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Exploring AI Literacy as a Mediator between Writing Motivation and AI-Assisted Creative Writing in Literature Teacher Education

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Research Article

Keywords: Writing motivation, artificial intelligence literacy, AI-assisted creative writing, pre-service teachers, mediation analysis

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Abstract

This study investigated the relationships among writing motivation, artificial intelligence literacy, and attitudes toward AI-assisted creative writing processes among pre-service literature teachers, with a particular focus on the mediating role of AI literacy. A total of 249 pre-service teachers participated in the study, which employed a correlational and mediational research design. Data were collected through the Writing Motivation Scale, an AI Literacy Scale adapted into Turkish, and a researcher-developed AI-Assisted Creative Writing Scale. Descriptive statistics revealed that participants demonstrated moderate-to-high levels across all three variables. Pearson correlation analyses indicated statistically significant positive relationships among the variables, with AI literacy exhibiting a notably stronger association with AI-assisted creative writing ($r = .49$) than writing motivation ($r = .21$). Mediation analysis conducted via bootstrapping (5,000 resamples) demonstrated that AI literacy fully mediated the relationship between writing motivation and AI-assisted creative writing ($B = 0.132$, 95% CI [0.052, 0.220]), with the direct effect becoming non-significant upon inclusion of the mediator. These findings suggest that writing motivation influences engagement with AI-assisted creative writing processes primarily through the pathway of AI literacy, underscoring the necessity of integrating AI literacy instruction into pre-service teacher education programs alongside writing pedagogy.

Keywords: Writing motivation, artificial intelligence literacy, AI-assisted creative writing, pre-service teachers, mediation analysis

Introduction

Writing is more than just a skill; It is a complex production process that expresses the cognitive, emotional and social existence of the individual. In this process, motivation stands out as a fundamental variable that directly shapes the author's willingness to choose, maintain, and complete the task (Graham et al., 2022; Camacho et al., 2021). This situation has an even more critical meaning for literature teacher candidates. Because teacher candidates with effective writing motivation tend to adopt pedagogical attitudes that will support their students' writing processes more strongly in the future (Watt &; Richardson, 2007). This determining quality of writing motivation leads researchers to examine in depth the factors affecting the writing motivations of literature teacher candidates. Indeed, studies conducted in this field over the past decade have shown that variables such as self-efficacy beliefs, goal orientation, and environmental supports shape writing motivation (Skar et al., 2023; Camacho et al., 2023).

The rapid integration of artificial intelligence into educational environments is also radically transforming writing processes. Various generative artificial intelligence tools, especially ChatGPT, provide instant support to students in processes such as idea generation, drafting and revision; thus, it redefines the creative writing experience (Song & Song, 2023). Incorporating AI into the writing process can have significant impacts on students' writing motivation, engagement, and performance (Nazari et al., 2021). However, the direction and magnitude of this impact vary depending on individual differences, contextual circumstances, and the level of AI literacy as a significant determinant (Laupichler et al., 2023a). Artificial intelligence literacy; It is defined as the individual's capacity to understand, critically evaluate, and use artificial intelligence technologies with ethical responsibility, and it is argued that this

capacity plays a regulatory role in the quality of AI-supported educational experiences (Ng et al., 2024). In this context, a comprehensive examination of the relational structure between these three variables in the context of teacher training programs points to an important research gap both theoretically and practically.

Background of the Study

Writing Motivation in Literature Pre-service Teachers

Writing motivation is a multidimensional construct that influences students' engagement with writing tasks, their capacity to maintain these tasks, and the quality of writing outputs (Troia et al., 2012). In the literature, writing motivation is mostly discussed within the framework of a dual distinction as intrinsic and extrinsic motivation; It is emphasized that internal elements such as curiosity, interest, and enjoyment differ from external elements such as grades, competition, and social recognition both qualitatively and functionally (Graham et al., 2022). From the perspective of Self-Determination Theory (LES), it is predicted that meeting basic psychological needs such as autonomy, competence and relatedness will nurture intrinsic writing motivation; it is stated that if these needs are not met, lack of motivation may occur (Ryan & Deci, 2000).

This theory offers a comprehensive motivation framework based on meeting three basic psychological needs, namely autonomy and efficacy, which focuses on the qualitative dimension of motivation rather than the quantitative dimension of motivation. According to the theory, individuals are internally motivated in conditions where these needs are met; In cases where it is not met, extrinsic motivation or lack of motivation comes to the fore. Writing motivation research is often based on this theory; findings are produced showing that students' intrinsic writing motivation strengthens with an increased sense of autonomy in writing tasks (Camacho et al., 2021). In the context of the writing motivation of literature teacher candidates, the ÖBK lays the groundwork for us to understand why they write and to what extent this action stems from their own will. In AI-supported writing environments, the theory remains a guide in terms of the conditions that determine whether the student can freely pursue the autonomous writing experience.

The instant feedback and personalization capacity of AI tools can enhance a student's perception of competence, strengthening their intrinsic motivation to write (Shahzad et al., 2024). However, research also reveals that the need for autonomy can be easily undermined by ready-made content provided by artificial intelligence (Dong et al., 2022). In this context, the extent to which students use artificial intelligence critically and consciously—that is, artificial intelligence literacy—gains a direct determining function in meeting their autonomy and competence needs.

The Expectation-Value Theory, developed by Wigfield and Eccles (2000), focuses on two key cognitive assessments that determine individuals' participation in academic tasks. Expectations for success and the subjective value of the task. An individual's belief that he/she can successfully complete a task and his/her subjective evaluation of the task in question in terms of interest value, usefulness value or cost of completion are the basic factors that determine task orientation and motivation level. This theory has been used extensively to explain the motivations of teacher candidates for choosing a profession; It has been shown that the intrinsic value that candidates attribute to teaching and the beliefs that they are competent

in this field have a strong relationship with the preference processes (Watt et al., 2012). A similar structure is confirmed in writing motivation research. Students' appreciation of writing and their expectations for writing success significantly predict writing behavior (Camacho et al., 2021). This evaluation process becomes critical, especially in tasks that require open-ended and high-level cognitive processes, such as creative writing.

