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Exploring the Relationship between Artificial Intelligence Literacy and English Language Learning Motivation

Huriye YAŞAR [1] *& Vasif KARAGUCUK* [2]

Abstract

Artificial intelligence has been transforming every field of life. It's critical to comprehend how artificial intelligence affects foreign language learning. Artificial intelligence can improve real-time feedback and individualized learning experiences, which may boost student motivation. The study assesses students' artificial intelligence literacy and English language learning motivation levels. Data were gathered through in-person surveys from 397 participants using the Artificial Intelligence Literacy and the English Language Learning Motivation Scales. The findings showed that English language learning motivation (65.02) and literacy in artificial intelligence (61.95) were above average. There were statistically significant positive correlations between total scores of English language learning motivation and artificial intelligence literacy ($p < 0.01$). These results imply that a greater motivation to learn English is related to a better level of artificial intelligence literacy. Also, incorporating artificial intelligence into language instruction can improve students' motivation and engagement. More research to examine other variables impacting this relationship is also needed. The results may offer insightful information to educators and legislators who seek to enhance artificial intelligence literacy and foreign language instruction in a quickly changing educational environment.

Keywords Artificial Intelligence | Literacy | Motivation | English Language Learning

Yapay Zekâ Okuryazarlığı ile İngilizce Dil Öğrenme Motivasyonu Arasındaki İlişkinin Araştırılması

Özet

Yapay zekâ hayatın her alanını dönüştürmektedir. Yapay zekânın yabancı dil öğrenimini nasıl etkilediğini anlamak hayati önem taşımaktadır. Yapay zekâ, öğrenci motivasyonunu artırabilecek gerçek zamanlı geri bildirimi ve bireyselleştirilmiş öğrenme deneyimlerini geliştirebilir. Çalışmada öğrencilerin İngilizce öğrenme motivasyon düzeyleri ve yapay zekâ okuryazarlıkları ölçülmüştür. Veriler, Yapay Zekâ Okuryazarlığı ve İngilizce Dil Öğrenme Motivasyon Ölçekleri kullanılarak 397 katılımcıdan yüz yüze anketler yoluyla toplanmıştır. Bulgular, İngilizce öğrenme motivasyonunun (65,02) ve yapay zekâ okuryazarlığının (61,95) ortalamanın üzerinde olduğunu göstermiştir. İngilizce öğrenme motivasyonu toplam puanları ile yapay zekâ okuryazarlığı arasında istatistiksel olarak anlamlı düzeyde, pozitif yönde ilişki bulunmaktadır ($p < 0,01$). Bu sonuçlar, İngilizce öğrenmeye yönelik daha yüksek motivasyonun, daha iyi düzeyde yapay zekâ okuryazarlığıyla ilişkili olduğunu göstermektedir. Ayrıca, yapay zekânın dil öğretimine dahil edilmesinin öğrencilerin motivasyonunu ve katılımını artırabilir. Ayrıca bu ilişkiyi etkileyen diğer değişkenleri incelemek için daha fazla araştırma yapılması gerekmektedir. Sonuçlar, hızla değişen eğitim ortamında yapay zekâ okuryazarlığını ve yabancı dil öğretimini geliştirmek isteyen eğitimcilere ve yasa koyuculara aydınlatıcı bilgiler sunabilir.

Anahtar Kelimeler Yapay Zekâ | Okuryazarlık | Motivasyon | İngilizce Dil Öğrenimi

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[1] Instructor, Gaziantep Islam Science and Technology University, huriye.yasar@gibtu.edu.tr, ORCID: 0000-0002-4143-1099

[2] Instructor, Gaziantep Islam Science and Technology University, vasif.karagucuk@gibtu.edu.tr, ORCID: 0000-0002-1532-8450

Introduction

Artificial intelligence (AI) has increased in popularity and seems to grow in every field. The multidisciplinary field of AI aims to automate tasks that now need human intelligence by imitating human cognitive functions (Williams, 1983). It enables robots to carry out activities like learning, reasoning, and problem-solving that traditionally need human intelligence (Morandín-Ahuerma, 2022). AI technologies can be useful in different disciplines and are revolutionizing many parts of life such as chatbots to produce codes based on definite rules, health to diagnose and cure illnesses, etc. (Modi et al., 2023). As AI is a snowballing field, training people not in computer, engineering, or mathematics fields to be professionals in AI is crucial as the people who are not in those fields interact with it in their daily lives (Laupichler et al., 2022).

As all fields from medicine to the industry have been reshaped by AI, English language learning and teaching has started to be revolutionized. To improve learning and its outcomes, AI is being operated in education more and more (Panigrahi, 2020; Negoiță and Popescu, 2023). This operation can vary from teaching to learning. Some of the personifications for students provided by AI are giving feedback, providing information, assisting, and measuring the skills required (Harry, 2023). English as an FL achievement can be enhanced by using AI (Aydın-Yıldız, 2023). Furthermore, combining AI in FL classrooms in blended learning may also develop students' English in terms of communication and listening skills (Obari and Lambacher, 2019). Those advantages of AI in foreign language (FL) education open a new area to investigate as those benefits may reshape students' psychological factors in FL learning. Because of that reason, investigating those factors concerning AI becomes imperative. Some studies have already been implemented so far. Students' attitudes are positive to the use of AI (Kushmar et al., 2022). AI-mediated FL teaching positively affects the L2 motivation of the students (Wei, 2023). Its use in English as an FL setting has been positively related to student motivation (Moybekâ et al., 2023). There is a lack of literature concerning AI and English language learning motivation (ELLM) although it is one of the main factors affecting FL learning. Some further studies are needed to develop vast literature about learner differences and AI interaction as AI is an inevitable fact of today's world. Understanding psychological factors related to Artificial Intelligence Literacy (AIL) can assist teachers and academicians in developing practical plans or curricula for incorporating AI into FL learning environments and better understand how AI is related to and affects it.

