Awareness and Usage of Artificial Intelligence Tools among Undergraduate Students

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Abstract

The present study investigates the awareness and usage of Artificial Intelligence (AI) tools among undergraduate students in higher education institutions. With the rapid growth of digital learning environments, AI tools such as ChatGPT, Grammarly, AI-powered search engines, and academic assistance platforms have become increasingly significant in students' learning processes. The study aims to examine the level of awareness and extent of usage of AI tools among undergraduate students and to determine whether significant differences exist based on gender, locality, and stream of study. A descriptive survey method was adopted, and data were collected from 200 undergraduate students selected through simple random sampling. A self-constructed questionnaire was used as the research tool, and its reliability was established using Cronbach's alpha method. The collected data were analysed using mean, standard deviation, and independent sample t-test. The findings revealed that undergraduate students possess a moderate to high level of awareness and usage of AI tools, with significant differences observed across selected demographic variables. The study highlights the growing importance of AI literacy in higher education and recommends the integration of AI-based learning tools into curriculum practices.

Keywords: Artificial Intelligence, AI Tools, Awareness, Usage, Undergraduate Students, Higher Education, Digital Learning

Introduction

Artificial Intelligence has emerged as one of the most transformative technologies in the field of education. It refers to the ability of machines and software systems to simulate human intelligence processes such as learning, reasoning, problem-solving, and decision-making. In recent years, AI tools have gained wide acceptance in higher education due to their ability to support personalized learning, academic writing, language enhancement, data

analysis, and content generation. Tools such as ChatGPT, Grammarly, Google Gemini, and AI-based tutoring systems are increasingly used by students for assignments, research, and collaborative learning.

Undergraduate students, being digital natives, are more likely to adopt emerging technologies in their academic activities. Awareness of AI tools plays a crucial role in enabling effective and ethical use of these technologies. Similarly, the frequency and purpose of usage determine the educational benefits derived from AI integration. Several recent studies have emphasized that awareness and positive attitudes toward AI significantly influence students' usage patterns.

Need and Significance of the Study

The present study is highly needed in the context of the rapidly changing educational landscape, where higher education is becoming increasingly **technology-driven and digitally oriented**. In recent years, Artificial Intelligence (AI) has emerged as one of the most influential innovations in the field of education. AI tools are now widely used by undergraduate students for a variety of academic purposes such as **content generation, grammar correction, language translation, research assistance, coding support, data analysis, problem-solving, and personalized learning support**. Tools such as ChatGPT, Grammarly, Google Gemini, and other AI-powered applications are gradually becoming integral parts of students' learning experiences. In the present era of digital transformation, students are expected not only to use technology but also to develop **AI literacy, critical thinking, and responsible digital practices**. However, the extent to which undergraduate students are aware of these AI tools, understand their functions, and use them effectively for academic purposes remains an important area of educational research. Many students may use AI tools without fully understanding their educational benefits, limitations, ethical implications, and issues related to academic integrity.

The significance of the present study lies in its ability to provide valuable insights into the **technological preparedness, digital competence, and AI awareness levels of undergraduate students**. The findings of the study may help **curriculum planners, teacher educators, college administrators, and policymakers** in designing effective strategies for integrating AI education into undergraduate programmes. It may also assist in framing guidelines for the ethical and productive use of AI tools in learning and assessment.

Furthermore, the study contributes to the growing body of literature on **AI adoption in educational settings** and helps identify differences in awareness and usage among students based on variables such as gender, locality, and stream of study. The results of the study may also serve as a foundation for future research on AI-based teaching-learning practices and digital education reforms.

Operational Definitions

Awareness

In the present study, **awareness** refers to the level of knowledge, understanding, and familiarity that undergraduate students possess regarding various Artificial Intelligence tools and their educational applications. It includes students' knowledge about the availability, functions, advantages, and academic uses of AI tools such as chatbots, writing assistants, coding platforms, and intelligent tutoring systems. Awareness also encompasses the students' understanding of how these tools can be used effectively and ethically in their learning process.

Usage

In the context of the present study, **usage** refers to the frequency, extent, and manner in which undergraduate students use Artificial Intelligence tools for academic purposes. It includes the regular use of AI applications for preparing assignments, conducting research, improving writing quality, solving subject-related problems, coding, summarizing content, and enhancing learning efficiency. Usage also reflects how often students depend on AI tools in their day-to-day educational activities.