When adapted to the context of AI-assisted writing, the Expectation-Value Theory predicts that the student's self-efficacy perception (expectation) that they will be able to successfully complete writing tasks using artificial intelligence tools and the value perception that these tools will increase creativity and writing quality (usefulness value) are decisive. Research shows that artificial intelligence literacy directly affects expectations and value perceptions; It reveals that individuals with high artificial intelligence literacy evaluate the function of technology more realistically and position both their expectations and the value they attribute to it at a more functional level. Individuals with lower AI literacy may experience a loss of motivation in the writing process by over- or under-evaluating tools (Laupichler et al., 2023a; Ng et al., 2024).

AI-Powered Creative Writing Processes

With the introduction of generative AI into educational settings, creative writing processes have begun to undergo a radical transformation at both instructional and individual levels. Artificial intelligence-supported writing tools; It transforms the traditional writing experience by offering instant and personalized feedback on processes such as idea generation, outlining, language revision, and content enrichment (Song & Song, 2023). The integration of these tools into creative writing processes is supported by empirical findings that they enhance both behavioral and cognitive engagement among students. As a matter of fact, it has been reported that students who participate in AI-assisted writing activities show higher writing performance compared to traditional writing groups (Nazari et al., 2021). It is also observed that the cognitive ease provided by artificial intelligence allows students to allocate resources to more creative and solution-oriented tasks (Gonzalez et al., 2023). This situation transforms the role of artificial intelligence in the creative writing process not only instrumentally but also pedagogically.

However, the findings on AI-assisted writing processes are not uniform and involve complexities that warrant careful consideration. The lack of emotional support and personalized guidance offered by human trainers in AI feedback stands out as a significant limitation, particularly in maintaining intrinsic motivation (Cen & Zheng, 2024). Research also points out that over-reliance on AI can impair critical thinking and independent writing skills; it is emphasized that this risk may also have negative repercussions on writing self-efficacy (Kasneci et al., 2023). This dual-faceted nature of AI-driven creative writing processes—both empowering and limiting effects—leads researchers to understand how this interplay intersects with individual differences. The student's capacity to understand and critically evaluate artificial intelligence, that is, artificial intelligence literacy, comes into play as a determining variable at this point.

AI Literacy Frameworks

Artificial intelligence literacy; It is conceptualized as a competence area that covers the individual's capacity to critically understand, evaluate and use artificial intelligence

technologies within the framework of ethical responsibility (Long & Magerko, 2020). The widely acclaimed framework developed by Ng et al. (2024) addresses AI literacy in its affective, behavioral, cognitive, and ethical dimensions; emphasizes that these dimensions form a dynamic structural whole that complements each other. Laupichler et al. (2023a) proposed a three-factor structure for AI literacy: technical understanding, critical evaluation, and practical application, which has been widely applied in the context of higher education. Adaptation studies conducted in Turkey also confirm that this structure produces valid and reliable results in different cultural contexts (Aybek & Aslan, 2023). Customized studies for pre-service teachers show that AI literacy directly affects how this group integrates AI tools into pedagogical processes, but the intersection of this effect with motivational patterns has not been adequately explored (Ayanwale et al., 2024).

The mediating role of AI literacy in educational outcomes has been explored with increasing interest in recent years. In one study, the impact of AI literacy on students' willingness to communicate was fully mediated through self-efficacy and anxiety (Chen et al., 2024). Similarly, it has been revealed that perceived usefulness plays a partial mediating role in the relationship between pre-service physics teachers' AI literacy and intention to use AI (Frontiers, 2025). In the context of writing, research shows that critical digital literacy about AI determines the quality of the writing experience derived from AI tools (Zawacki-Richter et al., 2019). When all these findings are evaluated together, it is clear that artificial intelligence literacy is not just a level of competence; It is concluded that it is a critical bridge variable that regulates the relational processes between motivation, technology use and learning outcomes.

Creative Writing and Technology Integration

Creative writing emphasizes individual originality, imagination and narrative building skills; It is a form of writing that activates both the cognitive and affective resources of the individual. This type of writing provides a particularly favorable context for writing motivation research, as it requires more motivational investment compared to standard academic writing tasks. The use of AI in creative writing processes is supported by empirical evidence that it enhances collaborative problem-solving and team creativity, particularly in digital storytelling endeavors (Chen & Yeh, 2025). The cognitive release provided by AI tools makes it easier for students to allocate resources to higher-level writing dimensions, such as narrative depth and creative originality, rather than technical constraints. This functionality has the potential to transform creative writing processes at both individual and group levels. However, it should be noted that the contribution of artificial intelligence in creative processes depends on how the individual interacts with these tools, to what extent they maintain a critical distance, and to what extent they undergo an assimilating evaluation process (Niloy et al., 2024).

Creative writing in teacher training programs has a central place in terms of both developing language skills and strengthening pedagogical reflection capacity. The integration of artificial intelligence tools into these processes offers literature teacher candidates an experiential learning space for future classroom applications. However, it is emphasized that an adequate literacy infrastructure is necessary for the critical and ethical use of artificial intelligence in a professional context (Dilek et al., 2025). Research reveals that the AI literacy level of the teacher or teacher candidate has a decisive position among the factors that make AI integration pedagogically meaningful (Cen & Zheng, 2024). This finding strongly supports the

need for a research framework in which AI literacy is studied both as an individual competence and as a mediating variable.

