

Secondary School Students' Awareness of Artificial Intelligence, Usage Trends, and Academic Achievement

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Abstract

The increasing prevalence of artificial intelligence (AI) technologies in today's educational environments makes it important to examine students' awareness of and usage trends regarding these technologies. In this context, the purpose of this study is to investigate whether middle school students' awareness of and usage trends regarding artificial intelligence differ based on their academic achievement scores. Additionally, the study aims to investigate whether middle school students' awareness and usage trends regarding artificial intelligence (AI) differ based on variables such as grade level, gender, and screen time. The study was conducted using the descriptive survey model, one of the quantitative research methods. The study population consisted of secondary school students enrolled in Niğde Province, while the sample comprised 704 secondary school students attending eight schools designated for the 2025–2026 academic year. The Artificial Intelligence Awareness and Usage Trends Scale was used as the data collection tool, and the obtained data were analyzed using descriptive statistics, one-way analysis of variance (ANOVA), and the Scheffe test. The research findings revealed that students' AI awareness and usage trends differed significantly according to their academic achievement levels and grade levels. In particular, it was found that students with higher academic achievement and those in higher grades exhibited higher levels of AI awareness and usage trends. While a significant difference in favor of male students was found regarding the gender variable, no significant difference was found regarding screen time. In light of these findings, it is recommended that educational programs be developed to increase artificial intelligence awareness and conscious usage tendencies at the secondary education level.

Keywords: Secondary school students, artificial intelligence, awareness, tendency.

Introduction

Artificial intelligence has become an increasingly widespread technology in the field of education and has emerged as a factor that directly affects students' learning processes. Various studies emphasise that artificial intelligence applications in education offer personalised learning opportunities, can increase student motivation, and support teaching processes (Bayraktar et al., 2023). In this context, the extent to which students recognise artificial intelligence technology and their willingness to use it for educational purposes are also considered important research topics.

AI awareness refers to the level of knowledge students have about what artificial intelligence is, the areas in which it is used, and the opportunities or limitations it offers in education (Yaman et al., 2025). The tendency to use artificial intelligence encompasses students' willingness and attitudes towards using these technologies in their learning processes (Yaman et al., 2025). Research shows that individuals with high artificial intelligence awareness are more inclined to use these technologies and have a more positive tendency to use them (Baba et al., 2025). This highlights the need to consider awareness and usage tendency together in educational research. A review of the literature reveals that the majority of studies examining awareness, attitudes and usage tendencies towards artificial intelligence have been conducted on teachers, teacher candidates or university students (Karayığit et al., 2025; Sarıkaya & Kavan, 2024). However, it is

noteworthy that studies examining secondary school students' awareness and usage tendencies regarding artificial intelligence are limited. The secondary school period is a critical developmental stage during which students' attitudes towards technology and usage habits are shaped. The awareness and tendencies developed in this age group directly influence how students will use technology in their future educational lives (MoNE, 2024).

National and international reports emphasise the need to support the conscious and ethical use of artificial intelligence in education, which can be achieved through awareness and positive usage tendencies instilled at an early age (MoNE, 2024). Otherwise, students may view artificial intelligence merely as a shortcut, which can negatively affect the quality of the learning process. Therefore, addressing AI awareness and usage tendencies alongside academic achievement is important in terms of supporting the qualified use of technology in education.

AI-based applications increasingly influence students' learning styles, ways of accessing information, and digital habits. However, the conscious, safe, and purposeful use of these technologies in educational settings necessitates an understanding of students' awareness and usage tendencies regarding AI. The secondary school period is a critical stage of development in which students' digital attitudes and behaviours are shaped, making studies targeting this age group particularly important.

The main objective of this study is to determine the relationship between secondary school students' awareness levels and usage tendencies towards artificial intelligence and their academic achievement. Furthermore, based on the findings, it is aimed to develop educational recommendations to increase artificial intelligence awareness. The relationship between artificial intelligence and education is a topic that has been studied with different target groups. However, after reviewing the literature, no other study was found that examined the relationship between secondary school students' awareness and usage tendencies towards artificial intelligence and their level of achievement.

