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AI-assisted learning applications in English courses in Vietnam

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Abstract

This paper investigates the factors influencing students' intention to use AI-assisted learning applications in English courses through the Uses and Gratification Theory lens. Utilizing a sample of English course participants, we hypothesize that social, process, content, and technology gratifications derived from using AI learning apps positively impact perceived enjoyment levels, which in turn influence students' intention to use these applications. The research model integrates these constructs, proposing direct relationships between gratifications and perceived enjoyment and an impact of perceived enjoyment on the intention to use. Data analysis, employing structural equation modeling techniques, reveals significant positive effects of social, process, content, and technology gratifications on perceived enjoyment, supporting our hypotheses. Moreover, perceived enjoyment emerges as a significant predictor of intention to use AI learning apps. These findings contribute to understanding user motivations and behaviors in adopting AI technologies for educational purposes, offering implications for educators, developers, and policymakers aiming to enhance English language learning experiences through AI-assisted platforms.

Introduction

Artificial intelligence (AI) refers to computer systems that can perform tasks and exhibit behaviors commonly thought to require intelligence (Bhatt & Muduli, 2022). AI encompasses a wide range of capabilities, from game-playing algorithms to robotics, but natural language processing (NLP) allows systems to analyze and generate human language (Kang et al., 2020). Early NLP systems were rule-based and limited to simplistic pattern matching. In contrast, modern techniques like deep learning enable more advanced capabilities by training AI models on massive datasets to extract statistical patterns. For instance, chatbots select scripted responses using basic keyword matching, while large language models like GPT-3 can generate original, customized text (Rudolph et al., 2023). As Ifelebuegu (2024) discussed, the parametric flexibility of models like GPT-3 allows AI writing assistants to produce far more versatile and human-like text compared to rigid chatbot approaches. Major advantages include the ability to generate coherent passages in response to prompts, maintain logical consistency, adapt tone for different contexts, and even exhibit creativity. However, chatbots still surpass AI assistants in certain areas like goal-oriented dialog and accessing external knowledge. While Narrow AI, or weak AI, refers to the use of artificial intelligence technology to create a specialized system that can mimic and potentially exceed human intellect in a certain task, has proven effective for conversational tasks, AI writing assistants demonstrate more human-like language abilities by leveraging the predictive power of deep neural networks trained on vast datasets.

With the rapid development of AI technologies, AI-assisted learning applications have been increasingly used in education to enhance and support student learning experiences (Lai, 2021). These applications utilize AI algorithms to provide students with personalized and adaptive learning content, feedback, and assessments. In English language courses, AI tutors and writing assistants have effectively improved language skills like vocabulary, grammar, reading, writing, speaking, and listening (Popenici, 2023; Vargas-Murillo et al., 2023). However, adopting these emerging technologies also faces skepticism and resistance in real-world teaching and learning scenarios (Sullivan et al., 2023). Therefore, understanding students' motivations and gratifications for using or not using AI-assisted learning apps can inform strategies to promote acceptance and usage.

The uses and gratifications (U&G) theory is a relevant framework to examine users' motivations and needs for utilizing media or technologies (Gao, 2023). It assumes that users actively choose media to fulfil certain gratifications or needs (Menon, 2022). Prior U&G research on educational technologies has largely focused on general learning management systems and online learning tools (Nikolopoulou et al., 2021), while specific investigations into emerging AI-assisted applications remain scarce. Liu et al. (2016) recently adapted the U&G theory to categorize users' needs into content, technology, process, and social dimensions. However, empirical evidence lacks whether students' motivations for adopting AI learning apps align with these dimensions.

Therefore, this study aimed to apply the uses and gratifications theory to understand students' motivations and gratifications for using or avoiding AI-assisted learning apps in English classes through a survey. The four dimensions of gratifications proposed by Liu et al. (2016) were measured: content, technology, process, and social. The findings are expected to provide practical implications for promoting user acceptance of AI learning apps by targeting specific motivations and needs. From a theoretical lens, this study contributed to pioneering attempts to verify the U&G framework in revealing students' adoption considerations regarding increasingly pervasive AI learning assistants. Future research may build on the findings to further extend or specify the current gratification categorization.