Research Gaps and the Importance of Research

When the research conducted in the literature is examined, it is seen that each of the variables of writing motivation, artificial intelligence-supported writing processes and artificial intelligence literacy is handled separately; However, it is difficult to come across a structural research model that examines these three variables together and in the context of pre-service teachers. Writing motivation research was mainly conducted on K-12 and general university student samples; The intersection of motivational patterns specific to pre-service teachers with creative writing technologies has been largely ignored (Graham et al., 2022; Camacho et al., 2021).

This research will make a data-based contribution to curriculum development processes by describing the writing motivation levels of pre-service teachers, revealing the strengths and weaknesses of undergraduate writing education. In addition, determining the level and quality of AI-supported creative writing processes in literature teacher candidates will produce important evidence for policy decisions regarding artificial intelligence integration in higher education. Constructing a structural model that tests the mediating role of artificial intelligence literacy between these two variables; It will be an original contribution in terms of both motivation theories and artificial intelligence literacy frameworks. This research also provides practical pedagogical directions for teacher training programs: Developing an empirical understanding of how strengthening AI literacy can positively affect writing motivation and technology-assisted writing processes will be a valuable output for future educational designs.

Within the scope of this research, answers to the following questions are sought:

1. What is the level of writing motivation, artificial intelligence literacy and artificial intelligence-supported creative writing levels of teacher candidates?
2. Is there a significant relationship between pre-service teachers' writing motivations and AI-supported creative writing processes?
3. Does artificial intelligence literacy play a meaningful intermediary variable role in the relationship between writing motivation and artificial intelligence-supported creative writing processes?

Method

Research Design

This research was carried out with a design in which descriptive and relational survey models were used together within the framework of a quantitative research approach. The descriptive survey model is one of the quantitative methods that aims to reveal the current situation as it is without interfering with any variable. The main purpose of this model; to systematically describe certain characteristics, attitudes, opinions and behaviors of individuals, groups or phenomena and to explain the current situation (Fraenkel et al. 2019). The relational survey design is used to examine the relationships between two or more variables without any intervention and to determine the connections between these variables (Creswell, 2012).

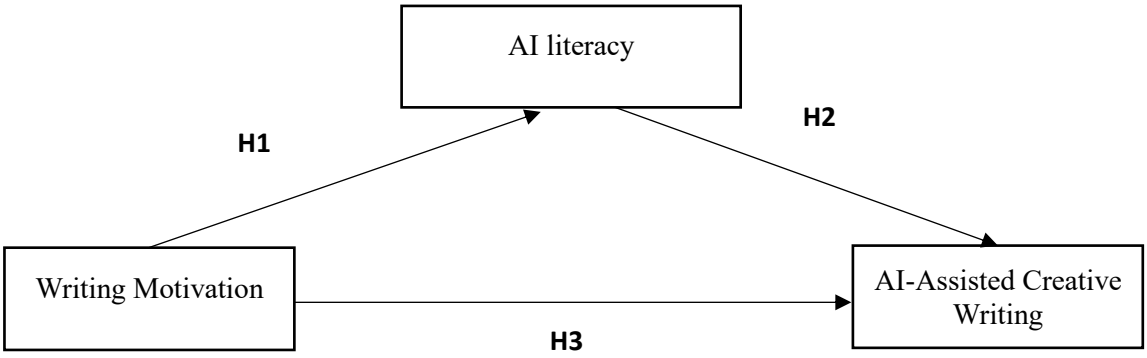


Figure 1: Research Variables and Model

Participants

The population of the study consists of senior teacher candidates from the department of literature who continue their education at different universities in Turkey in the 2025-2026 academic year. In this context, sampling was carried out and a total of 249 teacher candidates studying at 3 different universities and responding to online forms were included in the research. Demographic information of the students is presented in Table 1.

Table 1. Demographic Information of the Sample

Variable	Category	f	%
Age	21-22 years old	96	38,55
	23-24 years old	108	43,37
	Ages 25 and over	45	18,07
Gender	Female	153	61,45
	Male	96	38,55
Frequency of AI Usage	1 time per week	44	17,67
	More than once a week	70	28,11
	Almost every day	135	54,22

According to Table 1; When the age distribution of 249 university students participating in the study was examined, the majority of the participants were between the ages of 23-24 (43.37%) and female (61.45%), and the lowest rate was 25 years old and over (18.07%). When the frequency of artificial intelligence use of the participants is examined, it is seen that the majority use it almost every day (54.22%), followed by those who use it more than once a week (28.11%) and those who use it once a week (17.67%).

Data Collection Tools

Data collection is conducted through a comprehensive online questionnaire consisting of three main parts:

Demographic Information Form

This form was developed by researchers and collects information such as gender, age, and frequency of AI technology use.

AI Literacy Scale (AILS)

The Artificial Intelligence Literacy Scale (AILS), originally developed by Wang et al. (2023), is a multidimensional measurement tool composed of 12 items organized under four distinct factors. Adapted to Turkish culture by Eniş-Erdoğan and Ekşioğlu (2024). Awareness dimension captures individuals' capacity to identify the presence of AI technologies and comprehend their potential capabilities, whereas the Usage dimension reflects proficiency in

employing AI tools effectively. The Evaluation dimension focuses on the ability to critically examine and judge AI systems, while the Ethics dimension addresses understanding ethical considerations, societal implications, and principles of responsible AI use. Each dimension is represented by three items.

AILS is structured as a 5-point Likert-type scale, with response options ranging from 1 to 5. Items 2, 5, and 11 are reverse scored. Higher total scores indicate a higher level of AI literacy. The total score obtainable from the scale ranges from 12 to 84. Regarding reliability, Eniş-Erdoğan and Ekşioğlu (2024) reported a Cronbach's alpha coefficient of 0.861 for the original scale, while the internal consistency coefficient calculated in the present study was found to be 0.842.

