International Journal of Learning, Teaching and Educational Research
Vol. 24, No. 8, pp. 198-217, August 2025
https://doi.org/10.26803/ijlter.24.8.9
Received Jun 1, 2025; Revised Jul 5, 2025; Accepted Jul 24, 2025

The Influence of AI Knowledge on the Vocational Inclinations of Gifted Students

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Abstract. This study examines the impact of AI knowledge on the vocational inclinations of gifted students. Gifted students face challenges making career decisions due to their wide range of interests and unique cognitive abilities. This study employs a descriptive correlational approach utilizing a cross-sectional study to investigate how artificial intelligence influences career preferences among 363 gifted students, aged 16-18 years from Jubilee Schools in Amman, Jordan. Additionally, the study used a vocational inclination scale and the AI scale. Pearson's coefficient was used to confirm the validity of the construct and Cronbach's Alpha for reliability. The results showed that gifted students had an average level of AI knowledge, with a mean of (3.52) with strengths in critical evaluation but a lower level of proficiency in technical aspects. The results indicate the social pattern was prevalent among gifted students, constituting the highest percentage of all patterns at 41.3% followed by investigative, practical, and artistic careers. There are obvious differences between the sexes, with males favouring technical and investigative careers, while parental occupation does not appear to play a significant role. The findings of this study indicate that AI knowledge is a significant predictor of career inclinations; AI had a higher predictive ability in the investigative field among gifted students, with a percentage of 24%, with an effect size of 32%. this study recommends enhancing AI literacy in education by integrating AI concepts and making AI tools available in the classroom environment and teaching digital skills to help students identify their future career paths.

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Keywords: Artificial intelligence; Gifted students; Vocational inclinations

1. Introduction

Investing in human capital is one of the best kinds of investments. Particularly in talented and creative individuals. These individuals are the basis for a qualitative renaissance in politics, society, economics, and technology for their societies. (Ayasrah et al., 2023; Hanandeh et al., 2024) Innovation and creativity are indicators of a nation's progress, advancement, and prosperity. Providing support for their creative potential aligns with global priorities, such as ensuring inclusive and equitable quality education and fostering sustainable economic growth, which are emphasized in Sustainable Development Goals 4 and 5.

In addition, AI is projected to have an impact on over 85 million jobs globally by 2025, highlighting the need for talented youth to be equipped with the necessary skills to succeed in an AI-driven labor market (World Economic Forum, 2020). As a result, creative individuals tend to prefer careers that facilitate freedom of expression, experimentation, and problem solving. When a student works in a field he loves, he is more motivated to innovate and create in it (Gómez et al., 2023; Yusof et al., 2020). During the digital revolution era, artificial intelligence has taken on an increasingly important role in a number of areas of knowledge. Some sectors, such as health, education, industry, security, defence, entertainment, etc.

(Al-Mahdi, 2021; Renz & Hilbig, 2020; Senbekov et al., 2020), present unprecedented opportunities for talented and creative individuals due to this dynamic, rapidly evolving, and changing environment. to discover and refine their professional tendencies, and invest their capabilities in promising and influential fields, where their creativity can be directed towards innovative and growing fields, and their skills can be cultivated to meet the needs of an ever-changing labor market. In turn, this enhances their ability to achieve their ambitions and creates a positive and sustainable impact on society (Ali, 2020; Alnasraween et al., 2025; European Training Foundation, 2020; Kamalov et al., 2023; Vouglanis & Driga, 2023).

Gifted students often have concerns about their future careers (Jung, 2021). They have the passion, the ability, and the inclination to work in a variety of fields. The diversity of their interests and inclinations makes them confused when choosing the most appropriate career path or university major (Veronica et al., 2020; Abdul Aziz et al., 2021; Arab, 2024). Veronica et al. (2020) pointed to the challenge of aligning multifaceted talents with career paths, while Abdul-Aziz et al.' (2021) and Arab (2024) noted that this misalignment might contribute to hesitation and delay in career planning. Although these studies highlight different dimensions of the problem, they collectively point to a common issue: the lack of tailored guidance for gifted students facing complex career choices.

Occasionally, gifted students are unable to identify a specific major that aligns with their career goals, leading them to switch between different academic majors in pursuit of enrolling in the best programs at university. In an effort to make the most appropriate decision for their educational and professional careers, they

may also transfer between universities. While Grant et al. (2000) provided early evidence of this trend, more recent findings by Kar and Kar (2023) suggest that the problem persists despite advancements in academic advising. However, these studies (Ozcan, 2017; Yusof et al., 2020) stop short of exploring how this hesitation might be influenced by deeper psychological or contextual factors specific to gift.