The objectives of the study are to assess the level of AIL among students in an FL context, to measure students' ELLM, to examine the relationship between AIL and ELLM, and to provide insights for educators on the use of AI technologies to enhance motivation and learning outcomes in English language education. In this context, the research questions are;

Q1: What are the university students' AIL levels?

Q2: What are the university students' ELLM levels?

Q3: Is there a correlation between the university students' AIL and ELLM levels? If there is, how is that correlation?

The study is based on the hypothesis indicating;

H0: There is no statistically significant correlation between AIL and ELLM among university students.

Literature Review

Artificial Intelligence Literacy (AIL)

AIL refers to AI skills that members of the general public should be able to perform, targeting people who are non-experts in computer science (Laupichler et al., 2022). It also includes critical thinking and understanding about how reliable AI should be created and the effects of not doing so (Casal-Otero et al., 2023). The abilities that allow people to critically assess AI technology, interact and efficiently communicate with AI, and use AI as a tool in different aspects of life are collectively referred to as AIL (Long and Magerko, 2020). To be literate in AI doesn't require programming literacy (Kong et al., 2021), it is about critical thinking and evaluating as the production of AI is about what the user wants. From this perspective, AI usage becomes crucial among students to be more successful while learning specific skills. They should think, evaluate, judge, and even criticize AI when needed because what AI brings them is based on their wants. Wang et al. (2023) highlight 4 elements of AIL; awareness, usage, evaluation, and ethics.

AI awareness: Information that is highly appropriate to a person's existing demands is referred to as awareness (Baker et al., 2006). The person must know what she exactly needs and what can overlap with this need to be aware of a desire. Similarly, AI awareness is the person's assessment of the AI's current decision, understanding of this decision, and prediction of its future decisions (Karvonen et al., 2019). It is clearly understood that it involves not only the technical skills to use AI but also an understanding of its implications, opportunities, and limitations. To be literate in AI, awareness is highly important to know what AI is bringing, how focused it is on the tasks, or how relevant its productions are to the needs.

AI usage: AI offers many different tools for limitless purposes. AI usage is to use and take advantage of AI technologies in order to complete tasks effectively (Wang et al., 2023). The ability of students to use AI tools, such as virtual tutors, automated feedback systems, and language learning applications for different functions, may be considered an example of AI usage in education. Functional levels are the main focus of it, which includes easy access to AI tools, being proficient in their use, and the ability to integrate various AI tools (Wang et al., 2023). It allows them to use AI more successfully to improve their learning outcomes and experiences.

AI evaluation: People should be able to select appropriate AI tools, consider the outcomes, and analyze them is the focus of the review (Çelebi et al., 2023). It requires people to have a critical thinking ability not to copy-paste what they reach with the help of AI. The people should be aware of possible bias, misinformation, or misleads.

AI ethics: Ethics is a set of values, norms, or regulations that help judge what is right or good and is the study of right and wrong as well as the moral responsibilities and duties of things, such as intelligent robots, humans, and others (Siau and Wang, 2020). Similarly, AI ethics is an umbrella term of ideals, guidelines, and methods that apply generally acknowledged philosophy to direct ethical behavior in the design and use of AI (Leslie, 2019). The AI ethics is particularly crucial in the field of education. It covers factors like protecting student information, ensuring equal chance to access AI tools, and preventing possible abuse or over-reliance on it. Additionally, the students should morally be aware of AI use with good and bad sides and take responsibility for the decisions to be ethical in AI use.

English Language Learning Motivation

Motivation, according to Harmer (2008), is an innate drive that propels people to take action to accomplish goals. In other words, it's what makes people move to achieve something (Salajegheh

and Hoseinyshavoun, 2018). It is the reason behind people's decisions, their level of effort, and the amount of time they are eager to commit to an activity (Dörnyei, 2001). In the educational context, neither a suitable curriculum nor effective teaching is enough to accomplish a long-term goal lacking motivation (Dörnyei, 1998). It is first and foremost attitude toward learning that influences both the level of a student's learning and their desire to continue or quit (Salajegheh and Hoseinyshavoun, 2018). When a student becomes aware of the need and becomes motivated to learn, learning occurs most effectively thanks to motivation and it encourages students to focus, think critically, and acquire knowledge efficiently (Filgona et al., 2020). It additionally has a significant impact on acquiring a second language, or FL (Dörnyei, 1994). As being a pivotal factor in FL learning, it influences both the process and the outcomes (Lăpădat and Lăpădat, 2023). Motivation can be seen as a key factor to accompany all other elements affecting language learning. Highly motivated students possibly engage in learning and succeed in language acquisition more (Nat, 2022). So, motivation can foster a positive attitude toward the language, leading to more active participation and increased effort. Student motivation should be created, sustained, and supported through the FL learning process to have a learner-centered teaching environment. According to Uğurlu et al. (2017), ELLM comprises self-confidence, attitude, and personal usage.

