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# Investigation and Research on University Students' Awareness of Artificial Intelligence

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**Abstract:** This study employs questionnaire surveys to explore university students' awareness, applications, perceptions, and attitudes toward artificial intelligence (AI). Given that AI has been widely applied across various fields such as social life, education, healthcare, and more, its profound societal impact cannot be overlooked. In this rapidly evolving technological era, university students encounter and learn about AI through multiple channels. As the technology becomes increasingly pervasive, they are becoming familiar with AI applications and can identify common AI products. Moreover, in the face of the groundbreaking advancements and potential challenges AI poses to human employment, students are able to adopt a dialectical perspective to weigh the opportunities and risks. Investigating university students' awareness of AI not only helps reveal how AI technology influences their daily lives, academic pursuits, and future career planning but also holds significant importance for enhancing their AI application skills and technological literacy.

**Keywords:** university students; artificial intelligence; awareness; questionnaire survey

## 1. Introduction

Artificial intelligence (hereinafter referred to as "AI") is a cutting-edge interdisciplinary field centered on computer science, integrating mathematics, logic, neuroscience, and other disciplines. It aims to simulate human intelligence in thinking and behavior, developing intelligent systems capable of autonomous learning, reasoning, decision-making, and executing complex tasks [1]. These systems demonstrate intelligence comparable to or surpassing human performance in areas such as language communication, image recognition, and data analysis, providing technological support and innovative momentum for societal development.

AI originated in the summer of 1956 when scientists such as John McCarthy and Marvin Minsky first proposed the concept at Dartmouth College in the United States, defining the research direction of machine simulation of human intelligence and marking the birth of this emerging discipline [2]. Since then, numerous researchers have dedicated themselves to this field, embarking on a long journey to explore intelligent machines and laying the theoretical foundation and research framework for AI development.

With the rapid advancement of big data, cloud computing, deep learning, and other technologies, AI has entered a new era of growth. Breakthroughs in deep learning algorithms have enabled machines to autonomously learn features and patterns from massive datasets, significantly improving performance in tasks such as image recognition, speech recognition, and natural language processing. For example, in 2016, AlphaGo's victory

over world Go champion Lee Sedol marked a major milestone in AI's capabilities in complex decision-making, sparking global attention. In recent years, large-scale AI models like ChatGPT have elevated natural language processing to new heights [3]. These models can not only engage in fluent conversations with humans but also perform tasks such as drafting emails, copywriting, translation, generating video scripts, and coding, demonstrating powerful general language abilities and creativity [4]. This has once again ignited a wave of AI development, driving its widespread application and deep integration across fields such as education, healthcare, finance, and entertainment. In the future, AI will continue to evolve toward greater intelligence, generalization, and humanization, deeply embedding itself into all aspects of society and reshaping production and lifestyles [5].

Against this backdrop, individual AI literacy is crucial [6]. It encompasses not only a basic understanding of AI technology but also a rational attitude toward its applications and potential risks, as well as the ability to effectively utilize AI tools in daily life and work [7]. This will become a fundamental requirement for individuals to adapt to societal development and compete in the future. As the driving force of the new era, university students bear the responsibility of leading future progress. Investigating their awareness of AI helps delve into the multidimensional impact of AI on their daily lives, academic development, and career planning while also contributing to improving their AI application skills and digital literacy [8].

## **2. Research Methods**

### *2.1. Participants*

This study targets full-time undergraduate and postgraduate students in universities, categorizing them into foreign language majors and non-foreign language majors. Through systematic investigation, the study comprehensively examines university students' current awareness of AI.

### *2.2. Research Tools*

The study uses questionnaires as the research tool. In addition to basic information, the questionnaire is designed around four dimensions: university students' understanding of AI, application scenarios, perceptions, and attitudes. It consists of 26 questions, including single-choice, multiple-choice, and Likert scale items (supportive or non-supportive). The overall design is logical and clear, with diverse question types.

### *2.3. Data Collection*

The survey was distributed online via the "Questionnaire Star" platform. A total of 394 questionnaires were issued and 394 returned, of which 392 were valid, yielding a 100% recovery rate and a 99.49% validity rate. The Cronbach's Alpha coefficient of the questionnaire is 0.85, indicating good reliability and validity for measurement.

### *2.4. Data Analysis*

Questionnaire data were exported from "Questionnaire Star" to Excel and analyzed using SPSS 26.0. Descriptive statistics were used for general data analysis. Since the data did not meet normal distribution, non-parametric tests (Mann-Whitney  $u$  Test) were employed to compare differences in attitudes toward AI across genders and majors. A  $p$ -value  $< 0.05$  indicated statistically significant differences, and results were presented in charts.