The structure of this paper is organized as follows – the first section introduces the research background, gap, and objectives; the second section reviews past literature on uses and gratifications theory and AI learning apps; the third section explains the methodology; the fourth section presents results; the final section discusses findings, implications and recommendations for future research directions on this emerging area.

Literature review

Using AI-assisted learning applications to augment English language courses

AI writing assistants like Grammarly, Hemingway Editor, or Textio provide personalized feedback on improving vocabulary use, grammar, sentence structure, and overall readability when students are drafting written assignments. These automated checkers point out specific areas for improvement and offer corrected suggestions, allowing students to refine technical aspects of their English writing (Twersky & Davis, 2017). Moreover, apps like Duolingo ABC, Rosetta Stone, or Busuu contain AI chatbots that simulate conversational scenarios on diverse topics (Luo, 2022). Speaking and listening comprehension with these virtual tutors via interactive dialogue helps English learners build fluency. The chatbots adapt to difficulty levels and respond like native speakers to realistic situations. Vocabulary learning apps like Quizlet, Memrise, or Anki use spaced repetition algorithms and smart flashcard features to build each student's vocabulary (Nikishova & Kryvonosova, 2022). By tracking individuals' mastery of new words, these AI apps continuously adjust which terms to focus on practising, customizing the learning path based on actual needs and progress. This assists vocabulary retention significantly. Besides, all-in-one platforms like Speaking Pal English Tutor or Pearson English Portal automatically assess learners' abilities to recommend activities targeting weaker skills (Phillips, 2018). The more students use them, the more precisely the AI assesses gaps in listening, reading, writing, etc., to serve customized lessons. The data-driven adaptation promotes self-paced progress. Finally, to boost student engagement, programs like LearnEnglish Kids: Playtime or Duolingo incorporate gamification elements by rewarding progress and adding quests, levels, etc. (Saraswati & Purwati, 2021). Making practice seem like fun games lowers barriers and motivates more regular English usage, which is essential

for fluency.

Research framework

The uses and gratifications (U&G) theory provides the main theoretical framework for this study. The U&G theory examines people's motivations and gratifications for using a particular media or technology (Katz et al., 1973). It assumes that users actively select media to fulfil certain needs or motivations rather than passively consuming media (Raji et al., 2020). With advancements in interactive digital technologies, the U&G theory has gained resonance in understanding user acceptance, adoption, or rejection of emerging media forms (Bawack et al., 2023). Li et al. (2018); Stafford et al. (2004) pointed out three gratification dimensions including content, process, and social gratifications. Recently, researchers mentioned technology gratifications as the fourth dimension of U&G theory (Liu et al., 2016; Omar & Subramanian, 2013). This updated U&G model was applied in this study to examine key drivers of students' intention to use AI-assisted language learning applications from the lens of their motivations and perceived gratifications. In the context of AI-assisted learning applications, the Stimulus-Organism-Response (SOR) framework complements U&G theory by elucidating how external stimuli (gratifications) interact with individual cognitive and affective processes (perceived enjoyment) to influence their responses or intentions to use the AI-assisted language learning applications as they learn English. This research proposed the conceptual model from the Research framework as Figure 1.

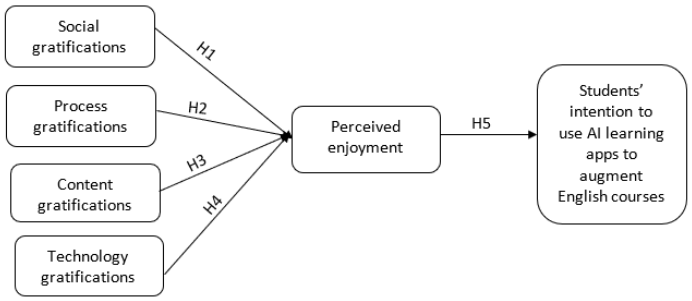

Figure 1. Research model.