Self-confidence: It is a feeling that something can be achieved (Tridinandi, 2018). In the FL context, one of the fundamentals to removing some significant barriers to communication is self-confidence (Gurler, 2015). That confidence allows students to take risks like engaging in discussions or explaining complicated ideas, all of which are essential for FL learning, especially speaking skills.

Attitude: People are likely to have positive attitudes when they come up with new, positive information about a problem and negative attitudes when they come up with new, negative information (Cialdini et al., 1981). It has such an effect on people that a positive attitude towards a task leads to enjoyment and opportunities, while a negative attitude avoids or delays tasks, and if necessary, may not lead to success (Yenilmez, 2007). Language attitude refers to individuals' feelings about their own or others' languages, which can be positive or negative, such as literary value or difficulty in learning (Crystal, 2011). Positive attitudes often lead to increased engagement in FL learning, whereas negative attitudes may result in reluctance. This highlights the importance of creating supportive learning environments that encourage favorable attitudes toward FL.

Personal Usage: In this context, it examines how people's motivation for FL learning is shaped according to their personal needs and preferences. To define personal usage more specifically, it can be seen as a motivational situation where people's motivations for FL are shaped by their interests, personal development goals, and lifestyle. It includes reasons such as following the world agenda, traveling to different countries, watching foreign broadcasts, interacting with tourists, supporting personal development, satisfying the desire to learn a universal language, and gaining prestige. It emphasizes that people highlight pragmatic and personal outcomes in their FL learning processes.

Methodology

Research Design

The research was designed as a correlational one. A correlational research looks into the probability of relationships between/among two or more quantitative variables, and if a relationship is revealed, the extent of it is also figured out (Fraenkel et al., 2012). In this study, university students' AIL and ELLM were the variables that were correlated to seek relationships.

Ethical Considerations

This study was conducted in accordance with the ethical approval obtained from the Gaziantep Islam Science and Technology University Social and Humanity Sciences Studies Ethics Committee, dated 03.04.2024, with document number 2400006971.

Participants

The participants were undergraduate/associate degree students at a state university. The sample size was calculated using an online calculator. The population was 2937 students at a state university. Bujang and Baharum (2016) suggested that with at least 80% power and 0.01 correlation, the minimum size is 382 participants for an alternative hypothesis in correlational studies and researchers could exceed the minimum size. This research included 397 students (N=397), ensuring an overall representation of the population. 132 of the participants were male (33.2%) and 265 of the participants were female (66.8%). Their ages ranged from 17 to 44; the mean age was 21.26. 221 of them were in the Faculty of Health Sciences (55.7%), 107 of them were in the Faculty of Engineering and Natural Sciences (27.0%), 25 of them were in the Faculty of Fine Arts and Architecture (6.3%), 19 of them were in the Faculty of Economics, Administrative, and Social Sciences (4.8%), 18 of them were in the Faculty of Medicine, and (4.5%), 7 were in the Vocational School of Technical Sciences (1.8%).

Data Collection Tools

Personal Information Form: This form was prepared based on the literature to identify participants and the context that they belonged to. It consisted of questions asking about gender, age, and the faculty where they studied.

Artificial Intelligence Literacy Scale (AILS): The scale consists of 4 subscales and 12 items in total. The subscales reflect the dimensions of AIL including awareness (items 1-3), usage (items 4-6), evaluation (items 7-9), and ethics (items 10-12) concerning AI (Wang et al., 2023). The adaptation of the AILS into Turkish was executed by Çelebi et al. (2023) It is a Likert-type scale ranging from (1) strongly disagree to (7) strongly agree. Items 2, 5, and 11 were negatively reverse-coded ones. After decoding those negatively reverse-coded items, the scale was expected to indicate higher scores if the AIL level increased. The Cronbach's alpha was 0.85 in the study of Çelebi et al (2023). In this study, it was calculated as 0.76.

English Language Learning Motivation Scale (ELLMS): The scale consists of 16 items and 3 subscales including self-confidence (items 1-4), attitude (items 5-9), and personal usage (items 10-16) indicating valid and reliable results after required analysis and can be applied on university students (Uğurlu et al., 2017). This scale is a Likert-type and the scoring ranges from (1) strongly disagree to (5) strongly agree. Items 1, 2, 3, 4, 6, and 7 were negatively reverse-coded and after decoding them, participants were expected to have higher scores as ELLM increases. The Cronbach's alpha was 0.83 in the study of Uğurlu et al (2017). In this study, it was calculated as 0.87.

In this study, both the AILS and ELLMS were applied in Turkish to ensure low-level English students' confidence and prevent misunderstanding of the items.

Data Collection

The data were gathered through face-to-face survey forms. To ensure clarity and understanding of the research questions, the surveys were piloted involving 57 students before collecting data from all students. The survey forms remained the same after piloting the study, and the dataset of those 57 students was excluded from the final analysis. Before collecting data, students were informed about the aim of the study, and consent forms were signed by volunteer students. The

average time needed for the completion of the surveys was 10 minutes. The data were collected using the Personal Information Form, AILS, and ELLMS.

Data Analysis

The data were analyzed using the "Statistical Package for Social Sciences" (SPSS) for Windows version 27.0 statistical software. The data analysis was based on normal distribution assumptions, which were determined according to Skewness-Kurtosis values. The results demonstrated that the data exhibited a normal distribution (W (397) =0.7 and 0.9; p >0.05). Descriptive statistics for gender, age, and faculty were applied and Pearson correlation was employed to calculate correlation statistics.