In this respect, the study aims to contribute to the development of recommendations for students to use artificial intelligence in a more conscious, purposeful, and educational manner. The findings are expected to guide teachers and education administrators, while also contributing to the development of artificial intelligence literacy at an early age, thereby supporting equal opportunities in education and academic achievement.

Research questions:

- Do secondary school students' awareness and usage trends regarding artificial intelligence vary by academic achievement score?
 - Do secondary school students' AI awareness and usage tendencies differ according to the class level variable?
 - Do secondary school students' AI awareness and usage tendencies towards artificial intelligence differ according to the gender variable?
 - Do secondary school students' AI awareness and usage tendencies regarding artificial intelligence differ according to screen time?
- Introduction is not mandatory.

1. Method

1.1. Research models

In this study, the descriptive survey model one of the quantitative research models was employed. The descriptive survey model is an approach aimed at describing an existing situation as it is and examining the individuals or objects under study within their own context (Karasar, 2017). This model is frequently preferred in studies conducted on large samples to determine individuals' views, attitudes, and tendencies (Creswell, 2014). Accordingly, this study examined the current state of middle school students' artificial intelligence awareness and usage tendencies in terms of various variables.

1.2. Population and Sample

The study population consists of secondary school students in Niğde, a province located in the Central Anatolia region of Turkey. Within the Turkish K-12 education system, which follows a compulsory '4+4+4' structure, grades 5 through 8 represent the lower secondary school level (MoNE, 2012). This stage is a critical transition period in the Turkish K-12 framework, bridging primary education and upper secondary tracks. In this context, academic achievement is assessed using a standardized centesimal scale ranging from 0 to 100, as mandated by the national regulation on primary education institutions (MoNE, 2014). On this scale, scores of 45 and above indicate successful attainment of the learning outcomes, providing a granular quantitative data set suitable for the statistical analysis of the academic variables explored in this research (Eurydice, 2023).

The sample of the study consists of 704 students studying in eight secondary schools in Niğde province. Prior to the research, permission was obtained from the Provincial Directorate of National Education. A total of 704 students who volunteered, obtained parental consent, and completed the form participated in the research. Information on the participants' gender and grade levels is presented in Table 1.

Table 1. Demographic information of participants

		F(frequency)	%(percentage)
Gender	Female	344	48.8
	Male	360	51.2
	Total	704	100
Grade	Year 5	210	30
	Year 6	149	21
	Year 7	183	26
	Year 8	162	23
	Total	704	100

Table 1 shows that 704 students participated in the study, with 51.2% (n=360) being male and 48.8% (n=344) being female. Furthermore, 30% (n=210) of the participants were in Year 5, 21% (n=149) were in Year 6, 26% (n=183) were in Year 7, and 23% (n=162) were in Year 8.

1.3. Data Collection Tools Information Form

Participants were asked for their demographic information, class level, gender, end of year achievement score for the 2024-2025 academic year and daily screen usage time. Additionally, the Artificial Intelligence Awareness and Usage Trends Scale was administered to secondary school students. Participants joined the study on a voluntary basis, and after informing the parents about the research, parental consent forms were obtained.

1.4. Artificial Intelligence Awareness and Usage Trends Scale for Secondary School Students

It was developed by Yaman et al. (2025) as a 5 point Likert type scale with 31 items. Of the items included in the scale (see Appendix 2), 22 were formulated with positive statements, while 9 were formulated with negative statements. This scale includes four dimensions to measure secondary school students' awareness and usage tendencies regarding artificial intelligence. The Secondary School Artificial Intelligence Awareness and Usage Tendencies Scale consists of four dimensions as "Basic Knowledge of Artificial Intelligence", "Areas of Artificial Intelligence Use", "Artificial Intelligence Anxiety", and "Artificial Intelligence Difficulty". The Cronbach Alpha coefficient for the scale was determined to be $\alpha = .870$ for the entire scale, and the α values for the sub-dimensions ranged from .743 to .914. These findings indicate that the scale is valid, reliable and consistent (Yaman et al., 2025).