Hypotheses development

Social gratifications refer to the opportunities to interact, connect, and engage with others when using technology (Kaur et al., 2020). In an educational context, the social dimensions encompass the ability to facilitate discussions, collaborate, and seek help from teachers and peers (Menon, 2022). Hussain and Shabir (2020) found that social features boost enjoyment and continued usage intention for e-learning systems and mobile learning apps by enabling greater communication and a sense of community. Similarly, AI-enabled chatbots, virtual tutors, and peer-learning functionalities may enhance social connectivity and collaborations in AI-learning apps (Shahab et al., 2023). Customized interactions can motivate learners and make learning more fulfilling and enjoyable (Ab Jalil et al., 2020). Thus, it is hypothesized:

> H1: Social gratifications positively impact perceived enjoyment of using AI-assisted learning apps.

Process gratifications center around a technology or system's experienced convenience, control, and efficacy (Cutler & Danowski, 1980). In AI learning apps, process dimensions include perceived ease of use, ability to self-pace learning, timely feedback, and access flexibility offered by the apps (Gerlich et al., 2015). Prior studies demonstrate that such process features significantly contributed to student enjoyment, engagement, and adoption of e-learning platforms and intelligent tutoring systems (Won et al., 2022; McLean, 2018). The automated and customized feedback improved time efficiency, allowing learners to progress faster and have more fun acquiring new skills (Gao, 2023). Thus, greater process gratifications from AI apps' interactivity and personalization capabilities can enhance users' perceived enjoyment.

> H2: Process gratifications derived from using AI learning apps positively influence perceived enjoyment levels.

Content gratification refers to users receiving informative, relevant, personalized, and satisfactory content from a technology (Possler et al., 2020). For AI-assisted language apps, content dimensions include adaptive learning resources and activities tailored to ability levels and accurate, multimodal content suited for different learning styles (Chang et al., 2022). Prior research found that personalized content recommendations and customized difficulty levels based on individual progress increased engagement, motivation, and enjoyment outcomes (Alsanousi et al., 2023). The perceived relevance and usefulness of content additionally contributed to learner satisfaction and continued usage intentions (Wang et al., 2023). Therefore, AI apps providing the appropriate challenge through data-driven content adaptations can potentially enhance enjoyment and gratification.

> H3: Content gratifications derived from AI learning apps positively affect students' perceived enjoyment levels.

Technology gratification encompasses the utilitarian benefits and advantages of a technology's features, convenience, interface, and overall quality (Liu et al., 2016; Omar & Subramanian, 2013). Concerning AI learning apps, AI functionalities, smart content delivery, ubiquitous access, and perceived usefulness shape technology gratification perceptions (Nkoala et al., 2023). Nkoala et al. (2023) demonstrated that outcome expectancy and perceived effectiveness of educational technologies' features, including personalization, interactivity, and convenience, enhanced their acceptance by raising users' intrinsic enjoyment and engagement (Zhang et al., 2023). Thus, AI apps high in utilitarian attributes can potentially provide greater technology gratification, indirectly contributing to enjoyment.

> H4: Technology gratifications derived from AI learning apps' features positively impact students' perceived enjoyment.

Enjoyment refers to perceptions of fun, pleasure, and emotional appeal derived from technology utilization (Ledbetter et al., 2016). According to prominent technology adoption theories, perceived enjoyment is a key predictor of users' attitude formation and intended technology usage behavior across educational and consumer contexts (Saleem et al., 2023). Prior empirical studies also demonstrate that enjoyment levels experienced by students while using e-learning and mobile learning systems strongly influenced their decisions to continue usage (Gao, 2023; Khoa et al., 2021). Besides enhancing motivation and engagement, AI apps provide an immersive, game-based environment that can make the English language learning process more fulfilling and enjoyable for learners. Greater perceptions of joy and emotional appeal are likely to shape behavioral intentions to use AI learning apps.

H5: Perceived enjoyment positively impacts students' intention to use AI learning apps to augment English courses.

Research method

Sampling

A quantitative cross-sectional survey was conducted for hypothesis testing. The study population comprised university students in Vietnam who had prior experience using AI English learning apps as course supplements. A total sample of 407 valid responses was collected using purposive sampling by distributing printed and online versions of structured questionnaires to students at five major universities in Vietnam. The survey included questions on respondents' demographic information, motivations, perceived gratifications, enjoyment, and intention to use AI learning apps, in addition to constructing measurement items. Ethics approval and informed consent were obtained prior to data gathering.