Findings

To answer Q1 and Q2, the total AIL and ELLM scores of the participants are analyzed using descriptive statistics. The results are shown in Table 1.

Table 1. *Total mean scores of the AILS, ELLMS, and their subscales*

Scale/Subscale	Number of Items	Mean±SD	Min-Max scores that can be obtained from the scale	Min-Max scores obtained from the scale
AILS-awareness	3	14.50±2.35	3-21	6-21
AILS-usage	3	15.31±3.56	3-21	3-21
AILS-evaluation	3	14.35±2.88	3-21	4-19
AILS-ethics	3	16.02±3.54	3-21	3-21
Total AILS	12	61.95±9.55	12-84	26-84
ELLMS-self-confidence	4	14.0±4.06	4-20	4-20
ELLMS-attitude	5	19.64±4.32	5-25	5-25
ELLMS-personal usage	7	28.46±5.34	7-35	7-35
Total ELLMS	16	65.02±10.03	12-84	21-82

Participants' total scores from AILS, ELLMS, and their subscales were analyzed and shown in Table 1. According to the findings, the mean of AILS awareness (14.50±2.35), usage (15.31±3.56), evaluation (14.35±2.88), ethics (16.02±3.54), and total AILS (61.95±9.55) scores were above average. When evaluating the mean scores of university students on the ELLMS, the scores for self-confidence (14.0±4.06), attitude (19.64±4.32), and personal usage (28.46±5.34) were obtained as above average with a total scale score of 65.02±10.03. Based on these findings, it was determined that the university students' AILS and ELLMS had average values (Table 1). It was also seen that the mean score of ethics was higher than the other subscales.

Q3 was to investigate and reveal a possible relationship between AIL and ELLM. Correlation analysis was implemented to answer Q3 and the results are indicated in Table 2.

Table 2. *Correlation analysis between the AILS, ELLMS, and their subscales*

Scale/Subscale	Total AILS	AILS-awareness	AILS-usage	AILS-evaluation	AILS-ethics	Total ELLMS	ELLMS-self-confidence	ELLMS-attitude	ELLMS-personal usage
Total AILS									
AILS-awareness	r=.555** p= .000								
AILS-usage	r= .786** p= .000	r= .264** p= .000							
AILS-evaluation	r= 0.789** p= .000	r= 0.291** p= .000	r= .607** p= .000						
AILS-ethics	r= .688** p= .000	r= .280** p= .000	r= .272** p= .000	r= .410** p= .000					
Total ELLMS	r= .350** p= .000	r= .199** p= .000	r= .300** p= .000	r= .267** p= .000	r= .239** p= .000				
ELLMS-self-confidence	r= .136** p= .006	r= .021 p= .679	r= .195** p= .000	r= .114* p= .024	r= .042 p= .404	r= .594** p= .000			
ELLMS-attitude	r= .216** p= .000	r= .119* p= .017	r= .164** p= .001	r= .127* p= .011	r= .210** p= .000	r= .844** p= .000	r= .518** p= .000		
ELLMS-personal usage	r= .320** p= .000	r= .179** p= .000	r= .253** p= .000	r= .268** p= .000	r= .217** p= .000	r= .781** p= .000	r= .114* p= .024	r= .441** p=.000	

According to the findings, there are statistically significant, moderate, and positive correlations ($p < 0.01$) between total AILS and total ELLMS and ELLMS personal usage. On the other hand, there are no statistically significant correlations ($p > 0.05$) between ELLMS self-confidence and AILS awareness and AILS ethics. Finally, besides the aforementioned correlations, in other subscales of the ELLMS and AILS, there are statistically significant, weak, and positive correlations (Table 2).

Discussion

The excessive interest in applying AI in educational contexts recently has been growing opportunities and pressures to integrate it into FL learning (Rusmiyanto et al., 2023). English, as it is a global language, has many learners all around the world. Especially, in educational settings, it has a shaping role in the FL field. AI has become commonly used by personalizing instruction and increasing efficiency and engagement, it is changing the field of education (Harry, 2023) but further studies are needed to effectively use it (Liu, 2023). To get educational benefits from this new technology, its tremendous potential should be understood (Kannan and Munday, 2018). Student motivation is one of the considerations that should be taken into while integrating AI into FL learning and teaching areas (Sumakul et al., 2022). The necessity for that study occurred by questioning students' AIL and FL motivation, which drives them to learn an FL. It was claimed that if the student

has a low level of motivation, it may be harder to take advantage of AI (Sumakul et al., 2022). Despite the increasing and growing studies in the literature on AI and its use in the FL learning and teaching field, no research regards the relationship between AIL and ELLM. Therefore, this study is intended to fill an essential gap in the literature.

According to the findings, students had an above-average level of AIL. Specifically, university students exhibited proficiency in various aspects of AILS, including awareness, usage, evaluation, and ethics. Since university students are already (or will be) exposed to AI platforms in both their casual and professional lives, they must improve their AIL (Laupichler et al., 2022). Therefore, the AIL levels of the university students suggest that they are aware of what AI is, they can be accepted as proficient in the use of AI, they can evaluate AI outcomes, and they know the ethical responsibilities of AI. It can be concluded that university students can critically evaluate AI and are ready for a rapidly evolving world with this technology.