2. Data Collection and Analysis

After the project was approved, research permission (see Appendix 1) was obtained from the Provincial Directorate of National Education to carry out the study. Furthermore, no email was sent because the scale owner stated that it was not necessary for use. The scale page states that "I/we permit the citation and use of the measurement tool I/we have developed/adapted, provided that it is limited to scientific research. There is no need to send an additional email for permission." After informing the participants about the purpose of the research, consent forms were distributed to obtain permission from their parents. The questionnaire forms were shared digitally via Google Forms. Subsequently, the data was analysed.

The collected data were transferred to a computer environment and analysed using the SPSS 24.0 software package programme. During this process, the data were tested to see whether they met the assumptions required for analysis within the framework of the research questions. Skewness and kurtosis values were examined to determine whether the data followed a normal distribution. According to the analysis results, the skewness value for the total score was calculated as -1.015 and the kurtosis value as 1.863. It has been noted that parametric tests can be conducted when the skewness and kurtosis values fall between -2 and +2 (Field, 2013; Tabachnick & Fidel, 2013). For the dataset obtained in this study, the skewness and kurtosis values fall within the specified limits and indicate a normal distribution.

Subsequently, the homogeneity of the data was examined using the Levene test. Based on the results obtained, a one way ANOVA test was conducted to determine whether artificial intelligence awareness and usage tendencies differed depending on end of year achievement averages. The Scheffe test was used to analyse which groups differed. A significance level of .05 was accepted in the study.

3. Findings

This section presents findings based on the analysis of data obtained from secondary school students within the scope of the research. Students' levels of awareness and usage tendencies towards artificial intelligence were examined in terms of variables such as academic achievement, class level, gender, and screen time. The findings obtained from the statistical analyses reveal how students' relationship with artificial intelligence differs significantly according to which variables. The findings are presented in tables in a clear and comparable manner; each table is interpreted in line with the objectives of the research.

3.1. Findings Related to the Year-End Achievement Score Variable

This section presents the findings related to students' artificial intelligence awareness and usage tendencies according to their year end achievement scores. First, descriptive statistics, including sample size (n), arithmetic mean, and standard deviation, are provided for each achievement group. Subsequently, a one way analysis of variance (ANOVA) was conducted to examine whether artificial intelligence awareness and usage tendencies differ significantly across students with varying levels of academic achievement. The findings obtained from these analyses are presented in Table 2.

Table 2. Distribution Results of Artificial Intelligence Awareness and Usage Tendencies According to Year-End Achievement Scores

Year-End Achievement						
Score	n	Mean	ss	sd	t	p
0-54	14	3.36	0.57			
55-69	38	3.33	0.47			
70-84	150	3.48	0.49			
85-100	502	3.60	0.51			
Total	704	3.55	0.51	3-700	5,559	0.001

n: number of participants, ss: standard deviation, df: degrees of freedom, F: between-groups variance value, p: p value

Table 2 examines the distribution of students' awareness of and propensity to use artificial intelligence according to their end-of-year academic achievement scores. The findings indicate that as students' academic achievement levels increase, so do their awareness of and propensity to use artificial intelligence. Indeed, while the average score for students in the lowest achievement group (0–54) is ($\bar{X} = 3.36$), this value remains at a similar level in the 55–69 range ($\bar{X} = 3.33$), it increases to ($\bar{X} = 3.48$) in the 70–84 range, and reaches the highest level ($\bar{X} = 3.60$) in the highest achievement group (85–100). This indicates that as academic achievement levels rise, students' awareness of and tendency to use artificial intelligence develop in a positive direction. The observation of a significant increase, particularly among students with an academic achievement level of 70 or higher, suggests that these students are able to use technology more effectively and consciously in their learning processes.

