensibility, combined with the influence of social media as a diffusion channel [3], situates Vietnam within a broader Southeast Asian model of "guided AI adoption" balancing technological enthusiasm with ethical vigilance.

D. Policy and Pedagogical Implications

The findings reveal an urgent need to embed AI literacy frameworks within Vietnam's K–12 curriculum to ensure that students' growing engagement with tools like ChatGPT translates into informed, ethical, and sustainable learning practices. With most students already experimenting with generative AI for academic purposes, policy interventions must move beyond restriction toward structured guidance that promotes responsible exploration. Integrating AI literacy should involve developing students' abilities to critically evaluate information, recognize algorithmic bias, and understand the ethical and societal implications of AI use. Schools thus become pivotal environments for cultivating not only technical competence but also reflective and moral awareness about digital technologies. Teachers play a central role in scaffolding these competencies—designing classroom activities that balance innovation with discernment, encouraging inquiry while upholding integrity, and modeling responsible AI use in their own pedagogical practices. At the systemic level, collaboration between the Ministry of Education and local institutions is essential to establish standards for AI integration, teacher training programs, and student assessment methods that reflect both cognitive and affective dimensions of learning. Rather than perceiving AI as a disruptive threat, Vietnam's education system has the opportunity to position it as a catalyst for rethinking pedagogy fostering critical engagement, creativity, and ethical digital citizenship among the next generation of learners.

E. Limitations and Future Directions

This study, while offering one of the first empirical insights into high school students' engagement with ChatGPT in Vietnam, is subject to several limitations. First, the cross-sectional design limits the ability to infer causal relationships among awareness, perceptions, and usage behaviors. Students' self-reported data may also carry biases of social desirability or recall, particularly in school contexts where AI use is emerging and norms remain ambiguous. Social desirability bias may be especially salient for items related to ethical concerns and "appropriate" learning behavior: students may underreport practices perceived as problematic (e.g., using ChatGPT to generate full assignments or engaging in plagiarism-adjacent behaviors) while simultaneously overreporting ethical caution (e.g., endorsing risk statements) to align with socially acceptable narratives of responsible technology use. Consequently, the measured levels of ethical awareness should be interpreted as an early and potentially unstable form of "ethical readiness," shaped by perceived surveillance, classroom norms, and uncertainty over what constitutes legitimate AI-assisted learning.

The regional scope of the sample drawn from two central provinces provides important contextual insights but may not fully capture the diversity of socioeconomic, institutional, and technological conditions across Vietnam's broader educational landscape. In addition, the survey primarily foregrounded cognitive and behavioral dimensions of AI engagement, leaving affective and relational aspects such as emotional reliance on AI tools, classroom dynamics, and the mediating role of teachers less explored. These limitations highlight the complexity of studying generative AI adoption in educational settings where technological affordances, policy ambiguity, and social norms intersect rapidly.

Future research should therefore adopt mixed-method and longitudinal designs to trace how students' perceptions, practices, and ethical judgments evolve as generative AI becomes more formally embedded in school curricula and assessment regimes. Expanding the scope to include teachers, parents, and policymakers would enable a more holistic understanding of the institutional and cultural ecosystems shaping AI literacy and ethical awareness. Qualitative approaches such as focus groups, classroom observations, or digital ethnography could illuminate how students negotiate authorship, authenticity, and creativity when using generative tools in everyday learning. Comparative studies across regions or national contexts would further situate Vietnam within global discussions of AI readiness and educational equity. Finally, future work should examine the pedagogical implications of AI integration, including its effects on assessment design, learning motivation, and teacher student relationships, while testing scalable frameworks for critical and ethical AI education in K–12 settings.

VI. Conclusion

This study provides a timely snapshot of how Vietnamese high school students are encountering, evaluating, and adopting ChatGPT as a learning companion. The findings reveal that awareness of ChatGPT is remarkably high, with 88% of respondents familiar with the tool and over 80% actively using it for study-related purposes. Students perceive clear educational advantages particularly in gaining faster understanding, improving efficiency, and generating ideas while maintaining a cautious awareness of risks such as misinformation and over reliance. Quantitative modeling confirmed that demographic (gender, grade level, school type) and attitudinal variables (perceived benefits and risks) significantly predict the likelihood of adoption, underscoring that both access and mindset shape engagement patterns in the emerging era of generative AI.

The study's broader significance lies in illustrating how AI adoption in Vietnam's secondary education system parallels global trends while reflecting local cultural and policy contexts. Students' proactive yet ethically conscious attitudes mirror global findings that emphasize the coexistence of optimism and caution toward generative AI. At the same time, their collective preference for official regulation and school-based guidance signals a distinctive institutional trust and orientation toward structured governance contrasting with more individual-driven practices in Western settings. These insights point to the need for a national AI literacy framework that integrates critical thinking, ethical awareness, and creative application into the K–12 curriculum. As generative AI continues to redefine the boundaries of learning and authorship, Vietnam stands at a crucial juncture: to harness the technology's transformative potential while fostering an education system that prepares students not only to use AI effectively, but also to question, challenge, and shape it responsibly in a global knowledge society.

Data Availability Statement

The questionnaire instrument and aggregated summary statistics generated during the current study are available from the corresponding author upon reasonable request. Due to the involvement of minor participants and the school-based nature of data collection, the raw individual-level survey data and complete SPSS datasets are not publicly available in order to protect participant anonymity and to comply with institutional and school-level data protection requirements. De-identified data excerpts and analysis syntax may be shared for verification or replication purposes, subject to approval by the participating institutions and ethical safeguards.

Conflict of Interest

The author declares no conflict of interest.

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