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Research Note

Exploring Generative AI Tools for English Language Learning: Student Adoption and Perceptions

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Abstract

This study examines the adoption and perception of generative AI, specifically ChatGPT, as a study tool among university students in Japan. With a focus on preliminary data, it seeks to elucidate students' awareness, current use, and potential future utilization of generative AI in their academic pursuits. The research utilizes a survey methodology to gather quantitative data from 101 students, revealing high awareness but varied adoption rates. While many students do not currently use ChatGPT in their studies, a significant majority express an intention to do so, anticipating benefits such as time-saving and improved research capabilities. Factors influencing non-use include concerns about accuracy and ethical implications. This paper contributes to the discourse on AI in education, highlighting the nuanced student perspectives and the need for ongoing research to navigate the rapidly evolving AI landscape in educational settings.

Introduction

The integration of Artificial Intelligence (AI) in education has witnessed substantial recent growth, leading to innovative tools and methodologies that aim to enhance the learning experience. Among these innovations, generative AI (herein referred to as GenAI) is emerging as a prominent player, demonstrating a remarkable ability to generate human-like text responses. The rapid advancement of GenAI has introduced opportunities, as well as challenges, in language education.

Despite this advancement, there is a noticeable gap in understanding how university students are incorporating these AI tools into their academic endeavors, especially in non-Western educational contexts (Crompton & Burke, 2023). The research described in this paper seeks to bridge this gap, aiming to shed light on the extent to which Japanese university students are aware of and utilize, GenAI in their studies.

The specific objectives of this research are multifaceted. Primarily, it seeks to determine the level of awareness and usage of GenAI among university students, providing insight into how these tools are impacting their academic lives. Additionally, the study aims to identify the various purposes for which students currently use, or intend to use, GenAI, exploring a range of applications from study aid to research assistance. A critical aspect of this research is to uncover the factors that influence students' decisions to adopt or refrain from using this technology, delving into the perceptions, attitudes, and external influences that play a role in these decisions. Lastly, the study investigates the potential impact of GenAI on students' learning experiences and outcomes, striving to understand how these tools can shape and influence their academic journeys.

By exploring these dimensions, this research aims to contribute valuable insights to the ongoing discourse surrounding the adoption of GenAI in education, providing a nuanced understanding of student perceptions and usage in a Japanese university setting.

Background and Literature Review

2.1 Generative AI in Language Learning

Generative AI, particularly models like GPT (Generative Pre-trained Transformer), has revolutionized numerous fields, including natural language processing and machine learning. Its application in language learning has garnered significant attention, demonstrating the potential to aid language acquisition, provide instant feedback, and create interactive and personalized learning experiences (Hou, 2020; Tan et al., 2023; Ulla et al., 2023). GenAI, especially large language models such as OpenAI's GPT-3.5, are now being explored for their capacity to not only impact the learning and teaching process but also to empower researchers in the field of language education (Pack & Maloney, 2023). According to Cambridge English (2023), the rapid development of GenAI is set to significantly enhance the effectiveness and accessibility of language education.

2.2 Adoption of AI Tools in Education

The adoption of AI tools in educational settings has been subject to extensive research (Yanhua, 2020). Studies have shown a variety of factors influencing students' willingness to utilize these technologies, ranging from perceived usefulness and ease of use, to trust in the technology and individual attitudes toward AI (Zhang & Aslan, 2021;

Wang et al. 2021; Kizilcec, 2023). Despite the potential of AI-based adaptive learning platforms to transform educational practices, their adoption in schools has been slower than anticipated, which raises questions about the factors influencing this adoption and the extent to which these factors affect teachers' engagement with the technology (Cukurova et al., 2023).

2.3 ChatGPT in Academic Settings

ChatGPT, as a specific instance of GenAI, has found its way into academic settings, assisting students in tasks such as essay writing, researching, and studying. Research on its impact has been emerging, with studies examining how students perceive these tools and the extent to which they integrate them into their academic practices (Bringula, 2023; Kohnke et al., 2023; Malik et al., 2023). The motivations driving academics to adopt ChatGPT vary, with considerations of academic integrity playing a significant role in adoption behavior (Bin-Nashwan, 2023). Furthermore, the potential benefits and challenges of using ChatGPT in higher education settings, particularly its effects on teaching, learning, research, and student assessment, are under investigation (Fütterer et al., 2023).

2.4 Cultural and Contextual Factors

Cultural and contextual factors play a significant role in technology adoption. Riberio (2020) notes that UNESCO has pinpointed challenges teachers encounter with AI comprehension and integration into teaching, shedding light on the cultural and situational aspects that impact the adoption of AI tools. In the Japanese educational context, studies have explored the integration of technology in classrooms, revealing unique challenges and opportunities (Stout & Yamauchi, 2012; Mitomo, 2020; Tanaka & Saito, 2021). However, research specific to AI tool adoption in Japan is still limited, highlighting a gap this study aims to address.