Table 1. Respondent characteristics.

Characteristics		Frequency	Percent
Gender	Male	214	52.6
	Female	193	47.4
Major	Business	130	31.9
	Technology	117	28.7
	Social science	160	39.3
Apps Using Frequency per week	1 - 3	94	23.1
	4 - 6	88	21.6
	6 - 10	100	24.6
	> 10	125	30.7
Using purposes	Vocabulary builders	98	24.1
	AI writing checkers	106	26.0
	Chatbot conversations	94	23.1
	Grammar tutors	109	26.8

Of the total 407 students in the final sample, 214 (52.6%) were male, and 193 (47.4%) were female. Students' majors were business (31.9%), technology (28.7%), and social science (39.3%). Over half of them (55.3%) used AI learning apps over six times a week on average, suggesting considerable familiarity. Most frequently used apps included customized vocabulary builders (24.1%), AI writing checkers (26%), conversational chatbots (23.1%), and adaptive grammar tutors (26.8%). Thus, the profile indicates the ability to provide valuable insights regarding adopting AI learning technologies. The information of the participants is described in Table 1.

Scale measurement

This study adopted validated multi-item scales from prior research to measure each construct in the proposed research model. Social gratifications (SG, three items), process gratifications (PG, four items), content gratifications (CG, six items of gratification of information sharing and gratification of self-documentation), and technology gratifications (TG, seven items of gratification of convenience, and gratification of medium appeal) were adapted from Liu et al. (2016). Six perceived enjoyment (PE) items were assessed through intrinsic motivation scales validated in earlier technology adoption studies (Khoa, 2020). Finally, intention to use AI learning apps (ITA) was measured using five items from Chen et al. (2021). Minor modifications were made to scale wordings tailored to AI-assisted language learning apps. All measurement items used a 5-point agreement scale ranging from "strongly disagree" to "strongly agree," with higher scores indicating more favorable perceptions.

Results

Measurement model assessment

Confirmatory factor analysis was conducted on all six constructs in the conceptual model using SmartPLS software and is presented in Table 2. Convergent validity was evident as all outer loadings (OL) exceeded 0.7 on their respective constructs (Hair Jr et al., 2016). Moreover, the average variance extracted (AVE) ranged from 0.577 to 0.763, greater than the 0.5 threshold. Additionally, the composite reliability scores (CR) were above 0.7, confirming convergent validity at the construct level. Moreover, Cronbach's alpha ranged from 0.847 to 0.939, meeting acceptable internal consistency reliability criteria.

Table 2. Reliability and convergent validity assessment.

Construct	Cronbach's alpha	Composite Reliability	Average Variance Extracted	Outer loading
CG	0.854	0.855	0.577	0.724 - 0.783
ITA	0.847	0.859	0.627	0.707 - 0.957
PE	0.889	0.901	0.648	0.724 - 0.938
PG	0.869	0.875	0.721	0.762 - 0.921
SG	0.845	0.847	0.763	0.862 - 0.884
TG	0.939	0.944	0.732	0.805 - 0.918

Discriminant validity was checked using two methods. Firstly, each construct's square root of AVE exceeded the inter-construct correlations displayed in the correlation matrix, per the Fornell-Larcker criterion (Fornell & Larcker, 2018) in Table 3. Secondly, all indicators displayed higher loadings on their allocated factors than cross-loadings, further supporting discriminant validity. Therefore, the measurement model demonstrated satisfactory quality for testing hypothesized relationships among key latent variables like social gratifications, process gratifications, content gratifications, technology gratifications, perceived enjoyment, and students' intention to use AI learning apps

to augment English courses.

Table 3. Fornell – Larcker crierion.

