

Awareness On Artificial Intelligence (Ai) Between Boys and Girls Among Higher Secondary Students

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ABSTRACT

Artificial Intelligence (AI) has emerged as a transformative technology influencing education, healthcare, industry, and daily life. Awareness and understanding of AI are essential for individuals to participate effectively in an increasingly digital society. In recent years, AI - based education systems have led to revolutionary changes in the field of education. The use of these technologies offers a number of advantages, such as being able to better respond to students ' individual needs, enabling teachers to guide students more effectively, and generally improving the quality of education. However, the use of these technologies also raises ethical concerns, especially for special needs students. With the increase in applications for these students in AI-based education, issues such as student privacy, justice, and equality of opportunity come to the fore. The study is concerned with the awareness of AI among boys and girls among higher secondary students in Coimbatore District. The data were collected from 413 XI standard students from Government and Private Schools in Coimbatore District using the Awareness on AI Questionnaire developed by Ravi R (2015). A simple random sampling method was adopted to select the sample. The collected data were analyzed using descriptive and t-tests. The study concludes that there is a significant difference in awareness of AI between boys and girls of the selected higher secondary students.

Key Words: Awareness, AI, Higher Secondary Students

1. INTRODUCTION

The rapid advancement of Artificial Intelligence (AI) is transforming various sectors, and education is no exception. AI plays a significant role in both general and higher education, influencing students' academic development by offering a mix of opportunities and challenges .AI has the potential to revolutionize education and address the diverse needs of learners. However, positive educational outcomes are not guaranteed solely by the adoption of advanced AI technologies. The integration of AI

in academic environments raises critical questions related to equality, accessibility, and the evolving role of traditional teaching methods.

The influence of AI on education is transformative and multifaceted. AI enables personalized learning by adapting educational content to meet the unique needs of individual students. Studies have shown that students in personalized learning environments exhibit improved self-efficacy and a more positive attitude towards their education. These experiences are increasingly achievable through AI-driven tools that analyze vast amounts of data to identify learning gaps and tailor interventions accordingly. For instance, AI-powered platforms, such as adaptive learning systems, have been shown to enhance student engagement and performance by providing real-time feedback and customized learning pathways.

In traditional education, students are encouraged to take an active role in their learning process by developing skills in exploration, analysis, and problem-solving. Critical thinking skills are essential for shaping students' overall learning experiences. Educators often rely on questioning techniques, collaborative activities, and assignments to enhance students' ability to evaluate information and develop independent perspectives. However, the rapid information and insightful responses provided by AI challenge traditional learning methods, raising questions about the distinctions between human learning and machine-based learning. For example, while AI can efficiently process and analyze data, it may lack the nuanced understanding and creativity inherent in human cognition. This underscores the need for a balanced approach to AI integration, ensuring that it complements rather than replaces human interaction and the development of critical thinking skills.

The use of AI in education is not without its challenges. The effective integration of artificial intelligence in education requires a thorough understanding of both the technology and the learning process. This complexity is further heightened by ethical concerns, especially in the context of the increasing use of generative artificial intelligence. For instance, it highlights the risk of students misusing AI tools in dishonest or unauthorized ways, such as using AI-generated content to complete assignments without proper attribution. Additionally, concerns about the application of AI in surveillance, control, and assessment practices could undermine trust and autonomy in educational settings. Higher education institutions must clearly define the role and extent of AI in student education to address these challenges effectively.

Artificial Intelligence (AI) has evolved rapidly and is now one of the most transformative technologies of the modern era. At its core, AI focuses on developing computer systems capable of performing tasks that traditionally require human intelligence, such as visual perception, speech recognition, decision-making and language translation. As a branch of computer science, AI aims to create intelligent machines that can perceive, learn, reason and act autonomously. AI adapts educational content to individual learning styles and performance levels and provides immediate feedback to students. So, higher secondary students should develop their awareness of Artificial Intelligence at school level itself, before going to college level the awareness of AI. Hence, the investigator is intended to explore the awareness of AI of higher secondary students.