The present study seeks to fill this gap by investigating the influence of artificial intelligence knowledge on the vocational inclinations of gifted students. Multiple external factors often influence students' choices of future careers, including the social environment in which they grow up, the influence of their relatives through their professions, the social outlook on certain jobs, as well as the influence of the media and people around them on a daily basis (Aljughaiman et al, 2019; Hadiyati & Astut, 2023).

As students grow older and approach making a decision about their university major, they face difficulties in identifying the right choice for themselves, despite exposure to many diverse career opportunities throughout their education. Consequently, they feel a lack of confidence in the quality of the choice as they approach making that decision. The development of a career plan requires consideration of a number of factors, including an individual's career goals, social expectations in their environment, and the opportunities available at that time (Mulhall, 2014; Aljughaiman et al, 2019; Jemini-Gashi & Kadriu, 2022).

As a result of their giftedness, gifted students' vocational inclinations play a crucial role in shaping their futures. As a result, the feelings of fulfillment, passion, desire, values, abilities, and personal interests of gifted students serve as the most important basic components that shape their academic and professional careers over the long run (Lamas, 2017; Abdul Aziz et al, 2021; Napier et al, 2024). As a result, academic excellence is also considered to be an important factor when determining a gifted student's future career and academic path.

There is a prevailing belief among many people that academic success guarantees a successful university education that leads to a successful career (Aljughaiman et al, 2019; Al-Nawasra, 2021; Kar & Kar, 2023). When gifted students complete high school, they frequently encounter numerous challenges in choosing the appropriate university major. A number of them have to change their majors in university, which results in wasting years of their lives and preventing them from enrolling in the majors they wish to pursue (Abdul Aziz et al, 2021; Razali et al, 2024). Despite the rapid spread of AI applications across various professional fields, there remains a clear gap in the literature on how gifted students' awareness and understanding of AI influence their future career orientations.

Most previous studies have focused on the use of AI in education, such as (Almuqayteeb,2025; Eltayeb,2025) study, but do not examine how it influences vocational inclinations among gifted children, who possess cognitive abilities and aptitudes enabling them to be influenced early by technological developments. Thus, this study was conducted, which examined the impact of AI knowledge on gifted students' vocational orientation. Additionally, the following research

questions were formulated: 1. What is the level of artificial intelligence knowledge among gifted students? 2. What is the predominant pattern of vocational inclinations among gifted individuals? Does gender and parent occupation influence the level of vocational inclinations of gifted individuals? What is the predictive power of artificial intelligence in determining the career preferences of gifted students?

2. Related studies

During the digital revolution, which has accompanied rapid changes and development in all sectors and fields, artificial intelligence is an area of computer science that pertains to the ability of computers to mimic human behavior, enhance human capabilities, and advance scientific and technological understanding. A key factor influencing gifted students' career inclinations is their ability to cognitive learning capacity particularly their learning agility particularly their learning agility, defined as the ability to quickly learn, unlearn, and adapt in dynamic environments (Dimitriadou et al., 2024). Ghosh & Thirugnanam (2021) emphasize the role of metacognitive skills in enhancing gifted students' engagement with complex tasks, while Krsmanovic & Deek(2023) link cognitive flexibility and adaptive learning abilities to better career orientation among high-achieving learners.

Additionally, it provides a broad range of opportunities for them to develop their interests and inclinations, as well as encourages them to pursue unconventional and innovative career paths (Nicoleta et al., 2022). Its unique future predictive capabilities, the ability to provide personalized and accurate recommendations, as well as the creation of numerous new scientific and professional fields, are all a result of the capabilities and potential of artificial intelligence in analyzing and organizing large amounts of data. As indicated by (Tamim, 2025; Siegle, 2023; Perifanis & Kitsios, 2023), gifted students have been able to discover and identify their professional tendencies more clearly as a result.

Artificial intelligence tools such as machine learning, behavioral model analysis, etc., are used to accomplish this goal. Through this program, gifted students have become more aware of their strengths, individual interests, and career pathways, and have been encouraged to explore their interests in modern and unfamiliar fields in greater depth. By doing so, they have been able to expand their knowledge in modern specializations that are compatible with the rapid growth of the employment sector (Edlich et al, 2019; Krsmanovic & Deek, 2023).

As a result of its predictive capabilities, it is also capable of tracking anticipated career developments based on advanced analyses of global trends, which helps gifted students make proactive educational and career decisions based on accurate data, enabling them to achieve excellence and distinction in their future career paths (Centre for Education Statistics and Evaluation, 2019; Jung, 2021).