The analysis conducted to determine whether the difference between groups was statistically significant revealed a significant difference based on academic achievement level ($F(3,700) = 5.559$, $p = 0.001$). This finding indicates that students' awareness of and tendency to use artificial intelligence differ significantly according to the academic achievement variable. However, the relatively small number of participants in the lowest achievement group ($n = 14$) is noteworthy. This suggests that the generalizability of the average for this group should be interpreted with caution. Additionally, the fact that the average differences between groups are not very high indicates that, although the difference is statistically significant, the effect size may be limited.

When examining the standard deviation values, a similar level of distribution is observed across all groups ($SD \approx 0.47 - 0.57$). This indicates that students' AI awareness and usage tendencies exhibit a homogeneous distribution within the groups. In conclusion, the findings reveal a positive and statistically significant relationship between academic achievement level and AI awareness and usage tendencies. In this context, it can be stated that academically more successful students are more open to AI technologies and use them more effectively in their learning processes. However, due to the limited magnitude of the difference, this result must be carefully evaluated in educational applications.

Table 3. Scheffe Test Results Regarding Artificial Intelligence Awareness and Usage Tendencies and Year-End Achievement Scores I

Group (I)	Group (J)	Mean Difference	ss	p
55-69	85-100	0.266	0.085	0.020
85-100	55-69			

Secondary School Students' Awareness of Artificial Intelligence, Usage Trends, and Academic Achievement

G. Ayhanöza & B. N. Soylu

n: number of participants, ss: standard deviation, df: degrees of freedom, F: between-groups variance value, p: p value

Table 3 shows which groups differ in terms of artificial intelligence awareness and usage tendencies based on students' end-of-year grade point averages. According to the results of the Scheffe test, there is a significant difference between students with an academic success average between 85-100 and those between 55-69. This difference favours students with higher achievement levels. In other words, it can be said that students with higher year-end success have greater awareness of artificial intelligence and a greater tendency to use this technology. The average difference between the two groups being 0.266 indicates that this difference is not only numerical but also statistically significant. No significant difference was found between the other achievement groups. The findings reveal that students with high academic achievement are more aware of artificial intelligence and more inclined to use this technology.

3.2. Findings Related to the Gender Variable

This section reports the findings regarding differences in students' artificial intelligence awareness and usage tendencies based on gender. Descriptive statistics, including the number of participants, mean scores, and standard deviations, are presented for male and female students. To examine whether gender is associated with statistically significant differences in artificial intelligence awareness and usage tendencies, a one-way analysis of variance (ANOVA) was performed. The results of this analysis are presented in Table 4.

Table 4. Distribution Results of Artificial Intelligence Awareness and Usage Tendencies According to the Gender Variable

Gender	n	Mean	ss	sd	F	p
Male	344	3.59	0.55			
Female	360	3.51	0.47			
Total	704	3.55	0.51	1-702	4,931	0.027

n: number of participants, ss: standard deviation, df: degrees of freedom, F: between-groups variance value, p: p value

Table 4 examines the distribution of students' artificial intelligence awareness and usage tendencies according to the gender variable. According to the analysis results, the average score for male students ($\bar{X} = 3.59$, $SS = 0.55$) is higher than that of female students ($\bar{X} = 3.51$, $SS = 0.47$). However, the means for both groups correspond to the mid-to-high range of the scale, and it can be concluded that students' overall awareness of and usage tendencies regarding artificial intelligence are relatively high. The results of the one-way analysis of variance (ANOVA) conducted to determine whether the difference between the groups was statistically significant revealed a significant difference based on the gender variable ($F(1,702) = 4.931$, $p = 0.027$). This finding indicates that gender has a statistically significant effect on students' awareness of and usage tendencies regarding artificial intelligence.