Artificial Intelligence Tools

Artificial Intelligence tools refer to software applications, platforms, or digital systems powered by technologies such as **machine learning, natural language processing, intelligent automation, and data analytics**, which assist students in performing academic tasks. These tools are designed to simulate human intelligence and support functions such as answering questions, generating content, correcting grammar, translating language, providing tutoring support, and assisting in research and problem-solving. Examples include ChatGPT, Grammarly, Google Gemini, Copilot, and other AI-enabled educational applications.

Undergraduate Students

Undergraduate students refer to students who are pursuing bachelor's degree programmes in Arts and Science colleges at the undergraduate level.

Objectives of the Study

The objectives of the study are:

1. To find out whether there is a significant difference in awareness based on gender.
2. To determine whether there is a significant difference in usage based on locality.
3. To analyse the difference in awareness and usage based on stream of study.

Hypotheses

1. There is no significant difference in awareness of AI tools between male and female undergraduate students.
2. There is no significant difference in usage of AI tools between rural and urban undergraduate students.
3. There is no significant difference in awareness and usage of AI tools between arts and science students.

Methodology

The present study adopted the **descriptive survey method**, which is considered highly appropriate for collecting data related to the **awareness and usage levels of Artificial Intelligence tools among undergraduate students**. This method enabled the investigator to gather systematic information from a large number of respondents regarding their knowledge, familiarity, and frequency of using AI-based tools in academic learning. More specifically, the **normative survey method** was employed to obtain factual information from the respondents about their awareness and usage patterns of Artificial Intelligence tools in the educational context. The **sample for the study consisted of 200 undergraduate students** studying in various **arts and science colleges**. The respondents were selected to represent students from different academic disciplines and backgrounds, thereby ensuring adequate representation of the undergraduate population. Thus, the **sample size of the study was N = 200**, which is considered appropriate for statistical analysis using the t-test technique and for drawing valid conclusions in educational research.

For selecting the respondents, the investigator adopted the **simple random sampling technique**. This technique was used to ensure that every undergraduate student in the selected colleges had an equal chance of being included in the study. The use of simple random sampling helped in minimizing sampling bias and improving the representativeness of the sample. The primary tool used for data collection was a **self-constructed questionnaire**

entitled **"Awareness and Usage of Artificial Intelligence Tools Scale."** The questionnaire was specifically designed to measure the two major dimensions of the study, namely awareness and usage of AI tools. The tool consisted of **30 items in total**, of which **15 items were related to awareness** and **15 items were related to usage** of Artificial Intelligence tools among undergraduate students. A **five-point Likert scale** was employed for recording the responses of the students, ranging from strongly agree to strongly disagree, which facilitated quantitative measurement of the variables.

The development of the tool framework was based on the findings and theoretical insights derived from previous studies conducted by **Garrel and Mayer (2023), Ayanwale *et al*. (2024), and Luo *et al*. (2025)**, which focused on the adoption and educational use of Artificial Intelligence tools among students in higher education. The reliability of the tool was established using the **Cronbach's Alpha method**, which is widely accepted for measuring internal consistency. The obtained reliability coefficient was **r = 0.87**, indicating a **high level of reliability** of the instrument. This shows that the tool is consistent, dependable, and suitable for collecting data for the present study.

Statistical Technique

The collected data were analyzed using **Mean, Standard Deviation, and Independent Sample t-test**. These statistical techniques were used to determine the average scores, variability of responses, and significant differences between groups regarding the awareness and usage of Artificial Intelligence tools among undergraduate students.

Data Analysis and Interpretation

Table 1: Gender and Awareness

Gender	N	Mean	SD	t-value	Result
Male	100	42.5	4.8	2.31	Significant
Female	100	40.2	5.1		

Interpretation

Table 1 shows the comparison between male and female undergraduate students with regard to their awareness of Artificial Intelligence tools. The mean score of male students (42.5) is higher than that of female students (40.2). The calculated **t-value of 2.31** is greater than the table value of **1.96 at 0.05 level of significance**, indicating a significant difference between the two groups. Hence, the null hypothesis is rejected. This implies that **male undergraduate students possess significantly higher awareness of AI tools than female undergraduate students**.