The use of artificial intelligence has also provided students with unique opportunities to explore emerging specializations in non-traditional labor markets, for example. Wang and King (2019) highlight how AI-powered learning

environments enable students to acquire interdisciplinary skills in robotics and machine learning. Both UNESCO ICT and The Next Minds (2020) emphasize the importance of artificial intelligence in digital applications such as cybersecurity and cyberspace, virtual and augmented reality, and digital forensics. In addition to that (Wang et al, 2023) point out that AI applications in virtual and augmented reality not only enhance educational engagement but also simulate real-life problem-solving scenarios This convergence of results indicates that artificial intelligence has brought about a qualitative shift in the labor markets in terms of opportunities and efficiency, and this requires educational institutions to prepare flexible learning strategies to keep pace with developments.

Previously, these fields were not available in traditional markets, but now they are becoming increasingly important in a wide range of service sectors. In light of this, it is likely that artificial intelligence will influence students' tendency toward immersion in it directly due to its numerous components and unlimited capabilities, as well as its ability to create a wide space for innovation and challenge, as well as its thrill of mystery, motivation, enthusiasm, and rapid development and change (Neji, 2023; Chen, 2023; Aldoseri, 2024).

Since students will be able to follow educational materials specially designed for them, AI will enhance the learning experience of students, enabling them to interact with materials that are aligned with their preferences, abilities, and talents, thereby increasing their depth of understanding in those fields that interest them and meet their individual needs. This type of personalized learning may enhance the feeling of confidence of gifted students in their professional decisions, which are in line with their talent and creativity, reducing the likelihood of them changing specializations in the future (Shemshack & Spector, 2020; Gunawardena et al, 2024; Jian, 2023; Wang et al, 2023).

A group of specialists has also confirmed that artificial intelligence will have profound and negative effects on the labor market in the forthcoming years, as it will lead to radical shifts in the nature of many jobs (Gruetzemacher & Whittlestone, 2022; George, 2023; Milanovic, 2024). In particular, jobs that are based largely on repetitive or routine tasks, such as manufacturing, customer service, and accounting, may be threatened by automation and artificial intelligence. With smart systems and artificial intelligence software, these tasks can be performed more efficiently, accurately, and professionally, reducing the need for human intervention (Brougham & Haar, 2018; Manyika & Sneader, 2018; Khogali & Mekid, 2023).

Therefore, this rapid development in professional fields, particularly those that may be automated to the point of being eliminated, may cause a negative reaction among talented students, as it may confuse and confuse their personal tendencies and inclinations. Further, this will make it difficult for them to decide whether or not to pursue these specializations that they consider aligned with their strengths and abilities. Therefore, they may not see artificial intelligence as a threat, but rather as an opportunity to invest in their talent and abilities in order to create, innovate, solve problems, and develop new fields.

Jordan has prioritized the needs of talented and gifted individuals as one of the earliest Arab developing countries in the Middle East. Through introducing and creating many special educational programs for talented and gifted students, the school has attempted to provide them with an integrated and appropriate educational environment. The most significant of which was the establishment of schools for gifted and talented students, known as King Abdullah II Schools for Excellence, located in all governorates of Jordan (Al-Rababaa, 2023; Ayasrah et al, 2022; Ayasrah et al, 2023). Without considering the social and cultural factors that influence talent, gifted care cannot be completed. In Vygotsky's sociocultural theory, talent is the result of a dynamic interaction between individual abilities and the cultural and social environment.

The development of talent is enhanced by interaction with others, especially in cultures and environments rich in culture and intellectual tradition. The integration of this theory contributes to a deeper understanding of talent care programs in Jordan and demonstrates the importance of aligning educational policies with local social and cultural conditions. In Jordan, however, talented and gifted students face many difficulties, the most significant of which is that the programs for caring for gifted and talented students do not cover all of Jordan and do not target all of these students. There are poor and accumulated economic conditions in Jordan, which are the major causes of this situation (Al-Hroub, 2023; Al-Rababaa, 2023).

The unemployment rate among Jordanian young people is significant (Al Husseini & Al Tal, 2023). Furthermore, the lack of resources, especially digital infrastructure, as well as the lack of integration of educational systems and the lack of traditional career guidance may result in the misuse and mismanagement of data (Alkhawaldeh, & Menchaca, 2014; TVET, 2023). Because of this, artificial intelligence is not fully utilized to guide gifted and outstanding students toward achieving their full potential, interests and abilities, as it should. Jordanian entities sponsoring gifted and talented students are striving with all their energy and capabilities to ensure that appropriate environments are created and maintained for gifted and talented students, despite these challenges.