2.5 Potential Impact on Learning Outcomes

The impact of GenAI tools on learning outcomes is a critical area of investigation. Preliminary studies have shown both positive and negative effects, depending on factors such as the implementation method, student engagement, and the nature of the task at hand (Semerikov et al., 2021). The integration of AI in education has been associated with a paradigm shift in teaching and learning, offering unparalleled opportunities as well as complex challenges (Alasadi & Baiz, 2023). Chiu (2023) identified GenAI

technologies as playing multiple roles in education across learning, teaching, assessment, and administration domains. Moreover, Relmasira et al. (2023) encourage educators to seize the opportunity to prepare students to leverage GenAI in meaningful ways and to experiment creatively with its use in educational settings.

Methodology

3.1 Research Design

The primary aim of this study is to explore the adoption, usage, and perceptions of GenAI tools, specifically ChatGPT, among English language learners at Japanese universities. To achieve this, a survey methodology was employed, providing a structured yet flexible means of gathering quantitative data on students' awareness, usage patterns, and attitudes towards these tools.

3.2 Data Collection

Data was collected through Google Forms, a widely used platform for creating and distributing surveys. The survey was comprised of 23 questions (9 multiple-choice and 14 Likert-scale), designed to capture a comprehensive view of the students' interactions and perceptions of GenAI. To ensure clarity and accessibility, the questions were provided in both English and Japanese, minimizing language barriers and enhancing the validity of the responses. The survey questions and responses were translated by the researcher (with the aid of machine translation) and checked for accuracy by a Japanese colleague.

Participants were assured of their anonymity, and participation was made entirely optional, fostering an environment where respondents could provide honest and accurate answers. The nature of the data collected was self-assessment, relying on participants' self-reported knowledge, behaviors, and attitudes.

3.3 Participants

The survey garnered participation from 101 university students resulting in 97 complete and usable responses. Responses were collected from students majoring in English, global communication, or international relations from universities in Kanagawa, Tokyo, and Shizuoka. Although the participants' exact demographics were not provided, most responses likely originated from first and second-year students, given that the surveys were predominantly disseminated among those year groups. Additionally, the diversity in responses suggests a range of experiences and perspectives

concerning generative AI tools.

3.4 Survey Questions

The survey comprised a series of multiple-choice questions, designed to address various aspects of the students' engagement with GenAI. The questions focused on:

- Awareness and initial exposure to GenAI (specifically ChatGPT) and similar tools (DALL-E2, Speechify, Midjourney, etc.).
- Usage of GenAI in academic studies, including purposes and frequency.
- Factors influencing the decision to use or not use generative AI.
- Anticipated future use and perceived benefits of AI in education.

Participants were also given the option to provide their own answers under 'other' for questions where predefined options may not have fully captured their experiences or opinions.

Preliminary Findings

4.1 Awareness and Initial Exposure

The survey data indicates a high level of awareness of GenAI tools among participants, with 94.8% of the respondents acknowledging that they have heard of ChatGPT specifically. The initial exposure to this tool is primarily through online news (54.3%) and social media (28.7%), highlighting the significant role of digital channels in disseminating information about AI technology. Recommendations from instructors (6.2%), peers (5.8%), and advertisements (5.0%) accounted for the remaining ways that students first became familiar with the technology.

4.2 Usage in Academic Studies

Despite the high level of awareness, a majority of the students (60.8%) reported that they do not use GenAI tools for their academic studies, including subjects beyond language learning. This suggests a discrepancy between awareness and actual usage, raising questions about the factors that influence adoption.

4.3 Purposes for Using ChatGPT

ChatGPT usage for academic purposes among students varies, primarily for research and information gathering (70.0%), idea generation (47.5%), and writing skills enhancement (35.0%). A minority (7.5%) also practice conversation with the tool,

reflecting its wide-ranging utility. (Multiple responses to usage were permitted.)

4.4 Factors Influencing Non-Usage

For students who refrain from using ChatGPT in their studies, concerns about accuracy and reliability (47.3%) were the most prominent factors, followed by ethical concerns (31.7%) and perceived usefulness (28.6%). Ease of use was a factor for a smaller portion of students (12.7%), suggesting that the tool's user-friendliness is not a major barrier to adoption.

4.5 Frequency of Use

The frequency of usage among the students is skewed towards the lower end, with 60.8% never using GenAI for their studies, 20.2% using it rarely, and 17.0% occasionally. Only a small percentage (2.0%) reported using GenAI very frequently.

4.6 Future Use and Anticipated Benefits

Looking ahead, 68.0% of the students anticipate using ChatGPT or similar GenAI tools for their academic studies in the future. The envisioned uses include research and information gathering (72.3%), generating ideas (60.0%), and improving writing skills (40.0%). The specific benefits students anticipate from using these tools in the future are predominantly time-saving (62.0%), improved research and information retrieval (54.3%), and an enhanced understanding of academic content (41.3%). (Again, participants were allowed to select all answers that they believed applied to their future potential use of AI in educational settings.)