### 3. Research Results and Analysis

#### 3.1. Basic Information of Survey Respondents

Among the respondents, 60.91% were foreign language majors, while 39.09% were non-foreign language majors. Foreign language majors primarily included English, Japanese, and Korean, while non-foreign language majors covered fields such as science (22.73%), economics and management (19.7%), information technology (19.7%), and others (e.g., humanities, arts, agriculture, social sciences, and education). This diversity ensures representativeness.

In terms of grade, most respondents were freshmen (53.05%) and sophomores (24.11%), with juniors (13.71%), seniors (7.87%), and postgraduates (1.27%) making up the remainder. This suggests that lower-year students are more concerned about AI awareness and applications.

Gender distribution showed 18.78% male and 81.22% female respondents, partly due to the higher proportion of female students in foreign language majors.

#### 3.2. University Students' Understanding of AI

Survey results revealed diverse channels for learning about AI. The majority (96.95%) accessed AI information online, highlighting the Internet's role as the primary information source. Traditional media (38.07%), TV programs (40.86%), peer recommendations (34.77%), and sci-fi movies (32.99%) also contributed, reflecting complementary knowledge dissemination channels.

Regarding awareness, 60.66% of students rated their understanding as "average", while 29.7% claimed "having some understanding of AI". Only 4.06% reported being "very knowledgeable about AI", and a small minority (5.59%) admitted to have limited awareness.

Students demonstrated high recognition of AI applications: 88.07% identified chatbots, 82.49% recognized AI-generated art, 78.43% knew about image processing tools, and 59.14% understood algorithmic video recommendations. However, 83.76% had not participated in AI-related courses or training, indicating a gap in formal education.

#### 3.3. University Students' Usage of AI

Most students (94.16%) actively used AI products, with tools like Doubao (90.24%), DeepSeek (57.32%), AI art (35.37%), and research aids (13.41%) being popular. Usage frequency varied: 10.98% daily, 26.83% 4–5 times weekly, 20.73% 2–3 times weekly, and 41.46% once or less weekly.

When using AI-generated content, 84.15% relied on personal judgment to correct errors, while 10.98% rigorously verified accuracy. Only 4.88% used content without review.

Citation practices for AI-generated content were inconsistent: 30.49% never credited AI, 51.22% occasionally did, 7.32% frequently did, and 10.89% always did.

#### 3.4. University Students' Perceptions and Attitudes toward AI

##### 3.4.1. University Students' General Perceptions and Attitudes toward AI

Overall, students held positive views: 84.15% were optimistic about the economic benefits of AI, and 81.47% believed it enhanced convenience and quality of life. However, opinions on artificial general intelligence (AGI) were divided: 26.92% rejected its development, 32.31% accepted it, and 40.77% remained neutral.

Regarding the arrival of AGI, 17.69% predicted its arrival within 5 years, 31.54% within 5–10 years, 30% within 10–20 years, and 20.77% beyond 20 years.

Preferred AI development areas included social life (80.8%), healthcare (27.99%), scientific research (21.32%), and education (18.74%). Concerns about AI restrictions were highest for military applications (52.28%).

On limiting AI development speed, 42.39% supported restrictions, while 57.61% opposed them, citing ethical risks (e.g., privacy, job displacement).

#### 3.4.2. Attitudes Toward AI in Foreign Language Fields

Nearly half (47.60%) held neutral views, while 43.90% supported or strongly supported AI's role in language domains. Most (73.1%) agreed AI reduced language professionals' workloads, and 77.1% believed its benefits outweighed drawbacks.

#### 3.4.3. Perceptions of AI Replacing Human Jobs

Among respondents, 39.2% feared AI would replace their future jobs, while 60.8% disagreed. Foreign language majors were split, with 57.5% optimistic and 42.5% pessimistic, reflecting varying perceptions of AI's threat to language-related careers.

### 3.5. Attitude Differences by Gender and Major

#### 3.5.1. Attitude Differences by Gender

Using "gender" as the independent variable, the questions categorized under "university students' attitudes toward AI" were extracted as variables for difference analysis. The results showed that, except for Q20, all p-values were greater than 0.05. According to Table 1, the researcher listed several questions as examples for reference (see Table 1):

1. What do you think is the impact of AI on human society? ( $p = 0.012$ )
2. How do you feel about accepting AI? ( $p = 0.964$ )
3. What is your attitude toward the future development of AI? ( $p = 0.149$ )
4. Do you think the application of AI in the field of foreign languages brings more benefits than drawbacks? ( $p = 0.560$ )
5. Are you willing to let AI gain an in-depth understanding of your personal privacy to provide better services? ( $p = 0.272$ )