By utilizing the remarkable advances in artificial intelligence technology, particularly its increasing role in identifying professional inclinations and guiding gifted and talented students toward their optimal educational and professional futures by utilizing the remarkable advancements in artificial intelligence technology. Many previous studies have examined the use of artificial intelligence in education, such as (Almuqayteeb, 2025; Ali, 2020; Chen et al, 2023; Eltayeb, 2025), without investigating how this affects vocational inclinations among gifted students. Therefore, this study was conducted in order to determine "The impact of artificial intelligence on the vocational inclinations of gifted students".

3. Methodology

A descriptive correlational approach was determined to be the most efficient method for achieving the study's objectives. During the research process, structured phases were followed, including

1. Identifying the research problem.
2. Developing and validating the instruments
3. Collecting data and using appropriate statistical techniques

Furthermore, the sample consisted of 363 students from King Abdullah Schools for Excellence and Jubilee Schools in Amman. The schools care for gifted children in Jordan, so researchers will be cautious in generalizing the results to all gifted students in Jordan. The schools with gifted students include 227 female students (62.5%) and 136 male students (37.5%). Additionally, the participants were divided into three main work groups: medical (24.8%), educational (55.9%) and engineering (19.3%). The basis for categorizing participants into these groups was prior academic record. Additionally, a simple random procedure was utilized to select the sample.

This study utilized the Professional Tendencies Scale developed by (Yannakoudakis, 2024; Gurres et al., 2021; Özçelik, 2023), ensuring validity and alignment with previous research. Additionally, Laupichler et al. (2023) developed and adapted the Artificial Intelligence Scale. In response to these studies, items were developed for both the artificial intelligence scale and the professional tendencies scale. A total of 41 items were included in the artificial intelligence scale, and 36 items were included in the professional tendencies scale.

A panel of arbitrators specializing in artificial intelligence, educational measurement and evaluation, and special education was consulted to provide an opinion regarding the scales. Based on the arbitrators' proposals, the artificial intelligence scale was composed of 38 items divided into three categories: technical knowledge (items 1-16), critical evaluation (items 17-28), and scientific application (items 29-38). The professional tendencies scale consists of 32 items arranged in four categories: practical, technical, social, and investigative. In the practical area, items 1-8 are represented, in the technical area, items 9-19, and in the investigative area, items 23-32.

An examination of the validity and stability of the scales was conducted using a survey sample of 40 students. The Pearson's correlation coefficient was used to determine the strength of association between individual items and their corresponding dimensions, as well as the total score of the scale, to assess the validity of the scale. Based on a correlation coefficient between the item and the dimension to which it belongs, the values ranged from 0.49 to 0.78 for technical knowledge, (0.56-0.75) for critical evaluation, and (0.58-0.85) for practical application.

There was a correlation coefficient between the item and the total score in the technical knowledge questions between 0.47-0.72, (0.43-0.69) for critical evaluation, and (0.56-0.77) for practical application. There was a correlation

coefficient of 0.60 to 0.85 between the item and the practical field for the professional tendencies scale, (0.49-0.71) for the technical field, (0.52-0.81) for the social field, and (0.49-0.71) for the investigative field. The various areas of artificial intelligence had alpha values of (0.92), (00.89), and (090), and the total score had an alpha value of (0.95), respectively. For professional tendencies, there were alpha values of (0.86), (0.81), (0.76), and (0.83) respectively.

4. Results

To address the study's first research query: What is the level of artificial intelligence knowledge among gifted students? Calculations were made of the arithmetic means and standard deviations of the students' estimates as shown in Table 1.

Table 1: Statistical analysis of gifted students' knowledge of artificial intelligence based on arithmetic means and standard deviations

Rank	Domain	M	SD	Degree
1	Critical evaluation	3.**74**	**0.68**	High
2	Practical application	3.**61**	**0.73**	Moderate
3	Technical knowledge	3.**29**	**0.72**	Moderate
Overall		3.**52**	0.**64**	Moderate

An arithmetic mean of (3.52) and a SD of (0.64) indicate that gifted students have an average level of knowledge of artificial intelligence. With an arithmetic mean of (3.74) and a SD of (0.68), the field of critical evaluation ranked first, while the field of practical application ranked second with a mean of (3.61) and SD of (0.73). With an arithmetic mean of (3.29) and (0.72), the field of technical knowledge placed last. The results are shown in Tables (2, 3, 4).