Title of the Study : Title of the Study is entitled “ Awareness On Artificial Intelligence (AI) Between Boys And Girls Among Higher Secondary Students.”

Operational Definition of the study

The investigator has given the following operational definitions for the terms used in the title of the study as follows:

Awareness (Definition)

Awareness refers to the state of having knowledge, understanding, or perception of a particular subject, issue, or situation. It involves being informed and conscious of facts, concepts, or developments in one’s surroundings.

Artificial Intelligence (AI) (Definition)

Artificial Intelligence is the branch of computer science that deals with creating machines or software capable of performing tasks that normally require human intelligence, such as learning, reasoning, problem-solving, decision-making, and language understanding.

Higher Secondary Students (Definition)

Higher secondary students are learners enrolled in the final stage of school education, typically studying in grades 11 and 12 (ages approximately 16–18), preparing for higher education or professional pathways.

OBJECTIVES OF THE STUDY

1. To study the Awareness of Artificial Intelligence (AI) Between Boys And Girls Among Higher Secondary Students.

SPECIFIC OBJECTIVES

1. To find out whether there is any significant difference between the mean score of awareness of AI among higher secondary students with respect to gender.

Hypothesis of the Study

Hypothesis -1: There will be a significant difference between the mean score of Awareness on AI among higher secondary students with respect to gender.

II.REVIEW OF RELATED LITERATURE

Liu Dong et al.(2025) examined the overall effect of AI on students’ academic achievement in relation to a set of moderator variables including educational level, role of Ai, intervention duration, sample size, learning strategy, subject area, and type of AI. Following the Preferred Reporting items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, a total of 29 empirical studies were selected from six database (Scopus, Web of Sciences. APA Psych INFO, Education Full Text, Education Source,

ERIC, and Social Sciences Full Text). These studies, comprising a sample of 2,657 participants across different educational levels, met the inclusion criteria before being coded, calculated, and analyzed.

Blankaklimova (2025) assessed how AI affects student well-being, focusing on mental health, social interactions, and academic experiences. While AI offers benefits such as personalized learning, mental health support, and improved communication efficiency, it also raises concerns regarding digital fatigue, loneliness, technostress, and reduced face-to-face interactions. Overreliance on AI may diminish interpersonal skills and emotional intelligence, leading to social isolation and anxiety. Furthermore, issues such as data privacy and job displacement emerge as AI technologies permeate educational environments.

Ahmed tliiet etal (2025) conducted a meta-analysis and research synthesis of the effects of AI application on students' learning achievement. Additionally, this study conducted one step forward to analyze the field of education, level of education, learning mode, intervention duration, and geographical distribution as moderating variables of the effect of AIEd. The Hedges'g was computed for the effect sizes, where 8.5 quantitative studies (N=10.469 participants) were coded and analyzed. The result indicated that the total effect of AIEd on learning achievement is very large ($g=1.10, P<0.001$). Particularly chatbots achieved a very large effect, while intelligent tutoring systems (ITS) and personalized learning systems had large effects.

Zakaria, A etal. (2024) investigated the impact of AI on academic performance among students at University of Technology Mara (Ui TM), Kedah. The study examines various effects of AI, such as the delivery of smarter content, enhanced support and assistance, and improved attitudes towards learning and motivation on students; academic outcomes. A total of 354 students participated in the study, providing data through self-administered questionnaires. Statistical analysis using SPSS revealed that three AI variables significantly influence students' academic performance. Consequently, educational institutions are encouraged to prioritize the integration of AI powered learning solutions into their classroom activities, as this approach has the potential to revolutionize learning by providing smarter content, adaptive support, and improved motivation and attitudes towards learning.

Roopa M K etal (2023) investigated the awareness and perception of AI among the public. The study will use a survey to collect data on people's understanding of AI, their attitudes towards Ai, and their concerns about AI. The results of the study will be used to develop strategies to improve public awareness and understanding of AI.