**Table 1.** Attitude Differences by Gender.

|   | Null Hypothesis  | Test                                      | Sig.  | Decision                    |
|---|--|---|-------|-----------------------------|
| 1 | The distribution of Q18 is the same across categories of Gender. | Independent-Samples Mann-Whitney $u$ Test | 0.964 | Retain the null hypothesis. |
| 2 | The distribution of Q19 is the same across categories of Gender. | Independent-Samples Mann-Whitney $u$ Test | 0.315 | Retain the null hypothesis. |
| 3 | The distribution of Q20 is the same across categories of Gender. | Independent-Samples Mann-Whitney $u$ Test | 0.012 | Reject the null hypothesis. |
| 4 | The distribution of Q21 is the same across categories of Gender. | Independent-Samples Mann-Whitney $u$ Test | 0.777 | Retain the null hypothesis. |
| 5 | The distribution of Q22 is the same across categories of Gender. | Independent-Samples Mann-Whitney $u$ Test | 0.097 | Retain the null hypothesis. |
| 6 | The distribution of Q23 is the same across categories of Gender. | Independent-Samples Mann-Whitney $u$ Test | 0.082 | Retain the null hypothesis. |
| 7 | The distribution of Q24 is the same across categories of Gender. | Independent-Samples Mann-Whitney $u$ Test | 0.272 | Retain the null hypothesis. |
| 8 | The distribution of Q25 is the same across categories of Gender. | Independent-Samples Mann-Whitney $u$ Test | 0.560 | Retain the null hypothesis. |
| 9 | The distribution of Q26 is the same across categories of Gender. | Independent-Samples Mann-Whitney $u$ Test | 0.149 | Retain the null hypothesis. |

The above results indicate that there is a significant difference between male and female students in their attitudes toward AI's impact on human society. Specifically, female students were more likely than male students to rate AI's impact on society as "moderate"

or "positive". This may stem from differences in risk perception and levels of concern between genders. Aside from this item, no other statistically significant differences were found between students' overall attitudes toward AI and the "gender" variable.

### 3.5.2. Attitude Differences by Major

Using "major" as the independent variable, questions classified under "university students' attitudes toward AI" were extracted as variables for difference analysis. The results showed that the p-value for Q22 was 0.022, which is less than 0.05, while the p-values for all other items were greater than 0.05 (Table 2).

**Table 2.** Attitude Differences by Major.

|   | Null Hypothesis   | Test   | Sig.  | Decision                    |
|---|---|--|-------|-----------------------------|
| 1 | The distribution of Q18 is the same across categories of Major. | Independent-Samples Mann-Whitney <i>u</i> Test | 0.893 | Retain the null hypothesis. |
| 2 | The distribution of Q19 is the same across categories of Major. | Independent-Samples Mann-Whitney <i>u</i> Test | 0.313 | Retain the null hypothesis. |
| 3 | The distribution of Q20 is the same across categories of Major. | Independent-Samples Mann-Whitney <i>u</i> Test | 0.804 | Retain the null hypothesis. |
| 4 | The distribution of Q21 is the same across categories of Major. | Independent-Samples Mann-Whitney <i>u</i> Test | 0.113 | Retain the null hypothesis. |
| 5 | The distribution of Q22 is the same across categories of Major. | Independent-Samples Mann-Whitney <i>u</i> Test | 0.022 | Reject the null hypothesis. |
| 6 | The distribution of Q23 is the same across categories of Major. | Independent-Samples Mann-Whitney <i>u</i> Test | 0.310 | Retain the null hypothesis. |
| 7 | The distribution of Q24 is the same across categories of Major. | Independent-Samples Mann-Whitney <i>u</i> Test | 0.362 | Retain the null hypothesis. |
| 8 | The distribution of Q25 is the same across categories of Major. | Independent-Samples Mann-Whitney <i>u</i> Test | 0.615 | Retain the null hypothesis. |
| 9 | The distribution of Q26 is the same across categories of Major. | Independent-Samples Mann-Whitney <i>u</i> Test | 0.034 | Retain the null hypothesis. |

The findings indicate a statistically significant difference between foreign language majors and non-foreign language majors in their responses to the item "attitude toward the application of AI in the field of foreign languages". Foreign language majors selected "neutral" and "supportive" at higher frequencies compared to non-foreign language majors. A possible explanation is that foreign language students recognize the high relevance of AI tools to their studies or future careers. They use AI tools more frequently in their daily routines, leading to a more intuitive appreciation of AI's practicality and accuracy.

Apart from this item, no other statistically significant differences were found between university students' attitudes toward AI and the "major" variable.

## 4. Conclusion

This study reveals that university students primarily learn about AI through the Internet but possess limited in-depth knowledge. While most use AI tools actively, citation practices are inconsistent. Optimism toward AI is widespread, though foreign language majors show greater concern about job displacement. Gender and major differences in attitudes are negligible. To foster responsible AI use, future efforts should emphasize training and education. Continuous tracking of AI's evolving impact is recommended. Qualitative methods like interviews could deepen understanding.

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