Table 2: Arithmetic means and SD of domain in the technical knowledge domain

Item	Rank	Item	M	S D	Degree
2	1	Differentiate between a general and a narrow AI	3.86	0.96	High
8	2	Investigate whether media representations of artificial intelligence go beyond the current capabilities of AI	3.71	0.74	High
3	3	Differentiate between artificial intelligence applications that are already in existence and those that are yet to be developed	3.58	0.85	Moderate
11	4	Give a general explanation of how machine learning works	3.57	0.74	Moderate
5	5	Describe the training, validation, and testing of machine learning models	3.49	0.79	Moderate

4	6	Distinguish between unsupervised and supervised learning	3.45	0.82	Moderate
12	7	In terms of machine learning, explain how the concept of 'reinforcement learning' works at a basic level	3.42	0.92	Moderate
1	8	Describe how deep learning is related to machine learning	3.39	0.74	Moderate
15	9	What is the meaning of the term “artificial neural network”?	3.26	0.79	Moderate
6	10	What is the influence of AI on the environment and how does it respond to it?	3.25	0.57	Moderate
9	11	In order to implement artificial intelligence, explain how computers use sensors to gather data	3.21	0.93	Moderate
16	12	Describe the meaning of the term “black box”when used in relation to AI	3.16	0.56	Moderate
14	13	Provide an explanation of how biases arise in AI	3.10	0.47	Moderate
7	14	What are the differences between rule-based systems and machine learning systems?	2.97	0.38	Moderate
10	15	Explain the concept of explainable artificial intelligence	2.74	0.63	Moderate
13	16	What is big data?	2.57	0.79	Moderate
		Overall	3.29	0.72	Moderate

As shown in Table 2, gifted students possessed a moderate level of technical knowledge concerning artificial intelligence, with a mean of 3.29 and a standard deviation of 0.72. Individual item arithmetic means ranged between 2.57 and 3.86. According to the results, item number 2 was ranked highest with a mean of 3.86 and a standard deviation of 0.96. In contrast, item number 16 ranked lowest with a mean of 2.57 and a SD of 0.79.

Table 3: Arithmetic Means and Standard Deviations of Items in the Critical Evaluation Domain

Item	Rank	Item	M	S D	Degree
17	1	Differentiate between human and AI	4.29	0.96	High
19	2	Name weaknesses of artificial intelligence	4.08	0.98	High
20	3	In the context of AI systems, describe the risks that may arise.	3.88	0.99	High
18	4	Discuss the advantages of using AI systems	3.85	0.99	High
22	5	Describe why data plays a critical role in the development and application of AI	3.79	0.78	High
24	6	What is the importance of human involvement in the development of AI systems?	3.68	0.87	High
28	7	Analyze the ethical implications of AI.	3.60	0.93	Moderate
25	8	Analyze the potential social and economic impact of AI	3.59	0.84	Moderate
21	9	Describe what artificial intelligence is.	3.56	0.73	Moderate
23	10	What are the reasons why it is important to consider data security when developing and using AI applications?	3.55	0.81	Moderate
27	11	Provide an explanation of why AI applications should be developed and used with consideration for data privacy	3.53	0.98	Moderate
26	12	Identify potential legal problems associated with the use of AI	3.51	0.93	Moderate
		Overall	3.74	0.68	Moderate

According to Table 3, gifted students had high levels of knowledge regarding artificial intelligence in critical evaluation, with arithmetic means of 3.74 and standard deviations of 0.68. The arithmetic means of the items ranged from 3.51 to 4.29. Item No. 17 came in first place, with an arithmetic mean of 4.29 and a standard deviation of 0.96, while item No. 26 took last place, with an arithmetic mean of 3.51 and a standard deviation of 0.93.

Table 4: Statistical analysis of a practical application field using arithmetic means and SD

Item	Rank	Item	M	S D	Degree
31	1	Find out if the technologies I use are supported by AI	3.91	0.92	High
32	2	Give examples of artificial intelligence-supported technical applications.	3.84	0.95	High
29	3	Name strengths of artificial intelligence	3.83	0.83	High
37	4	What is the potential impact of AI on the future?	3.76	0.81	High
35	5	Examine the implications of AI applications in at least one subject area.	3.71	0.73	High
33	6	Identify applications that use AI-assisted natural language processing/understanding.	3.64	0.99	Moderate
30	7	Describe why AI is becoming increasingly important in recent years	3.63	1.00	Moderate
36	8	Analyze whether AI can and should be used to solve a problem in my field	3.49	0.98	Moderate
34	9	Give examples from my daily life where you might be in contact with artificial intelligence.	3.22	0.92	Moderate
38	10	Explain what an algorithm is.	3.15	1.01	Moderate
		Overall	3.61	0.73	Moderate