Academic Writing Motivation Scale (WMS)

The Academic Writing Motivation Scale (WMS) was developed by Payne (2012) to measure students' motivation for academic writing, and the adaptation study to Turkish culture was carried out by Kulusaklı (2021). The scale is a highly reliable measurement tool developed to evaluate the academic writing motivation of EFL students and the Cronbach's alpha coefficient was found to be .89 in the Turkish adaptation study. In this study, literature was used to determine the academic writing motivations of teacher candidates and the reliability coefficient on the sample was determined as .87. A scale graded in the Likert type of five (0=Strongly disagree – 4=Strongly agree); It consists of five sub-dimensions: pleasure (13 items), self-efficacy (8 items), instrumentality (5 items), recognition (4 items) and effort (5 items). While pleasure represents intrinsic motivation, recognition and instrumentality encompass extrinsic motivation dimensions. Although the scale initially consisted of 37 items, a total of 35 items were evaluated in the adaptation studies because two items did not adequately represent an implicit structure.

Artificial Intelligence-Assisted Creative Writing Scale (AACWS)

The Artificial Intelligence-Assisted Creative Writing Scale (AACWS), developed by the researcher, was employed to assess pre-service literature teachers' attitudes toward AI-assisted creative writing processes. The scale development procedure followed a systematic, multi-stage protocol. An extensive review of the relevant literature was initially conducted, and a comprehensive item pool was generated in consultation with subject matter experts. The draft items were subsequently submitted for evaluation to three specialists in Turkish language education, measurement and evaluation, and educational technology, respectively. Based on the experts' assessments concerning content validity, scope appropriateness, and linguistic clarity, necessary revisions were made and the scale was finalized. The revised instrument was then administered to a pilot sample composed of pre-service literature teachers to examine its psychometric properties prior to the main data collection phase.

The finalized scale consists of 12 items designed to measure participants' attitudes toward AI-assisted creative writing processes. Responses are recorded on a five-point Likert-type format ranging from (1) *Strongly Disagree* to (5) *Strongly Agree*, with intermediate options of (2) *Disagree*, (3) *Undecided*, and (4) *Agree*. Total scores obtainable from the scale range from 12 to 60, with higher scores indicating stronger endorsement of positive attitudes toward AI-assisted creative writing. All items are positively worded, and no reverse coding is required in the scoring procedure.

Internal consistency analysis conducted on the pilot study data yielded a Cronbach's alpha coefficient of .91, demonstrating that the scale possesses a high level of reliability. To examine the construct validity of the instrument, Confirmatory Factor Analysis (CFA) was performed. The CFA results confirmed that all 12 items loaded onto a single latent factor, with

standardized factor loadings exceeding the generally recommended threshold of .50 for all items. The model fit indices obtained from the analysis provided strong support for the unidimensional structure of the scale. Specifically, the chi-square to degrees of freedom ratio (χ^2/sd) was 1.87, falling well below the commonly accepted upper limit of 3.00 (Kline, 2016). The Root Mean Square Error of Approximation (RMSEA) was .054, indicating close approximate fit within the acceptable range of ≤ .08 (Browne et al., 1993). The Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI) were .96 and .95, respectively, both meeting the stringent criterion of ≥ .95 recommended by Hu and Bentler (1999). The Standardized Root Mean Square Residual (SRMR) was .048, confirming that residual correlations remained within acceptable bounds. Collectively, these fit statistics provide robust evidence that the unidimensional factor structure of the AIACWS is tenable and that the scale measures the intended construct in a valid and reliable manner for use with pre-service teacher populations.

Data Collection Process and Ethical Procedures

For the research, an ethics committee report was first obtained and it was carried out on a voluntary basis. The data were provided to teacher candidates online; It was delivered through different communication channels such as e-mail lists and social media platforms. The questionnaire form was initiated with an informed consent text explaining the purpose of the research, the voluntary participation, how confidentiality principles were ensured, and the participants could withdraw from the study at any time. Only participants who gave consent were able to continue to respond to the data collection tools. The average completion time of the survey is 15–20 minutes, and all data has been collected anonymously to protect participant privacy.

Data Analysis

Within the scope of the analysis of the data, PROCESS Macro (v4.2), developed by Hayes (2022) and integrated into SPSS software, was used to examine the direct and indirect relationships between variables. Before proceeding to multivariate analyses, basic statistical assumptions were systematically tested to evaluate the suitability of the data set. The reliability of the measurement tools used in the study was examined with Cronbach's alpha coefficient and the fact that all scales gave values above .70 showed that the reliability levels were sufficient (George & Mallery, 2003). Descriptive statistics were presented with mean and standard deviation values, and the relationships between the variables were evaluated with Pearson correlation analysis. Before the regression analyses, the multiple linearity assumption was tested; it was determined that the correlations between the independent variables were below .80 and the variance inflation factor (VIF) values remained at the level of 2.23 at most and were below the critical limits.

The normality assumption was examined through skewness and kurtosis coefficients and it was understood that the normal distribution condition was met by seeing that the values were in the range of −2 and +2. The significance of the indirect effects was tested over 5,000 resamplings using the bootstrap method and all estimates were reported on the basis of 95% confidence interval. The linearity assumption was evaluated through scattering diagrams and linear relationships were observed between the variables. In order to determine possible outliers, Mahalanobis distances were calculated, and no extreme values that could distort the analysis results were found. Furthermore, exceeding the recommended minimum sample size ($n \geq 200$) for mediating variable analyses increased the statistical power of the model

estimations, supporting the reliability of the findings. As a result of all these evaluations, it was determined that the data set met the assumptions required for multivariate statistical analyses and it was concluded that the model tests carried out in this direction offered valid and reliable results.