2. METHODOLOGY

DESIGN OF THE STUDY

Since the objective of the study is to find out the difference in awareness of AI between boys and girls among higher secondary students, it needs to adopt the survey method. So, in the present study, the investigator adopted the survey research design. The data were collected from 413 11th standard students from Government and Private Schools in Coimbatore District.

SAMPLING TECHNIQUE

A simple random sampling method was adopted for this study.

TOOLS USED FOR THIS STUDY

1. Awareness on AI Questionnaire
2. Personal data sheet

PERSONAL DATA SHEET/GENERAL INFORMATION PERFORMA

To find out the background of the students, the investigator used a personal data sheet. It considered details regarding their name, age, sex, locality, etc. The students were asked to fill in the particulars given in the personal data sheet.

AWARENESS OF AI QUESTIONNAIRE

Awareness on the AI Questionnaire was developed by Ravi, R. (2015). The tool consists of 21 items. There are five alternatives given the scale, namely Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree. There are no negative items, all are positive items only. The scoring is given like 5 To Strongly Agree

4 to Agree (A)

3 for Undecided (U)

2 for Disagree (D)

1 for Strongly Disagree (SD)

The high score indicates the greater the level of awareness of AI.

PILOT STUDY

The pilot study is a small-scale study conducted prior to conducting an actual experiment or investigation, designed to test and refine procedures. In the present study, the investigator conducted a pilot study with 30 11th standard students from Michael's Hr. Sec. School, Sular.

ESTABLISHING VALIDITY AND RELIABILITY

After conducting the pilot study, the investigator established the reliability and validity of the research tool. The validity and reliability measures are as given below.

VALIDITY

The tool was presented to experts assessing the content validity of the items. All the experts carefully read each item of the scale and gave comments and suggestions on the following aspects as requested by the investigator.

Length of the statement.

The items are vaguely worded and improperly arranged Adequacy of the items in the light of the objectives General format of the scale

RELIABILITY

The reliability of a test is usually calculated by one of the four methods.

- Test-retest method
- Alternative or parallel form method
- Split-half method
- Rational equivalence method

Of those, the test-retest method was used to find out the reliability of the Awareness on AI Questionnaire. The reliability value is 0.854.

DATA COLLECTION PROCEDURE

The personal data sheet and Awareness on AI questionnaire were made as a booklet. The investigator reasonably approached the sample (11th standard students) after getting permission from the concerned head and explained briefly about the importance of the investigation. The data were collected using the Awareness on AI Questionnaire developed by Ravi, R (2015). Later in all, the entire questionnaire was arranged properly, and the incomplete questionnaire was removed and completed questionnaires were tabulated. The data collected from the sample were analyzed using appropriate statistical techniques.

STATISTICAL METHODS USED FOR THIS STUDY

1. Mean
2. Standard deviation
3. t-test

3. RESULTS AND INTERPRETATIONS

Hypothesis -1: There will be a significant mean score difference in awareness of AI between boys and girls among the selected higher secondary students.

Table 1: Mean score difference in awareness of AI between boys and girls among the selected higher secondary students

Name Of The Variable	Sex	N	Mean	SD	DF	t-value	p-value
Awareness on	BOYS	221	105.71	17.212	411	6.889*	.000

AI	GIRLS	192	116.42	13.880			
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*Significance at 0.01 level

Table 1 shows that the mean score difference in awareness of AI between the groups based on sex among the selected higher secondary students. According to the table, the calculated t- value is statistically significant at 0.01 level in Awareness on AI. Hence, the hypothesis 1 is accepted, and it is concluded that the variable sex does influence awareness of AI among the selected higher secondary students.

4. FINDINGS AND CONCLUSIONS

Based on the results of the present study, it is found that there is a significant difference in awareness of AI among the selected higher secondary students. Further, the variable sex does affect the awareness of AI among the selected higher secondary students. As per the table, girls have a higher awareness of AI than their counterparts.

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