According to Table (4) above, gifted students in artificial intelligence found that the average degree of knowledge in the field of practical application was 3.61 and the SD was 0.73. The arithmetic means of the items ranged between (3.15-3.91), with item No. (31) ranked first with an arithmetic mean of (3.91) and a SD of (0.92), while item No. (38) ranked last with an arithmetic mean of (3.15) and a SD of (1.01). The results of the second question: *What are the prevailing patterns of vocational inclinations among gifted individuals*? Table 5 below illustrates the frequencies and percentages of each pattern in order to answer the question.

Table 5: Frequencies and percentages of prevailing vocational inclination patterns among gifted students

	Patterns	F	%
	Social	150	41.3
	Investigative	90	24.8
	Practical	70	19.3
	Art	53	14.6

Based on Table 5, the social pattern is the most common among gifted students and has the highest frequency of 150 and the highest percentage of 41.3%, while the artistic pattern has the lowest frequency of 53 and the lowest percentage of 14.6%.

Results of the third question: Are there statistically significant differences in the level of vocational inclinations based on gender and parents' occupation? With regard to the answer to this question, the arithmetic means and deviations of the responses of gifted students were determined based on the variables of gender and parents' occupations.

Table 6: Means and standard deviations of gifted students' responses by gender and occupation of their parents

Variables	Levels		Practical	Art	Social	Investigative
Gender	Male	M	3.23	3.10	3.84	3.57
		SD	0.76	0.77	0.76	0.91
	Female	M	2.83	2.67	3.61	3.38
		SD	0.81	0.79	0.84	0.84
Parents work	Medical	M	2.96	3.82	3.74	3.60
		SD	0.98	0.75	0.82	0.78
	Educational	M	3.13	2.81	3.68	3.40
		SD	0.97	0.85	0.82	0.88
	Engineering	M	3.07	2.89	3.70	3.40
		SD	1.03	1.7	0.83	0.93

Table (6) shows that there are apparent differences between the arithmetic means depending on the variables of gender and parents' work. Respectively. To determine whether these differences are statistically significant, a multivariate analysis of variance was conducted, as shown in Table 7.

Table 7: MANOVA for the Significance of Differences in Arithmetic Means by Gender and Parental Occupation

Source of Variance	Fields	SS	DF	M S	F	Sig	Partial Eta Squared
Gender Hoteling's Trace (0.199) F (17.590) Sig (0.00)	Practical	11.187	1	11.187	11.823	0.001	0.032
	Art	11.220	1	11.220	18.332	0.000	0.049
	Social	1.345	1	1.345	2.045	0.154	0.006
	Investigative	4.213	1	4.213	5.603	0.018	0.105
Parents work Wilks' Lambda (0.969) F (1.388) Sig (0.198)	Practical	2.339	2	1.169	1.236	0.292	0.007
	Art	0.525	2	0.263	0.429	0.651	0.002
	Social	0.029	2	0.015	0.022	0.978	0.001
	Investigative	2.280	2	1.140	1.516	0.221	0.008
Error	Practical	337.819	357	0.946			
	Art	218.500	357	0.612			
	Social	234.732	357	0.658			
	Investigative	268.422	357	0.752			
	Realistic	337.819	357	0.946			
Total	Realistic	354.801	362				
	Art	237.294	362				
	Social	244.836	362				
	Investigative	276.505	362				
	Realistic	354.801	362				

In terms of practical and technical tendencies, statistically significant differences were found, and in terms of investigative professional tendencies, males had a statistically significant advantage, but no statistically significant differences were observed in terms of social tendencies. The effect size for the practical tendencies was (0.032), technical tendencies (0.049), and for the investigative tendencies (0.015) According to the results, the level of professional tendencies attributed to the variable of parents' work did not differ statistically significantly. What is more, a simple regression analysis was conducted in order to answer the question, *what is the predictive power of artificial intelligence in determining the career preferences of gifted students?* As shown in table 8 below.