Results

Findings Related to the First Research Question: Descriptive Statistics

Within the scope of the first question of the research, descriptive statistics regarding the scores obtained by the teacher candidates from the writing motivation (WMS), artificial intelligence literacy (AILS) and artificial intelligence supported creative writing (AACWS) scales were calculated. In this context, N, arithmetic mean ($\bar{X}$), standard deviation (SD), minimum and maximum values are presented in Table 2.

Table 2. Descriptive Statistics on Research Variables

Variable / Sub-Size	N	Min	Max	$\bar{X}$	SS	Item Number	Comment
Writing Motivation Scale (WMS)							
Enjoyment	249	1.62	5.00	3.87	0.57	13	High
Self-Efficacy	249	1.75	5.00	3.74	0.61	8	Medium-High
Instrumentality	249	1.60	5.00	3.71	0.65	5	Medium-High
Recognition	249	1.00	5.00	3.44	0.75	4	Medium
Effort	249	1.40	5.00	3.52	0.77	5	Medium
WMS Total	**249**	**1.80**	**5.00**	**3.72**	**0.57**	**35**	**Medium-High**
Artificial Intelligence Literacy Scale (AILS)							
Awareness	249	1.67	5.00	3.66	0.60	3	Medium-High
Usage	249	1.00	5.00	3.63	0.69	3	Medium-High
Evaluation	249	1.00	5.00	3.85	0.64	3	High
Ethics	249	2.00	5.00	3.82	0.57	3	High
AILS Total	**249**	**2.25**	**5.00**	**3.74**	**0.48**	**12**	**Medium-High**
AI-Assisted Creative Writing Scale (AACWS)							
AACWS Total	**249**	**1.25**	**5.00**	**3.70**	**0.68**	**12**	**Medium-High**

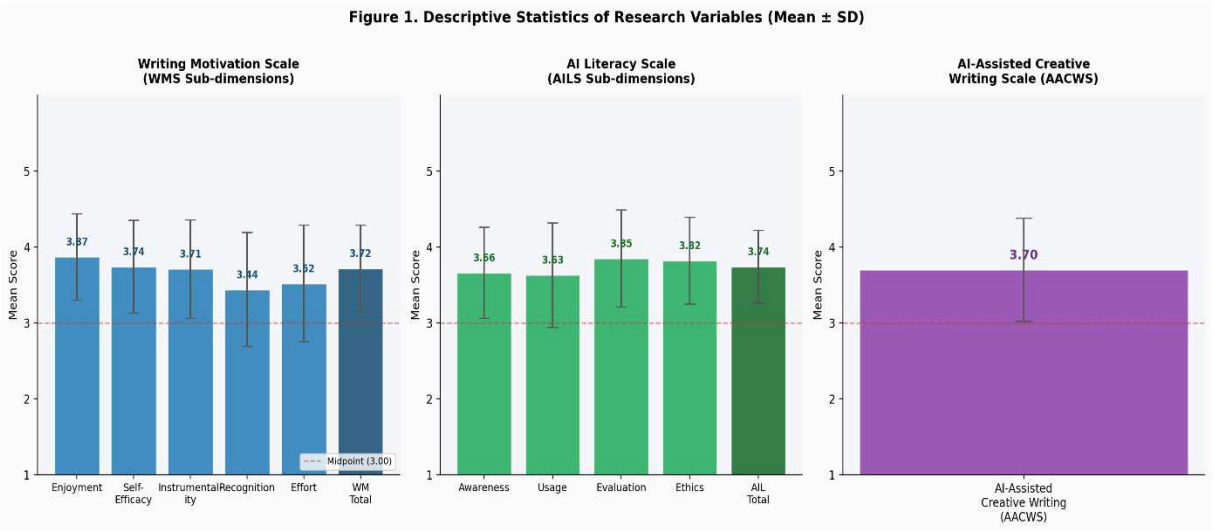
Note. $\bar{X}$ = arithmetic mean; SS = standard deviation; The comment column is based on the ranges 1.00–2.49 = Low, 2.50–3.49 = Medium, 3.50–4.49 = Medium-High, 4.50–5.00 = High.

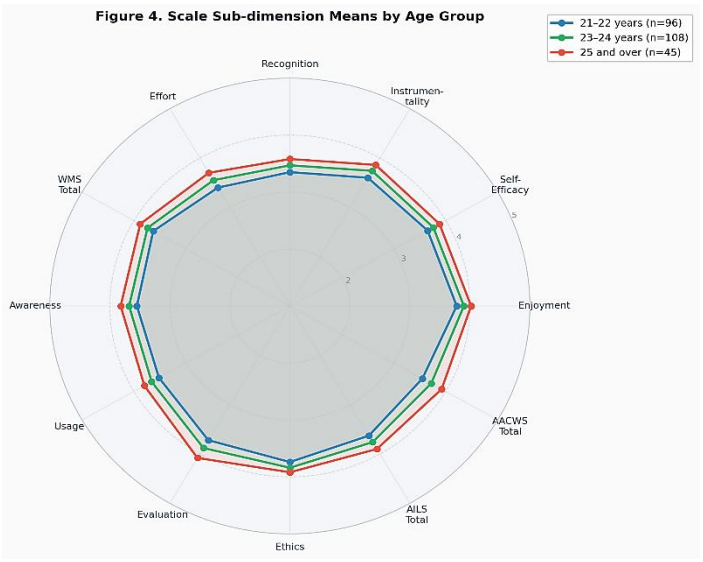
When Table 2 is examined, it is seen that the average score of the pre-service teachers in the Writing Motivation Scale (WMS) is $\bar{X} = 3.72$ (SD = 0.57) and this value can be described as medium-high level. It is noteworthy that the highest average in terms of sub-dimensions belongs to the Enjoyment dimension ($\bar{X} = 3.87$, SD = 0.57). This finding indicates that literature