Constructs	CG	ITA	PE	PG	SG	TG
CG	0.760					
ITA	0.323	0.792				
PE	0.563	0.543	0.805			
PG	0.531	0.399	0.498	0.849		
SG	0.443	0.304	0.449	0.361	0.874	
TG	0.408	0.218	0.466	0.4	0.472	0.856

PLS-SEM assessment

The R^2, f^2, Q^2, and VIF values are pointed out in Table 4. The structural model demonstrated substantial explanatory power, with R^2 values of 0.432 for perceived enjoyment and 0.295 for intention to use. This exceeds the minimum threshold of 0.2 for R^2 in social science research (Hair Jr et al., 2016). Stone-Geisser's Q^2 values were computed through blindfolding tests to assess predictive relevance. Q^2 was greater than zero for both endogenous constructs – perceived enjoyment (Q^2 = 0.262) and intention to use (Q^2 = 0.172) - satisfying criteria for predictive relevance. The variance inflation factor (VIF) statistics were computed and checked to assess if multi-collinearity among predictors affects results. All VIFs ranged between 1.000 and 1.584, significantly lower than the common cut-off of 5 (Hair et al., 2019); therefore, the absence of collinearity issues among research constructs was established. Perceived enjoyment has a large effect on the intention to use AI-assisted Learning applications in English courses (f^2 = 0.418); the rest of the relationships had small effects (0.02 < f^2 < 0.15).

Table 4. Result of R^2, f^2 Q^2, and VIF values.

Construct	R^2	f^2		Q^2	VIF	
		ITA	PE		ITA	PE
CG			0.108			1.584
ITA	0.295			0.172		
PE	0.432	0.418		0.262	1.000	
PG			0.049			1.487
SG			0.027			1.436
TG			0.043			1.426

A PLS-SEM was applied for hypothesis testing due to the combination of categorical and continuous indicators. In Table 5, social gratifications (β = 0.149, t = 2.564), process gratifications (β = 0.204, t = 3.768), content gratifications (β = 0.312, t = 5.554), and technology gratifications (β = 0.187, t = 4.298) all had significant positive effects on perceived enjoyment of AI apps. Moreover, perceived enjoyment substantially predicted students' behavioral intentions to use AI learning apps (β = 0.543, t = 7.562). Therefore, all five proposed hypotheses were supported at a 1% significance level, except the hypothesis H1 at a 5% significance level). The PLS model's goodness of fit was examined using procedures from standardized root means square residual (SRMR) and exact model fit tests (Henseler et al., 2014). The SRMR was 0.049, below the 0.08 threshold, indicating a good model fit relative to correlation residuals.

Table 5. Result of PLS-SEM.

Relationship	β	t-value	Result
SG -> PE (H1)	0.149	2.564	Supported
PG -> PE (H2)	0.204	3.768	Supported
CG -> PE (H3)	0.312	5.554	Supported
TG -> PE (H4)	0.187	4.298	Supported
PE -> ITA (H5)	0.543	7.562	Supported

Conclusion

Discussion

The current study provided empirical support for adopting an updated uses and gratifications perspective to understand motivations and acceptance considerations regarding AI technologies for language learning. The four gratification dimensions analyzed - social, process, content, and technology benefits - have foundations in prior e-learning and mobile learning research. The findings align with prior studies as applications of U&G theory, which revealed watching movies on YouTube (Bakar et al., 2014) or purchasing virtual goods (Kaur et al., 2020). Moreover, in correspondence with technology acceptance research, affective reactions about flow-like, pleasurable engagement played a pivotal role in forming usage intentions (Al-Bashayreh et al., 2022; Al-Emran et al., 2020). Greater interactivity, personalization, and appeal offered by AI learning apps can cultivate perceptions of fun, control, and curiosity vital for voluntary adoption by students (Bhatt & Muduli, 2022). The empirical demonstration of cognitive and emotional mechanisms influencing usage decisions advances understanding of students' relationships with emerging intelligent technologies. While prior investigations often focused narrowly on performance and effort expectancies, this study takes a more holistic motivational stance. This discussion elaborates on the relevance and theoretical grounding of each dimension.