Motivation is one of the key factors in acquiring a specific skill. The more strongly motivated a student is to complete the task, the more probable it is that they will reject easy solutions to challenges (Salajegheh and Hoseinyshavoun, 2018). FL education should be planned to increase motivation (Changlek and Palanukulwong, 2015). The findings showed that students' motivation levels were already above average and relatively high. Motivation in an FL context serves as the originary stimulus to begin learning and, subsequently, the main source of energy throughout the drawn-out and frequently difficult learning process; in other words, motivation is a prerequisite for all other components (Dörnyei, 2014). It is related to other psychological individual differences, as well. For example, motivation may annihilate the anxiety in learning an FL (Changlek and Palanukulwong, 2015). When it is thought that a higher level of anxiety is an obstacle, increasing motivation becomes more important to mitigate negative feelings toward language learning. If the motivation of the learner is high, then language learning achievement increases (Al-Qahtani, 2013; Dashtizadeh and Farvardin, 2016; Feng et al., 2013; Fitriwati, 2018).

Furthermore, the analysis revealed statistically significant, moderate, and positive correlations between total AILS and total ELLMS scores, as well as ELLMS personal usage. This suggests that students with higher AILS tend to perform greater motivation and engagement in English language learning activities. However, no significant correlations were found between ELLMS self-confidence and AILS awareness or AILS ethics, indicating that confidence levels in English language learning may not necessarily be influenced by awareness or ethical considerations related to AI. The findings also revealed statistically significant, weak, and positive correlations between various subscales of AILS and ELLMS, highlighting the interrelations between specific aspects of AIL and ELLM. These results underscore the importance of considering not only overall proficiency levels but also specific components within each domain when examining the relationship between AIL and ELLM.

The results revealed that students had a relatively higher AI awareness and ELLM. However, there was no relationship between it and ELLM and its subscales. Despite the high levels of FL motivation and AI awareness among students, it's possible that they evolved separately. For example, exposure to AI tools or a general interest in technological developments may be the source of AI awareness. FL motivation, on the other hand, is influenced by specific reasons, career expectations, or personal goals included in personal usage. Those may not affect their AIL. But it shouldn't be forgotten that people can make wise decisions when awareness is automated as human attention is a limited resource that needs to be maximized (Baker et al., 2006). So, AI awareness can be affected by other variables of the students, such as career decisions, leisure time habits, etc.

It was figured out that students' motivation to learn English as an FL and AI usage are significantly correlated, with AI-mediated instruction having a beneficial impact on learning outcomes and self-regulated learning (Yang, 2024) as well as motivation (Song and Song, 2023). However, this study hasn't found a significant relationship between AI usage and ELLM. The participants were mostly university students who didn't take formal general English courses at university. They only learn English in two terms as an obligatory course. It can be said that apart from the exceptions, the students are not proficient in English. AI usage is thought to be more beneficial for low-level English students when compared to higher ones (Gayed et al., 2022). This is because lower ones are not independent learners; they need more tutor support, interaction, and feedback. The results have already shown that students who have AIL have had greater motivation to learn English. Adapting AI tools to English lessons will be helpful for students to be eager to learn English if they learn how to use them efficiently. AI may offer personalized feedback on how students are doing as well as suggestions for development, resulting in a more successful and personalized learning environment (Harry, 2023). So, as students who can be admitted as not proficient in FL didn't take AI or AIL-related courses, or weren't mediated by AI in formal educational settings, they couldn't associate their AI usage with their FL learning as they are not aware of how AI could help them.

The ability of students to evaluate, compare, and choose AI tools according to their usefulness and relevance for particular tasks is the main focus of the evaluation subscale of AILS. The motivational drivers of FL learning, which frequently have more to do with cultural, professional, or personal goals than with AI evaluation abilities, are not always in line with this, even though they demonstrate a good level of AIL. Although students may be encouraged to use AI tools for different purposes including FL learning, they do not need or value the capacity to critically assess these resources. This implies that the AI evaluation abilities of the students might function without reference to the FL learning motivation.

Although AI can be used efficiently in learning processes, ethical difficulties come up like privacy concerns and dishonesty (Alghamdy, 2023). Students could be highly motivated to learn English for practical or personal reasons without considering or being influenced by ethical principles about the AI tools they use. AI tools may not consider the ethical responsibilities of biases, misinformation, or deception. Also, if some students recognize that AI may be misleading, they could tend not to prefer AI tools to learn about FL but continue their motivation to FL and ethical understanding which weakens any potential link between AI ethics and ELLM. Similarly, students with strong ethics might prioritize those principles in broader AI use but not see them as relevant to their ELLM. Teachers and policymakers may promote a more responsible and inclusive use of AI in learning environments by addressing ethics and ethical issues in the FL process to make them more ethical and motivated.

Self-confidence is a very important personal attitude towards FL. A person who has a high level of self-confidence is more likely to achieve success and satisfying consequences (Tridinanti, 2018). The self-confidence of the students may be different because of their past education lives, experiences on FL, or individual factors. Furthermore, with the help of technology and what it brings, students can have personalized experiences contrary to traditional practices but this may mitigate negative feelings toward language learning such as dissatisfaction and inadequacy (Creely, 2024). It may be the result of the nature of a language. Limitless words and limited rules, combining all skills to produce the FL may be hard for them. Users who have too much information have to cope with an information overload that complicates their tasks and obscures crucial information (Baker et al., 2006).