However, the fact that the average difference between groups is quite small (0.08 points) is noteworthy. This suggests that the observed significance may largely stem from the large sample size. Indeed, with a total of 704 participants, even small differences can yield statistically significant results. Therefore, it can be stated that the practical (application-oriented) significance of this difference is limited. When examining standard deviation values, it is observed that male students' scores ($SD = 0.55$) exhibit greater variability compared to female students' scores ($SD = 0.47$). This indicates that awareness of and usage tendencies regarding artificial intelligence among male students exhibit a more heterogeneous distribution. In conclusion, while the research findings reveal that male students' AI awareness and usage tendencies are statistically significantly higher than those of female students, the small magnitude of this difference suggests that the results should be interpreted with caution in terms of educational applications. In this context, it can be assessed that both gender groups possess similar levels of awareness, and the difference primarily manifests in quantitative terms.

3.3. Findings Related to Screen Time Variable

This section presents the findings concerning whether students' artificial intelligence awareness and usage tendencies differ according to their daily screen time. Descriptive statistics, including the number of participants, mean scores, and standard deviations, are provided for each screen time group. A one-way analysis of variance (ANOVA) was conducted to examine potential differences in artificial intelligence awareness and usage tendencies across varying levels of screen exposure. The results of these analyses are summarized in Table 5.

Secondary School Students' Awareness of Artificial Intelligence, Usage Trends, and Academic Achievement
G. Ayhanöza & B. N. Soylu

Table 5. Distribution Results of Artificial Intelligence Awareness and Usage Tendencies According to Screen Time Variable

Screen Time	n	Mean	ss	sd	F	p
1	258	3.53	0.52			
2	196	3.53	0.48			
3	115	3.60	0.52			
4	68	3.54	0.45			
5	27	3.51	0.59			
6	11	3.36	0.56			
7 and above	29	3.80	0.53			
Total	704	3.55	0.51	6-697	1,788	0.099

n: number of participants, ss: standard deviation, df: degrees of freedom, F: between-groups variance value, p: p value

Table 5 shows whether secondary school students' awareness and usage tendencies regarding artificial intelligence vary according to their daily screen time. The average scores obtained indicate minor differences based on screen time. The average score of students with a daily screen time of 7 hours or more is the highest at 3.80, while the average of students with 6 hours of screen time per day is the lowest at 3.36. The averages of the other groups are quite close to each other. The results of the statistical analysis reveal that these differences are not significant. According to the results of the one-way analysis of variance, there was no statistically significant difference between the groups based on screen time ($p > .05$). This indicates that an increase or decrease in the amount of time students spend in front of a screen does not have a significant effect on their awareness of and tendency to use artificial intelligence. In conclusion, although some minor changes in average scores were observed depending on screen time, it can be said that screen time is not a determining factor in students' awareness and usage tendencies regarding artificial intelligence.

A Scheffe test was conducted on artificial intelligence awareness and usage tendencies in relation to the screen time variable, but no significant difference was observed.

3.4. Findings Related to the Class Level Variable

This section reports the findings related to whether students' artificial intelligence awareness and usage tendencies differ according to their class level. Descriptive statistics, including the number of participants, mean scores, and standard deviations, are presented for each class level. To examine potential differences among grade levels, a one-way analysis of variance (ANOVA) was conducted. The results of these analyses are presented in Table 6.

Table 6. Distribution Results of Artificial Intelligence Awareness and Usage Tendencies According to the Class Level Variable

Class Level	n	Mean	ss	sd	F	p
5	210	3.46	0.47			
6	149	3.51	0.50			
7	183	3.62	0.52			
8	162	3.63	0.53			
Total	704	3.55	0.51	3-700	4,855	0.002

n: number of participants, ss: standard deviation, df: degrees of freedom, F: between-groups variance value, p: p value

Table 6 shows that students' awareness and usage tendencies regarding artificial intelligence vary according to their grade level. When examining the average scores, it is understood that students' awareness and usage tendencies towards artificial intelligence increase as their grade level rises. The lowest average is seen among Year 5 students, while this average gradually increases in Years 6, 7, and 8. It is particularly noteworthy that the scores of Year 7 and 8 students are higher. The results of the statistical analysis also support this finding. According to the results of the one-way analysis of variance, the difference between grade levels is statistically significant ($p < .05$). This finding shows that students' awareness and tendency to use artificial intelligence vary depending on their grade level. Consequently, it can be said that students in higher grades are more aware of artificial intelligence and more inclined to use these technologies than students in lower grades. This situation can be explained by the fact that students' experience with technology increases as their age and education level increase.