Table 8: A simple regression analysis to reveal the predictive ability of artificial intelligence on the career tendencies of gifted students

Fields	R	R^2	Beta	T	Sig	Effect Size
Practical	0.34	0.11	0.34	6.907	0.001	0.12
Art	0.35	0.12	0.35	7.151	0.000	0.14
Social	0.35	0.12	0.35	7.169	0.000	0.14
Investigative	0.49	0.24	0.49	10.87	0.000	0.32

Table (8) indicates that artificial intelligence has a significant impact on professional tendencies since the statistical significance is less than 0.05. As a result of the study, artificial intelligence had a higher predictive ability in the investigative field among gifted students, with a percentage of 24%, but a lower predictive ability in the practical field, with a percentage of 11%. Effect size was calculated using Cohen's f^2, based on the coefficient of determination values (R2) resulting from the regression analysis.

The results showed that the "Investigative" variable had a medium to large effect size, whereas the remaining variables (practical, art, and social) showed small to medium effect sizes. Graphs illustrate the normal distribution of some dependent variables and the form of dispersion that illustrates the linear relationship between artificial intelligence and professional tendencies.

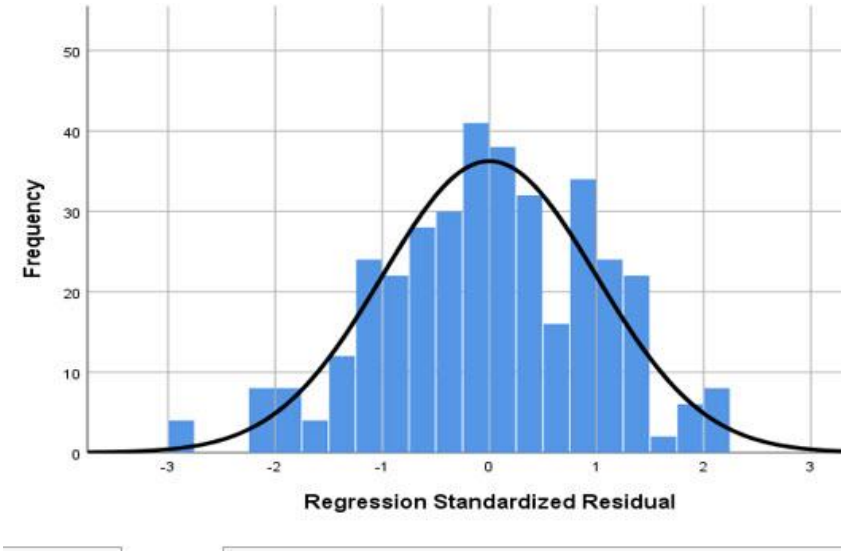

Figure 1: Normal Distribution

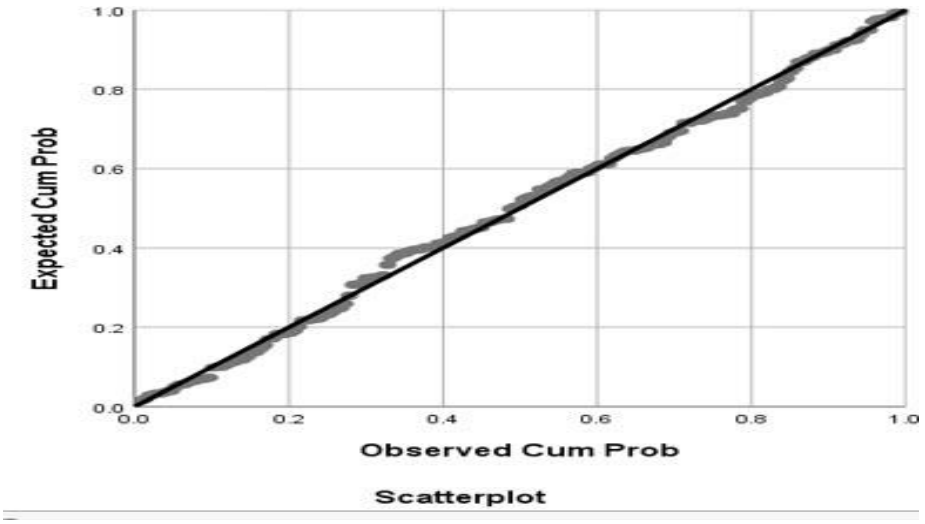

Figure 2: The linear relationship

5. Discussion

A positive correlation was found between gifted students' vocational inclinations and their knowledge of artificial intelligence. The correlation coefficients between artificial intelligence and practical tendencies (0.34), Art tendencies (0.35), Social tendencies (0.35), and Investigative tendencies (0.49). Moreover, it illustrates the difficulties and challenges gifted individuals face when seeking employment and deciding between the many career opportunities available to them in an era of rapid change and growth.