Additionally, AI may be an overreactor, overcorrector, or even a source of stress for them and they may not feel perfect. When the students are not familiar with the flexibility of the language and are not instructed very well considering their psychological factors, AI may sabotage FL learning. So, their self-confidence may be hurt by the hands of AI. So, AIL may not get on well with student psychology in terms of FL learning.

As the study figured out, increasing AIL may increase motivation for FL learning. Hence, students can achieve it better. When it is thought that AIL is a pivotal skill to be acquired in the 21st century, FL learning motivation may be helpful to increase this skill. In an ever-evolving workplace, individuals must have the ability to work cooperatively with the help of AI to be current and prevent falling behind (Laupichler et al., 2022). AIL can be adapted into education processes, which in turn positively influences their FL learning motivation.

Conclusion

The unstoppable pace of AI and growing interest in it directs a new research area. As it opens a new space to be researched, AI and/in education should be investigated more. Innovative methods should be developed, technological tools should be modernized and AI-based FL learning and teaching environments should be created to raise the standard of instruction in FLs (Yanhua, 2020). To start, some psychological factors should be examined to look closer at students.

The study explored the relationship between AIL and ELLM among university students. In conclusion, it was determined that the university students' AIL was at a good level and that their literacy of AI was above average in terms of awareness, usage, evaluation, and ethics. These results indicated their readiness to engage with AI technologies critically. Additionally, their ELLM and its subscales of self-confidence, attitude, and personal usage were at a good level. They were determined to be relatively motivated to English as an FL learning.

The study revealed statistically significant, moderate, and positive correlations between total AIL and total ELLM scores, as well as ELLM personal usage. The findings suggest that students with higher AIL tend to exhibit greater motivation in English language learning. AIL and ELLM are positively related, and developing one of them can be a booster of the other. This result highlights how incorporating AI into FL learning environments has the potential to be revolutionary. Teachers may improve student engagement and meet a variety of learning requirements by utilizing AI's capacity to deliver interactive tools, adaptive learning experiences, and personalized feedback. AIL development as a competency is especially crucial for educating university students for an AI-driven world, since it gives them the technical know-how, ethical awareness, and critical thinking skills necessary for responsible technology use. These skills promote their career preparedness and lifelong learning outside of the classroom.

It should also be kept in mind that no relationship was found among AIL awareness, usage, evaluation, and ethics subcales and ELLM self-confidence, and attitude subscales. This shows that although students' personal usage motivation to learn English is favorably correlated with their general AIL, some aspects of AIL might not have a direct effect on more general motivating elements like attitudes or self-confidence. This emphasizes the need for more focused approaches that close these gaps and assure that integrating AI enhances both the affective and practical components of FL learning.

Educators and institutions should prioritize the integration of AI into FL education in ways that actively engage students and enhance their motivation. Studies suggest that FL learning can be

more fruitful with the help of AI and AI tools including writing (Song and Song, 2023), speaking, and pronunciation (Almehmadi, 2024), and increase willingness, and joy but reduce anxiety (Zhang et al., 2024). They can provide immediate feedback to construct learning, and practice opportunities in FL based on students' personal needs. Not only technical proficiency but also ethical understanding towards AI can be achieved with a well-constructed AI education (Lee, 2021). Based on the study's findings, it is strongly advised to incorporate AI-driven tools into interactive and collaborative language tasks to promote both technical and FL-related achievement and engagement, create AI-integrated curricula that address psychological aspects like anxiety and self-confidence, and make sure that AI applications lessen rather than increase difficulties in FL learning. Although it seems hard to integrate AI into FL settings immediately, the lecturers can advise using AI as an outside-of-classroom-learning tool for students by warning them about the drawbacks. Those drawbacks can be overreliance and agonizing critical thinking. Even so far, some studies have figured out that AI dependency may be a difficult obstacle in the future (Yun, 2024) and it can sabotage critical thinking skills (Darwin et al., 2024).

All things considered, the study adds to the expanding literature of research on the integration of AIL and ELLM among students. The results offer significant perspectives for educators and policymakers that aim to improve students' competence in both areas and create a more ideal learning atmosphere. Yet, more research is required to look into other variables that can affect and/or cause the relationship between AIL and ELLM, as well as their implications for language education and technological literacy initiatives. By understanding the dynamics between AIL and ELLM, educators and policymakers can develop strategies to enhance students' proficiency in both domains and create a more conducive learning environment in an ever-evolving technological landscape.

Limitations and Suggestions for Further Studies

The results obtained from this study are only valid for those university students at a state university in the city of Gaziantep who were conveniently sampled and cannot be generalized to all university students. Further studies can be implemented at different universities and differences can be investigated based on the department because all students' availability to AI, FL background, and technical knowledge may differ among departments. Furthermore, some other variables related to students' psychological differences such as FL self-efficacy, anxiety, and attitudes can be investigated. Those variables can be explored whether they have relationships with AI readiness, AI anxiety, etc. Some career-choice-related studies should be implemented especially for university students as they are very close to the workplace. In addition to these, some qualitative studies can be conducted to understand the reasons behind the obtained results. It shouldn't be forgotten that learner differences should be taken into account before AI-driven educational contexts are created. Additionally, biases can stem from self-reported results. Because it was up to students to answer the items based on their sincerity. To overcome these limitations, future studies should use more dependable methods to gather more objective performance data and a variety of sampling techniques. Experimental studies can test the effect of AI on FL learning.