Table 7. Scheffe Test Results for Artificial Intelligence Awareness and Usage Tendencies in Relation to Grade Level

Group (I)	Group (J)	Mean Difference	ss	p
5	7	0.159	0.051	0.021
5	8	0.165	0.053	0.022

n: number of participants, ss: standard deviation, df: degrees of freedom, F: between-groups variance value, p: p value

When examining the Scheffe test results in Table 7, it can be seen that there are differences between groups in terms of students' awareness and usage tendencies of artificial intelligence according to class levels. Accordingly, there is a significant difference between Year 5 and Year 7 students. This difference favours Year 7 students; that is, Year 7 students have higher awareness and usage tendencies towards artificial intelligence. Similarly, a significant difference was also found between Year 5 and Year 8 pupils, and this difference was in favour of Year 8 pupils. However, no significant difference was found between other class levels. This situation shows that awareness and usage tendencies regarding artificial intelligence increase, particularly as pupils move from lower to upper classes, but this increase may not be noticeable at every class transition.

In conclusion, it can be said that 7th and 8th grade students are more aware of artificial intelligence than 5th grade students and are more inclined to use these technologies. This can be explained by the fact that students' experience with technology increases as they get older and their level of education increases.

4. Conclusion and Discussion

Today, artificial intelligence is becoming increasingly visible in students' education, communication, and access to information processes. However, the effective and conscious use of these technologies in educational environments requires an understanding of students' awareness and usage tendencies towards artificial intelligence. Middle school is a critical developmental period when students' digital habits are shaped and their attitudes towards technology begin to become permanent (Çelik & Kılıçoğlu, 2022). Therefore, it is important for education to reveal which variables are related to artificial intelligence awareness in this age group.

This project aims to examine secondary school students' awareness of and usage trends regarding artificial intelligence in terms of key variables such as academic achievement, grade level, gender, and screen time. The findings reveal that awareness of and usage trends regarding artificial intelligence are not solely dependent on the amount of time spent with technology; they are also related to students' learning processes, academic levels, and age-related developmental characteristics. This suggests that educational activities on artificial intelligence should be planned with consideration for students' age and developmental levels. It is believed that this study could contribute to the development of educational practices aimed at enhancing students' awareness of artificial intelligence. Additionally, this research aims to support students in using artificial intelligence in an ethical, safe, and mindful manner, thereby contributing to the digital transformation process in education.

The findings indicate that as students' academic achievement levels rise, so do their awareness and usage patterns regarding artificial intelligence. This result suggests that students who are more cognitively engaged in learning processes are more open to emerging technologies and more likely to use them for educational purposes. Recent studies indicate that students' digital competence and AI literacy are positively associated with academic performance and self-regulated learning skills (OECD, 2021; UNESCO, 2023; European Commission, 2022; Luckin et al., 2022; Holmes et al., 2022).

According to the findings of the study regarding the class level variable, students in higher grades have higher artificial intelligence awareness and usage tendencies. This suggests that students' digital experiences and technological understanding develop as their age and level of education increase. This finding is consistent with studies arguing that technology integration in education should be approached in a gradual and age-appropriate manner (Ertmer & Ottenbreit-Leftwich, 2010; MoNE, 2025). Furthermore, the literature indicates that students' positive attitudes towards digital literacy and technology increase as their grade level rises.