Discussion

5.1 Awareness and Initial Exposure

The high level of awareness of GenAI-powered tools among university students in Japan indicates a high level of dissemination of information through digital channels. This is evident from the 94.8% of participants who have heard of or used ChatGPT, primarily learning about them through online news and social media. This widespread awareness, however, does not directly translate into usage for academic purposes, suggesting that mere awareness might not be sufficient to drive adoption.

5.2 Adoption and Usage in Academia

The study reveals a notable gap between awareness and actual use of GenAI in

academic settings, with over 60.0% of students not utilizing these tools for their studies. This disjunction raises critical questions about the factors influencing adoption and how they might be addressed to encourage the constructive use of AI tools in education. The reasons for not using these tools, including concerns about its accuracy, reliability, perceived usefulness, and ethical considerations, offer valuable insights into the challenges associated with its adoption.

Although outside the scope of this research, it has been observed that there is no unified policy among universities regarding the ethical use of GenAI. While some administrations actively encourage educators to explore its use in classrooms, other institutions have issued blanket bans. These varied stances may lead to confusion among students about whether or not using AI in their studies may lead to accusations of academic misconduct.

5.3 Purposes and Frequency of Use

For the minority of students who do use GenAI, the purposes are diverse, ranging from research and information gathering to improving writing skills. However, the frequency of use is skewed towards rare usage, highlighting a potential area for further exploration and understanding. Identifying the factors that influence the frequency of AI tool use can provide important insights into their role in academic practices.

5.4 Future Prospects and Anticipated Benefits

Looking forward, a significant portion of students (68.0%) foresee themselves using GenAI or similar tools in their future studies, anticipating benefits such as time-saving, improved research and information retrieval, and enhanced understanding of academic content. This perspective indicates that future adoption patterns may be influenced by overcoming present obstacles and improving the perceived value of these tools.

5.5 Potential Limitations of the Study

While this study provides important insights into the adoption and perception of GenAI among university students in Japan, several limitations must be acknowledged. First, the study's reliance on self-reported data may lead to biases in the responses, as students might overestimate their awareness or underreport their usage due to social desirability or ethical concerns. Additionally, the sample size of 101 participants, while offering a glimpse into the students' perspectives, may not be sufficiently representative of the wider student population in Japan. This limits the generalizability of the findings.

Another potential limitation is the rapidly evolving nature of GenAI technology. The findings of this study, while current, may quickly become outdated as new advancements in AI are continuously being made, potentially altering the landscape of AI in education. Furthermore, the cultural and linguistic specificity of the study, focusing solely on university students in Japan, means that the findings might not apply to students in different cultural or educational contexts. Lastly, the study's focus on GenAI tools in language learning contexts might have overlooked broader applications of these technologies in other academic disciplines, which could offer different insights into student adoption and perceptions.

Conclusion

This preliminary report has explored the current state of adoption, usage, and perceptions of GenAI among university students in Japan, shedding light on the complex interplay between awareness, usage patterns, and influencing factors. The findings reveal a range of opportunities and challenges, indicating that more research and exploration are required to understand the role of AI-powered tools in academic settings.

As the field of GenAI continues to evolve, understanding the factors that influence student adoption and usage becomes increasingly crucial. By addressing the concerns about accuracy, reliability, and ethical implications, and enhancing the perceived usefulness of these tools, there is potential to transform the academic landscape, fostering a more seamless integration of AI-powered tools in educational settings.

This study serves as a stepping stone toward a comprehensive understanding of the role of GenAI in education, providing insights that can inform future research, policy, and practice. However, due to the rapidly evolving nature of AI technology, it is important to emphasize the need for continuous data collection and observation in future research. As AI tools like ChatGPT evolve and become more integrated into educational settings, student behaviors, attitudes, and perceptions are likely to shift correspondingly. Repeated studies, ideally at regular intervals, will be instrumental in tracking these changes and understanding the long-term implications of AI integration in education.

An ongoing research effort is crucial not only for understanding changes in GenAI usage in education but also for identifying emerging trends and challenges that students might face as they adapt to new technologies. By continually collecting data, researchers and educators can stay ahead of these changes, ensuring that their strategies, policies, and practices evolve in tandem with the technology and the needs of the students.

Furthermore, longitudinal studies would allow for a more comprehensive understanding of how the use of AI in education impacts student learning outcomes over time. This could include aspects such as academic performance, engagement, motivation, and the development of critical thinking and problem-solving skills. Understanding these impacts will be key to optimizing the use of AI in educational contexts and ensuring that these tools serve as beneficial aids in the learning process rather than as mere novelties.

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