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Genişletilmiş Özet

Giriş

Yapay zekâ (YZ) popülerlik kazanmıştır ve her alanda büyümektedir. YZ'nin durdurulamaz hızı ve ona olan ilginin artması yeni bir araştırma alanına yön vermektedir. YZ bir kartopu alanı olduğundan, bilgisayar, mühendislik veya matematik alanlarında olmayan kişileri YZ konusunda profesyonel olarak eğitmek, bu alanlarda olmayan kişilerin günlük yaşamlarında YZ ile etkileşime girmesi nedeniyle hayati önem taşımaktadır (Laupichler vd., 2022).

Öğrenmeyi ve sonuçlarını iyileştirmek için YZ eğitimde giderek daha fazla kullanılmaktadır (Panigrahi, 2020; Negoiță ve Popescu, 2023). Bu kullanım, öğretmekten öğrenmeye kadar değişebilir. YZ'nin öğrenciler için sağladığı kişileştirmelerden bazıları geri bildirim vermek, bilgi sağlamak, yardımcı olmak ve gereken becerileri ölçmektir (Harry, 2023). YZ, öğrencilerin nasıl performans gösterdiğine ilişkin kişiselleştirilmiş geri bildirim ve gelişim önerileri sunabilir ve bunun sonucunda daha başarılı ve kişiselleştirilmiş bir öğrenme ortamı ortaya çıkabilir (Harry, 2023). YZ'nin bu avantajları araştırılacak yeni bir alan açmaktadır. Bu faydalar, eğitimde öğrencilerin psikolojik faktörlerini yeniden şekillendirebilir. Bu nedenle, YZ ile ilgili bu faktörlerin araştırılması zorunlu hale gelmektedir. Şimdiye kadar bazı çalışmalar yürütülmüştür. YZ aracılı yabancı dil (YD) öğretimi, öğrencilerin 2. dil motivasyonunu olumlu yönde etkilemektedir (Wei, 2023). Öğrencilerin tutumları da YD öğreniminde YZ kullanımına karşı olumludur (Kushmar vd., 2022). YZ'nin YD ortamında İngilizcede kullanımı, öğrenci motivasyonuyla olumlu yönde ilişkilendirilmiştir (Moybekâ vd., 2023). Ek olarak, YD olarak İngilizce başarısı, YZ kullanılarak artırılabilir (Aydın-Yıldız, 2023). YZ'nin günümüz dünyasının kaçınılmaz bir gerçeği olması nedeniyle, öğrenci farklılıkları ve YZ etkileşimi hakkında geniş bir alanyazın geliştirmek için bazı ek çalışmalara ihtiyaç vardır. Yapay Zekâ Okuryazarlığı (YZO) ile ilişkili psikolojik faktörleri anlamak, öğretmenlerin ve akademisyenlerin YZ'yi YD öğrenme ortamlarına dâhil etmek için pratik planlar veya müfredatlar geliştirmelerine ve YZ'yi öğrenme ile nasıl ilişkili olduğunu ve onu nasıl etkilediğini daha iyi anlamalarına yardımcı olabilir. Çalışmanın amaçları, bir dil öğrenme ortamında öğrenciler arasında YZO düzeyini değerlendirmek, öğrencilerin İngilizce Dil Öğrenme Motivasyonunu (İDÖM) ölçmek, YZO ile İDÖM arasındaki ilişkiyi incelemek ve eğitimcilere İngilizce dil eğitiminde motivasyonu ve öğrenme çıktılarını geliştirmek için YZ teknolojilerinin kullanımı konusunda fikir vermektir.

Yöntem

Araştırma, ilişkisel bir araştırma olarak tasarlanmıştır. Bu çalışmada, üniversite öğrencilerinin YZO ve İDÖM'leri, ilişkileri aramak için ilişkilendirilen değişkenlerdir. Katılımcılar, bir devlet üniversitesinde lisans/ön lisans öğrencileriydi. Bu araştırmaya 397 öğrenci (N=397) katılmış olup, evrenin genel bir temsilini sağlamıştır. Veri toplamada Kişisel Bilgi Formu, YZO ölçeği ve İDÖM ölçeği olmak üzere toplam 3 veri toplama aracı kullanılmıştır.

Bulgular ve Tartışma

Bulgulara göre YZO ölçeği farkındalığı (14,50±2,35), kullanımı (15,31±3,56), değerlendirme (14,35±2,88), etik (16,02±3,54) ve toplam YZO ölçeği (61,95±9,55) puanlarının ortalamaları ortalamanın üstündedir. Üniversite öğrencilerinin İDÖM ölçeği puan ortalamaları değerlendirildiğinde ise özgüven (14,0±4,06), tutum (19,64±4,32) ve kişisel kullanım (28,46±5,34) puanlarının ortalamanın üstünde olduğu, toplam ölçek puanının ise 65,02±10,03 olduğu görülmüştür. Bu bulgulara dayanarak üniversite öğrencilerinin YZO ve İDÖM ölçekleri puanlarının ortalama değerlere sahip olduğu

belirlenmiştir (Tablo 1). Ayrıca etik alt ölçek puan ortalamasının diğer alt ölçeklere göre daha yüksek olduğu görülmüştür.