Findings related to the gender variable show that male students' awareness and usage tendencies towards artificial intelligence are higher than those of female students. This situation may be related to factors such as social orientations towards technology use, individual interests, and frequency of exposure to technology. Studies conducted in our country also show that there are limited differences between gender and attitudes towards technology and usage habits, but these differences do not consistently emerge in every study (Esgin et al., 2016). This finding suggests that gender-based differences may be related to educational opportunities, guidance methods, and learning experiences rather than biological necessity. When appropriate learning environments and equal opportunities are provided, female students can also demonstrate similar levels of development in the fields of technology and artificial intelligence.

The absence of a significant difference in the study based on screen time suggests that awareness and usage tendencies regarding artificial intelligence cannot be explained solely by the amount of time spent with technology. This finding parallels studies emphasising that the quality and content of screen time are more important than its quantity (Kırık, 2021). Rather than the length of time students spend in front of screens, how and for what purpose they use this time may be more decisive in terms of artificial intelligence awareness.

By examining secondary school students' awareness and usage tendencies towards artificial intelligence in terms of various variables, this study presents important findings on how artificial intelligence literacy is shaped at an early age. The results indicate that AI awareness is related to educational factors such as academic achievement and class level, pointing to the need for awareness-raising activities on AI in educational settings. Recent research highlights that early exposure to AI concepts and the development of AI literacy are closely linked to students' cognitive readiness, digital competence, and learning outcomes (Long & Magerko, 2020; Ng et al., 2021; Zawacki-Richter et al., 2019). In this context, integrating AI-related content into school curricula is emphasized as a key factor in fostering responsible and effective technology use among students (Holmes et al., 2022; Chiu et al., 2023).

Awareness initiatives developed in schools based on the research findings can contribute to students growing up as individuals who use artificial intelligence ethically, safely, and consciously, rather than merely consuming it. Indeed, studies underline that ethical awareness, critical thinking, and responsible AI use should be embedded in early education to support students' long-term digital well-being and citizenship skills (Ng et al., 2021; Chiu et al., 2023). Furthermore, promoting AI literacy in compulsory education is considered essential for reducing digital inequalities and ensuring equal opportunities in access to emerging technologies (Zawacki-Richter et al., 2019; OECD, 2021). In this respect, the study is instructive in supporting the acquisition of skills required in the digital age, strengthening equal opportunities in education, and raising social awareness.

This project addresses secondary school students' AI awareness and usage tendencies within the framework of academic and individual variables, providing a basis for AI awareness initiatives that can be implemented in educational settings. Research findings indicate that artificial intelligence awareness is not solely dependent on time spent with technology; it is also related to academic achievement, class level, and learning processes. This points to the need for artificial intelligence literacy to be addressed in a manner appropriate to age and developmental level, rather than in an unplanned and random fashion.

Consequently, this project aims to contribute to the development of students who not only use artificial intelligence but also understand the effects of these technologies and can consciously guide them. In this respect, the study has the potential to contribute to increasing social awareness by providing a scientific basis for the digital transformation process in education. It reveals that secondary school students' artificial intelligence awareness and usage tendencies are related to academic and individual variables. The findings indicate that artificial intelligence literacy needs to be supported by planned and conscious educational practices from an early age. In particular, the development of school-based artificial intelligence awareness programmes will contribute to students using these technologies ethically, safely, and for educational purposes. In this respect, the study is instructive for both educators and policymakers and has the potential to be socially beneficial.

Recommendations

Based on the findings of this research, it is recommended that certain educational arrangements be made to increase artificial intelligence awareness and conscious usage tendencies at secondary school level. Firstly, it may be beneficial to include age-appropriate awareness activities in lesson content that address the concept of artificial intelligence not only as a technical subject but also in relation to its ethical, security and daily life aspects. Supportive and guided applications could be developed for students with lower academic achievement to demonstrate how artificial intelligence technologies can be used effectively and safely in learning processes. Furthermore, considering that students' awareness increases as they progress through school levels, it is important to plan artificial intelligence literacy within a gradual and continuous structure. It is recommended that inclusive and guiding learning environments be created that encourage equal participation of all students in order to reduce gender-based differences.

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