As a result of the finding, it was determined that gifted students possess a moderate level of knowledge of artificial intelligence (knowledge (M = 3.52, SD = .64), with critical evaluation emerging as the strongest domain (M = 3.74, SD = .68), followed by practical application (M = 3.61, SD = .73), and technical

knowledge (M = 3.29, SD = 0.72). In other words, students can analyse Al and its implications. Nevertheless, they may lack technical experience with artificial intelligence concepts such as deep learning, machine learning, or big data. Furthermore, these findings support the results of (Dimitriadou et al., 2024; Laupichler et al., 2023) suggesting that even when students develop general AIA literacy, they may not engage in the technical foundations of AI.

In the field of AI-based careers such as cyber security, data science, data visualization, etc., having a gap in technical knowledge is concerning since it may restrict gifted students' abilities to search and find. As a result of the clear gap in technical knowledge related to artificial intelligence among gifted students (mean = 3.29) compared to critical evaluation and practical application and technical knowledge, it is recommended that educational institutions enhance the technical aspect of AI programs for this group. This includes incorporating advanced concepts such as machine learning, deep learning, and big data, as well as practical training activities that develop applied expertise.

It was found that social interests (41%) were the most common vocational interests among students, followed by investigative interests (25%), practical interests (19%), and artistic interests (14%) among students. As a result of the study, gifted students have demonstrated a strong interest in careers involving social interaction, problem solving, and investigation, which are considered to be important components of careers in education, psychology, and research. Among gifted students, social tendencies are prevalent due to the high levels of leadership, empathy, and the desire to make a positive contribution to society. Additionally, institutions that provide care for gifted children promote cooperative work and community service.

The social inclinations are predominant among the other domains, according to research conducted by (Abdul Aziz et al., 2021; Aljughaiman et al., 2019), which indicated that gifted students prefer jobs in which they can engage and interact with activities that contribute to society. Even so, the low prevalence of artistic inclinations suggests that creative careers are not as attractive as other careers within the educational system as a whole. As a result, it is essential to investigate further in these fields as well as examine how AI technologies can be integrated into these fields in order to influence the artistic inclinations of gifted students.

In addition, the study revealed significant gender differences in vocational inclinations favoring male gifted students in practical, artistic, and investigative fields. However, no significant differences were observed in social domains. In some cases, these differences could be attributed to socialization, which affects career choices significantly. Games that promote interaction and nurturing are encouraged for females, while games involving construction and competition are encouraged for males. Career choices may also be influenced by family and school environments as well as medical expectations.

In contrast to male gifted students, female gifted students tend to experience educational and societal influences that may steer them away from these fields. A

strong correlation exists between the findings of (Kar & KaR, 2023) that address gender disparities in STEM fields and the previous findings. In contrast, parental occupation did not significantly influence the gifted students' vocational inclinations, suggesting that personal interests and educational exposure can be a more important factor than parental occupation in shaping job preferences. In contrast to such findings, other studies have found stronger parental influence on job preferences (Mulhall, 2014; Hadiyati & Astut, 2023). It is possible that students' career choices are changing in this era where AI can play a greater role.

Considering the findings of this study, AI knowledge appears to have a significant predictive relationship with vocational inclinations, with the investigation domain showing the strongest correlation ($R2 = 0.24$, $p = 0.001$), followed by the social, artistic, and practical domains in order of importance. AI plays a significant role in shaping the career choices of gifted students, as students with higher levels of artificial intelligence literacy are more likely to develop problem-solving and investigative interests. According to the findings of the study (Tapalova & Zhiyenbayeva, 2022; Edlich et al., 2019), AI tools and applications can assist students in better understanding their strengths, market needs, and trends.

Students still prefer careers that do not require artificial intelligence or are more hands-on, as indicated by the low predictive power of the practical domain ($R2 = 0.11$). It is therefore imperative that career guidance incorporate both AI-driven recommendations and real-world career exploration experiences. In order to accomplish this, workshops or counselling sessions are conducted to introduce them to artificial intelligence and integrate AI applications into career counselling.

6. Conclusion

This study highlights the importance of artificial intelligence in shaping the vocational inclination of gifted students where AI can significantly influence their career preferences, especially in investigative fields. Additionally, the study found significant gender differences, with males preferring technical and investigative careers, while parental occupation had no significant effect on gender. Moreover, the findings show that AI-driven guidance is necessary to assist gifted students in making well-informed career choices. By integrating AI-based career guidance tools into gifted students' decision-making processes, they could be able to better align their talents with the demands of the labor market. Nevertheless, further experimental research is required to verify its effectiveness in different contexts. Furthermore, educational institutions should adapt, adopt, and innovate their career development strategies consistently.

7. References

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