Bulgulara göre, toplam YZO ve İDÖM ölçekleri ve İDÖM ölçeği kişisel kullanımı arasında istatistiksel olarak anlamlı, orta düzeyde ve pozitif ilişki ($p < 0,01$) bulunmaktadır. Öte yandan, İDÖM ölçeği öz güven ile YZO ölçeği farkındalık ve YZO ölçeği etik arasında istatistiksel olarak anlamlı ilişki ($p > 0,05$) bulunmamaktadır. Son olarak, yukarıda belirtilen ilişkilerin yanı sıra, İDÖM ve YZO ölçeklerinin diğer alt boyutlarında istatistiksel olarak anlamlı, zayıf düzeyde ve pozitif ilişki bulunmaktadır (Tablo 2). Alanyazında YZ ve YD öğrenme ve öğretim alanında kullanımı üzerine artan ve büyüyen çalışmalara rağmen, YZO ve İDÖM arasındaki ilişkiyi ele alan hiçbir araştırma yoktur. Bu nedenle, bu çalışma alanyazındaki önemli bir boşluğu doldurmayı amaçlamaktadır.

Bulgulara göre, öğrenciler ortalamanın üzerinde bir YZO seviyesine sahiptir. Özellikle, üniversite öğrencileri farkındalık, kullanım, değerlendirme ve etik dâhil olmak üzere YZO'nun çeşitli yönlerinde yeterlilik göstermiştir. Üniversite öğrencileri hem günlük hem de profesyonel yaşamlarında AI platformlarına zaten maruz kaldıkları (veya kalacakları) için YZO'larını geliştirmeleri gerekir (Laupichler vd., 2022). Bu nedenle, üniversite öğrencilerinin YZO seviyeleri, YZ'nın ne olduğunun farkında olduklarını, YZ kullanımında yeterli kabul edilebileceklerini, YZ sonuçlarını değerlendirebileceklerini ve YZ'nin etik sorumluluklarını bildiklerini göstermektedir. Üniversite öğrencilerinin YZ'yı eleştirel bir şekilde değerlendirebilecekleri ve bu teknolojiyle hızla gelişen bir dünyaya hazır oldukları sonucuna varılabilir.

Bulgular, öğrencilerin motivasyon düzeylerinin ortalamanın üzerinde ve nispeten yüksek olduğunu göstermiştir. YD bağlamında motivasyon, öğrenmeye başlamak için orijinal uyarıcı görevi görür ve daha sonra, uzun ve sıklıkla zor öğrenme süreci boyunca ana enerji kaynağıdır; başka bir deyişle, motivasyon diğer tüm bileşenler için bir ön koşuldur (Dörnyei, 2014). Diğer psikolojik bireysel farklılıklarla da ilişkilidir. Örneğin, motivasyon YD öğrenirken duyulan kaygıyı ortadan kaldırabilir (Changlek ve Palanukulwong, 2015). Daha yüksek düzeyde kaygının bir engel olduğu düşünüldüğünde, dil öğrenmeye yönelik olumsuz duyguları azaltmak için motivasyonu artırmak daha önemli hale gelir. Öğrencinin motivasyonu yüksekse, dil öğrenme başarısı artar (Al-Qahtani, 2013; Dashtizadeh ve Farvardin, 2016; Feng vd., 2013; Fitriwati, 2018). YD eğitimi motivasyonu artıracak şekilde planlanmalıdır (Changlek ve Palanukulwong, 2015).

Ayrıca, analiz toplam YZO ve İDÖM ölçekleri puanları ile İDÖM kişisel kullanımı arasında istatistiksel olarak anlamlı, orta düzeyde ve pozitif ilişki ortaya koymuştur. Bu, daha yüksek YZO'ya sahip öğrencilerin İngilizce öğrenme aktivitelerinde daha fazla motivasyon ve katılım gösterme eğiliminde olduğunu göstermektedir. Ancak, İDÖM ölçeği öz güven ile YZO ölçeği farkındalık veya YZO ölçeği etik arasında anlamlı bir ilişki bulunamamıştır; bu da İngilizce öğrenmedeki güven düzeylerinin YZ ile ilgili farkındalık veya etik hususlardan etkilenmeyebileceğini göstermektedir. Bulgular ayrıca YZO ve İDÖM ölçeklerinin çeşitli alt boyutları arasında istatistiksel olarak anlamlı, zayıf ve pozitif ilişkiler ortaya koyarak YZO ve İDÖM'ün belirli yönleri arasındaki karşılıklı ilişkileri vurgulamıştır. Bu sonuçlar, YZO ve İDÖM arasındaki ilişkiyi incelerken yalnızca genel yeterlilik düzeylerini değil aynı zamanda her alandaki belirli bileşenleri de dikkate almanın önemini vurgulamaktadır. Çalışmanın ortaya koyduğu gibi, YZO'yu artırmak YD öğrenimi için motivasyonu artırabilir. Dolayısıyla, öğrenciler YD'yi daha iyi başarabilirler. YZO'nun 21. yüzyılda edinilmesi gereken temel bir beceri olduğu düşünüldüğünde, YD öğrenme motivasyonu bu beceriyi artırmada yardımcı olabilir. Sürekli gelişen bir iş ortamında, bireylerin güncel olmak ve geride kalmayı önlemek için YZ'nin yardımıyla işbirlikçi bir şekilde çalışma becerisine sahip olması gerekir (Laupichler vd.,

2022). YZO, eğitim süreçlerine uyarlanabilir ve bu da YD öğrenme motivasyonlarını olumlu yönde etkileyebilir.