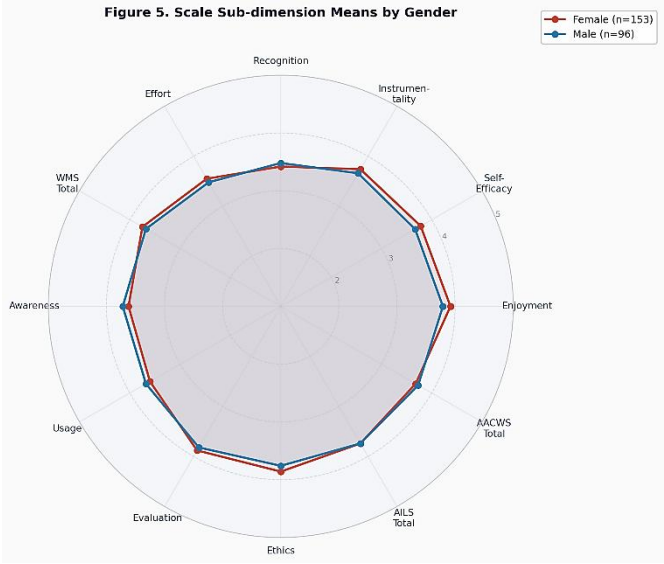
teacher candidates tend to internalize writing activities and enjoy this process. It is understood that the Self-Efficacy ($\bar{X}$ = 3.74), Instrumentality ($\bar{X}$ = 3.71) and Effort ($\bar{X}$ = 3.52) dimensions are also in the medium-high range, while the Recognition dimension exhibits a relatively lower average ($\bar{X}$ = 3.44) compared to the other sub-dimensions and remains at a moderate level.

The mean score obtained from the Artificial Intelligence Literacy Scale (AILS) was determined as medium-high with $\bar{X}$ = 3.74 (SD = 0.48). When the sub-dimensions are examined, it is seen that the highest mean belongs to the Evaluation dimension ($\bar{X}$ = 3.85, SD = 0.64), followed by Ethics ($\bar{X}$ = 3.82), Awareness ($\bar{X}$ = 3.66) and Usage ($\bar{X}$ = 3.63). These findings indicate that the most powerful dimension of pre-service teachers' AI literacy is the capacity for critical evaluation, followed by ethical sensitivity. On the other hand, the relatively low standard deviation values (range 0.48–0.69) provide evidence that intragroup differences remain limited.

When the Artificial Intelligence Assisted Creative Writing Scale (AACWS) is considered with its one-dimensional structure, it is seen that the general average of the teacher candidates is $\bar{X}$ = 3.70 (SD = 0.68) and this value corresponds to the intermediate-high level range. This finding reveals that pre-service literature teachers' attitudes towards AI-supported creative writing processes are generally positive. When the general averages of the three scales are evaluated together, it is understood that all three variables are at a medium-high level and the difference between the arithmetic means is relatively limited (3.70-3.74 range). This pattern shows that the expected relational dynamics between the research variables stand on an observable basis in the sample in question.







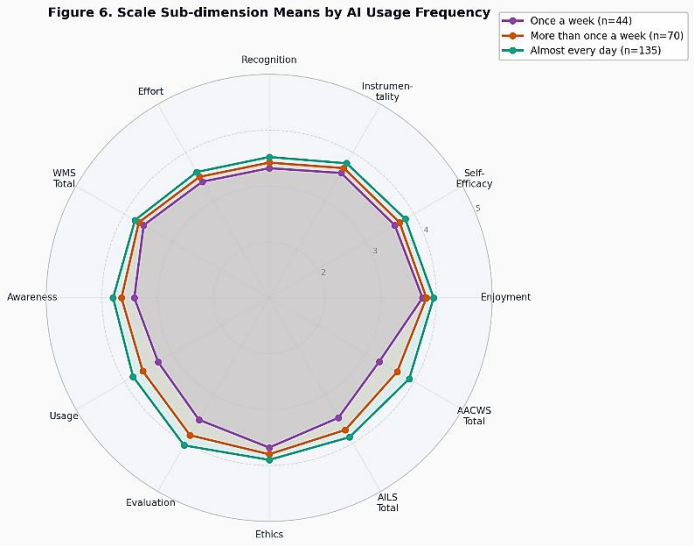


Figure 2. Descriptive Statistics on Research Variables (Mean ± SD)

Findings on the Second Research Question: Correlation Analysis

Within the scope of the second question of the research, the relationship between the writing motivations of pre-service teachers and artificial intelligence-supported creative writing processes was examined. Accordingly, the Pearson correlation coefficients between the sub-dimensions and the grand total scores of the three scales were calculated and presented in Figure 3.

Table 3. Pearson Correlation Coefficients Between Research Variables

Variable	1	2	3	4	5	6	7	8	9	10	11
1. WMS Delight	-	-	-	-	-	-	-	-	-	-	-
2. WMS Self-Efficacy	.42**	-	-	-	-	-	-	-	-	-	-
3. WMS Instrumentality	.33**	.42**	-	-	-	-	-	-	-	-	-
4. WMS Recognition	.36**	.31**	.38**	-	-	-	-	-	-	-	-
5. WMS Effort	.50**	.43**	.45**	.43**	-	-	-	-	-	-	-
6. WMS General	.79**	.73**	.65**	.65**	.76**	-	-	-	-	-	-
7. AILS Awareness	.15*	.07	.17**	.22**	.15*	.21**	-	-	-	-	-
8. AILS Usage	.06	.10	.14*	.14*	.11	.14*	.45**	-	-	-	-
9. AILS Assessment	.17**	.12	.14*	.14*	.19**	.20**	.47**	.54**	-	-	-
10. AILS Ethics	.17**	.09	.07	.08	.11	.15*	.33**	.27**	.25**	-	-
11. AILS General	.17**	.13*	.18**	.22**	.21**	.24**	.74**	.73**	.76**	.62**	-
12. AACWS General	.14*	.21**	.18**	.19**	.28**	.21**	.38**	.37**	.62**	.13*	.49**