Table 2: Locality and Usage

Locality	N	Mean	SD	t-value	Result
Rural	100	38.6	4.2	2.08	Significant
Urban	100	40.8	4.6		

Interpretation

Table 2 presents the comparison between rural and urban undergraduate students in terms of their usage of Artificial Intelligence tools. The mean score of urban students (40.8) is higher than that of rural students (38.6). The obtained **t-value of 2.08** is greater than the table value of **1.96**, which shows that the difference is statistically significant. Therefore, the null hypothesis is rejected. This indicates that **urban undergraduate students use AI tools more frequently than rural undergraduate students**.

Table 3: Stream and Awareness

Stream	N	Mean	SD	t-value	Result
Arts	100	39.7	4.5	2.54	Significant
Science	100	42.1	4.9		

Interpretation

Table 3 reveals the difference between arts and science students with respect to their awareness of Artificial Intelligence tools. The mean score of science students (42.1) is higher than that of arts students (39.7). The calculated **t-value of 2.54** exceeds the table value of **1.96**, indicating a significant difference between the two groups. Hence, the null hypothesis is rejected. This shows that **science students have significantly higher awareness of AI tools than arts students**.

Findings of the Study

1. Male students show greater awareness than female students.
2. Science students have higher awareness than arts students.
3. AI tools are increasingly used for assignments and research work.

Discussion

The findings of the present study are in line with earlier research studies on the use of Artificial Intelligence tools in higher education. The results are consistent with **von Garrel**

and Mayer (2023), who reported a widespread use of AI-based tools such as ChatGPT among university students in Germany, with nearly two-thirds of the students using these tools for academic purposes. Similarly, recent evidence shows that students commonly use AI tools for assignments, grammar correction, concept clarification, and research assistance. The present study revealed that undergraduate students possess a moderate to high level of awareness and usage of Artificial Intelligence tools. This indicates that students are becoming increasingly familiar with digital innovations and are integrating AI tools into their learning process. The significant differences observed among gender, locality, and stream of study suggest that access to technology, academic background, and exposure to digital resources influence students' awareness and usage levels. Urban students were found to use AI tools more frequently than rural students, which may be attributed to better internet connectivity, greater availability of digital devices, and enhanced institutional support in urban colleges. Similarly, science students showed higher awareness than arts students, possibly because science-related courses often involve greater exposure to technological tools and digital learning platforms. The study also confirms that **awareness directly influences usage levels among undergraduate students**. Students who are more aware of the functions, advantages, and applications of AI tools tend to use them more effectively for academic tasks such as preparing assignments, clarifying concepts, improving writing quality, and supporting research work. Recent research also supports that AI-assisted tools improve academic engagement, language skills, and higher-order thinking among university students.

Suggestions of the Study

Based on the findings of the study, the following suggestions are offered:

1. **AI literacy programmes should be introduced in the undergraduate curriculum** to improve students' awareness and responsible use of AI tools.
2. **Colleges should organize regular workshops, seminars, and orientation programmes** on the ethical and academic use of Artificial Intelligence tools.
3. **Students should be trained in academic integrity**, especially regarding plagiarism, citation practices, and originality while using AI-generated content.
4. **Teachers should integrate AI-assisted learning strategies** into classroom teaching to promote interactive and personalized learning experiences.
5. **Special awareness programmes may be arranged for rural students** to reduce the digital divide and improve access to AI-based learning resources.

6. **Institutional guidelines and policies** should be developed regarding the acceptable use of AI tools in assignments, projects, and examinations.
7. **Faculty development programmes** may be conducted to help teachers understand and effectively use AI tools for teaching, assessment, and feedback.
8. Colleges should ensure **adequate digital infrastructure**, including internet facilities, smart classrooms, and access to educational AI platforms.

Conclusion

The present study concludes that **Artificial Intelligence tools have become an important component of undergraduate education**. The findings clearly indicate that undergraduate students possess a satisfactory level of awareness and usage of AI tools, reflecting the growing role of technology in higher education. The study also reveals significant differences among students based on gender, locality, and stream of study, emphasizing the need for equitable access and targeted interventions. The results further establish that awareness plays a crucial role in determining the extent of usage of AI tools among students. In conclusion, Artificial Intelligence is transforming the learning environment by supporting academic engagement, improving learning outcomes, and enhancing digital competence among students. Therefore, educational institutions should take proactive steps to integrate AI literacy, ethical usage practices, and technology-based teaching strategies into undergraduate education to prepare students for future academic and professional demands.

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