Social gratifications refer to the interpersonal connections and interactions enabled by AI technologies. As found in this study, students appreciate the social presence, connectedness, collaboration, and sharing facilitated by AI apps. This aligns with findings on social gratifications sought from educational technologies (Chen et al., 2019; Rathnayake & Winter, 2018). The social dimension has roots in foundational U&G theory positing that media selection and use serve social-integrative needs (Katz et al., 1973). AI technologies offer new opportunities for social gratifications by simulating human-like connections. However, ethical concerns exist around emotional manipulation and deception (Vallor, 2021). Moderation is required to balance social benefits and risks.

Process gratifications relate to the interactive nature and procedural utility of using AI apps for convenient, personalized, and guided learning. Learners value AI features like adaptive content, feedback, and scaffolding that aid self-regulation (Rathnayake & Winter, 2018). The process dimension connects to early U&G research on the seeking of participatory and functional benefits from media (Katz et al., 1973). AI leverages data-driven, responsive algorithms to optimize learning processes and trajectories. But risks around data privacy, bias, and over-reliance on AI require ongoing scrutiny (Selwyn, 2019).

Content gratifications refer to the informational and cognitive values derived from AI-generated or curated subject matter. Learners appreciate how AI delivers personalized, relevant, and stimulating content (Alam et al., 2024). This aligns with knowledge and surveillance needs in classical U&G theory (Katz et al., 1973). However, AI content raises concerns about misinformation from generative models and filter bubbles from curation algorithms (Toder Alon & Tahar, 2024). Maintaining high-quality, balanced content remains an imperative.

Technology gratifications involve the advantages of using innovatively designed, convenient, and engaging AI interfaces. New technologies often create novel experiential and hedonic gratifications (Leung, 2001). But poor usability undermines user experience (Wang et al., 2018). AI advances like speech recognition and virtual assistants offer more naturalistic and immersive interactions. However, continued refinements are required to bridge the gap between human and machine (Cowan et al., 2017).

Theoretical contribution

This pioneering study offers theoretical and practical contributions regarding the intersection of AI in education and motivational models explaining technology acceptance behaviors. Theoretically, it expands the applications of uses and gratifications theory as a fitting lens to unpack both utilitarian and enjoyment-oriented user requirements likely to be fulfilled by sophisticated AI applications and, by extension, other smart educational systems. The proposed scale development and validation to categorize social, process, content, and technology gratifications makes the traditional U&G model relevant for technology adoption research in rapidly evolving contexts. Addressing users' needs and goals is imperative, given the relative lack of motivational perspectives guiding AI education studies.

Additionally, the research delineates the affective and emotional aspects linked to AI tools through enjoyment, which strongly predicts voluntary usage intentions. The findings incorporate holistic well-being-centric measures like enjoyment, resilience, and empowerment in investigating how emerging technologies impact learning processes and outcomes. It also enriches technology adoption models used thus far by uncovering the underlying needs and gratifications that ultimately motivate perceptions of intrinsic motivation.

Managerial implication

On the practical level, the nuanced understanding of what draws students towards trying or sticking with AI learning apps has several implications. Educators and app designers can strategically build features catering to social connections, timely feedback, personalized content recommendations, and interactive elements preferred by digitally savvy learners. Fulfilling cognitive/functional needs and intrinsic enjoyment is critical for voluntary uptake. Additionally, the knowledge that enjoyment levels vary based on gender opens up possibilities for developing differentiated versions of apps that appeal better to male or female users' interests through gamification and narrative, respectively. Addressing poor adoption levels requires diagnosing deficiencies in fulfilling user needs through in-depth uses and gratifications investigations undertaken in this study.

Limitations and further research

Although the study provides transferable insights on user motivations for emerging AI apps, findings should be interpreted considering the inherent limitations of the quantitative cross-sectional survey methodology and sample profile consisting mostly of tech-savvy undergraduate students. Wider demographic profiles may yield variations in motivational patterns. Besides reported usage frequency, actual learning improvements were not examined. Longitudinal designs can uncover evolving usage behaviors and relationships between gratifications sought and actual academic gains. Qualitative techniques can reveal additional emotional, ethical, and social dynamics that influence user adoption of rapidly advancing AI technologies as they become common fixtures in contemporary classrooms.

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