*Note. * p < .05; ** p < .01; N = 249. Row and column numbers indicate the order of variables. WMS = Write Motivation Scale; AILS = AI Literacy Scale; AACWS = AI-Assisted Creative Writing.*

The Pearson correlation analysis revealed statistically significant positive relationships among the majority of the research variables. Among the Writing Motivation Scale (WMS) sub-dimensions, the strongest inter-correlations were observed between Enjoyment and Effort (r = .50), Enjoyment and General WMS (r = .79), and Self-Efficacy and General WMS (r = .73), indicating that the sub-dimensions converge coherently around a common motivational construct. Instrumentality, Recognition, and Effort sub-dimensions also demonstrated moderate-to-strong positive correlations with the WMS general score (r = .65, r = .65, and r = .76, respectively), further supporting the internal consistency of the scale's factor structure.

Regarding the AI Literacy Scale (AILS), the sub-dimensions of Awareness, Usage, and Assessment showed moderate positive inter-correlations (r = .45 to r = .54), while the Ethics sub-dimension maintained weaker but still significant associations with the remaining sub-dimensions (r = .25 to r = .33). The AILS general score correlated most strongly with the Assessment sub-dimension (r = .76), followed by Usage (r = .73) and Awareness (r = .74), suggesting that all three sub-dimensions contribute substantially to overall AI literacy.

With respect to the primary relationships of interest, the AILS general score demonstrated a moderate positive correlation with the AI-Assisted Creative Writing Scale (AACWS) general score ($r = .49$, $p < .01$), whereas the WMS general score showed a comparatively weaker but still significant positive association ($r = .21$, $p < .01$). At the sub-dimension level, the AILS Assessment sub-dimension yielded the strongest correlation with AACWS ($r = .62$, $p < .01$), followed by Awareness ($r = .38$) and Usage ($r = .37$). Among the WMS sub-dimensions, Effort ($r = .28$) and Self-Efficacy ($r = .21$) exhibited the highest associations with AACWS, while Enjoyment showed the weakest relationship ($r = .14$, $p < .05$). Notably, the AILS Ethics sub-dimension demonstrated only a marginal positive correlation with AACWS ($r = .13$, $p < .05$), indicating that ethical awareness of AI, while relevant, contributes less directly to AI-assisted creative writing engagement than the cognitive and evaluative dimensions of AI literacy.

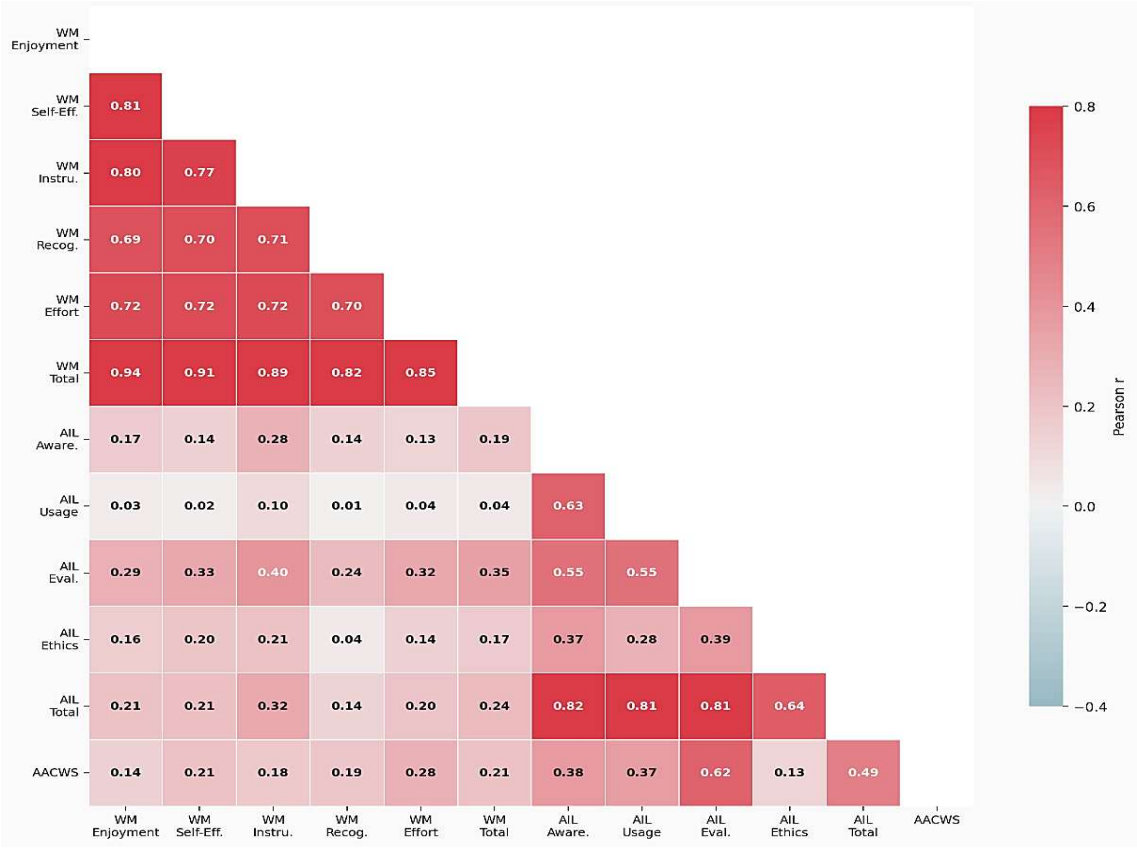


Figure 3. Correlation Matrix Between Research Variables

Findings on the Third Research Question: Mediation Analysis

In line with the third question of the research, it was tested whether artificial intelligence literacy (AILS) plays an intermediary role in the relationship between writing motivation (WMS) and artificial intelligence-supported creative writing (AACWS). For this purpose, the bootstrapping method based on the PROCESS macro logic developed by Hayes (2018) was

applied (n = 5000 resampling; 95% confidence interval) and the results are reported in detail in Table 3 and Table 4. In the model, the total score of the WMS (X) was used as the independent variable, the total score of the AILS (M) as the mediator variable, and the total score (Y) of the AACWS as the dependent variable.

Table 4. Direct Effects of Writing Motivation and AI Literacy on AI-Assisted Creative Writing

Directions	B	SE	β	t	p	LLCI	ULCI
WMS → AILS (path a)	0.202	0.052	0.239	3.870	.001**	0.099	0.304
AILS → AACWS (path b)	0.654	0.080	0.466	8.206	.001**	0.497	0.811
WMS → AACWS (total impact, c)	0.253	0.074	0.213	3.430	.001**	0.108	0.398
WMS → AACWS (direct effect, c')	0.120	0.067	0.102	1.789	.075	−0.012	0.252

*Note. B = non-standardized regression coefficient; SE = standard error; β = standardized regression coefficient; ** p < .01;*

The direct effects analysis presented in Table 3 examined the pathways through which writing motivation (WMS) and AI literacy (AILS) predicted AI-assisted creative writing (AACWS). A path, representing the effect of WMS on AILS, was statistically significant and positive (B = 0.202, β = 0.239, t = 3.870, p < .001), indicating that higher levels of writing motivation were associated with higher AI literacy scores. The b path, reflecting the effect of AILS on AACWS while controlling for WMS, yielded the strongest coefficient in the model (B = 0.654, β = 0.466, t = 8.206, p < .001), demonstrating that AI literacy was a robust and significant predictor of AI-assisted creative writing attitudes. The total effect of WMS on AACWS (c path) was also positive and statistically significant (B = 0.253, β = 0.213, t = 3.430, p < .001), confirming that writing motivation, considered alone, meaningfully predicted engagement with AI-assisted creative writing. However, when AI literacy was introduced into the model as a mediator, the direct effect of WMS on AACWS (c' path) was substantially reduced and lost statistical significance (B = 0.120, β = 0.102, t = 1.789, p = .075), with the confidence interval crossing zero (LLCI = −0.012, ULCI = 0.252). This pattern of results, in which the direct effect becomes non-significant upon inclusion of the mediator while the indirect pathway remains operative, constitutes the primary statistical evidence for full mediation of the relationship between writing motivation and AI-assisted creative writing through AI literacy.

Table 5. Cumulative, Direct, and Indirect Effects of Writing Motivation on AI-Assisted Creative Writing

Impact Type	B	β	SE (Boot)	z	LLCI	ULCI
Total Impact (c)	0.253	0.213	0.074	3.430**	0.108	0.398
Direct Effect (c')	0.120	0.102	0.067	1.789	−0.012	0.252
Total Indirect Impact	0.132	0.112	0.043	—	0.052	0.220
WMS → AILS → AACWS	**0.132**	**0.112**	**0.043**	**—**	**0.052**	**0.220**

*Note. B = non-standardized coefficient; β = standardized coefficient; SE (Boot) = standard error obtained with bootstrapping (5000 resampling); LLCI/ULCI = lower and upper bounds of the 95% confidence interval; ** p < .01; n.s. = not statistically significant; — = The statistic t is not calculated for indirect effects.*

Table 5 presents the total, direct, and indirect effects of writing motivation (WMS) on AI-assisted creative writing (AACWS), estimated through bootstrapping with 5,000 resamples. The total effect of WMS on AACWS was statistically significant and positive (B = 0.253, β = 0.213, p < .01), confirming that writing motivation, in the absence of the mediator, exerted a meaningful influence on AI-assisted creative writing attitudes. Upon introduction of AI literacy (AILS) as a mediator, the direct effect of WMS on AACWS diminished considerably and failed to reach statistical significance (B = 0.120, β = 0.102, p = .075), as evidenced by the 95% confidence interval spanning zero (LLCI = −0.012, ULCI = 0.252). The total indirect effect, operating through the WMS → AILS → AACWS pathway, was statistically significant (B = 0.132, β = 0.112, SE = 0.043), with the bootstrapped 95% confidence interval falling entirely above zero (LLCI = 0.052, ULCI = 0.220). Since the confidence interval does not include zero, the indirect effect is considered statistically significant at the p < .05 level, providing robust evidence for mediation. The fact that the only indirect pathway specified in the model — WMS → AILS → AACWS — yielded identical values to the total indirect effect (B = 0.132, β = 0.112) indicates that AI literacy fully accounts for the indirect relationship between writing motivation and AI-assisted creative writing. Taken together, these findings demonstrate that the effect of writing motivation on AI-assisted creative writing is transmitted entirely through AI literacy, satisfying the statistical criteria for full mediation and underscoring the central regulatory function of AI literacy within this motivational process.

When these findings are evaluated together, it is seen that artificial intelligence literacy plays a full mediating role in the relationship between writing motivation and artificial intelligence-supported creative writing processes. It was also found that teacher candidates with higher writing motivation strengthened their awareness, use, evaluation and ethical literacy

levels of artificial intelligence technologies; it is concluded that this literacy level has become the main determinant of more effective participation in artificial intelligence-supported creative writing processes. The pattern in question empirically supports the hypothesis that the motivational mechanisms envisaged in the frameworks of Self-Determination Theory and Expectation-Value Theory in the literature operate through technology literacy.

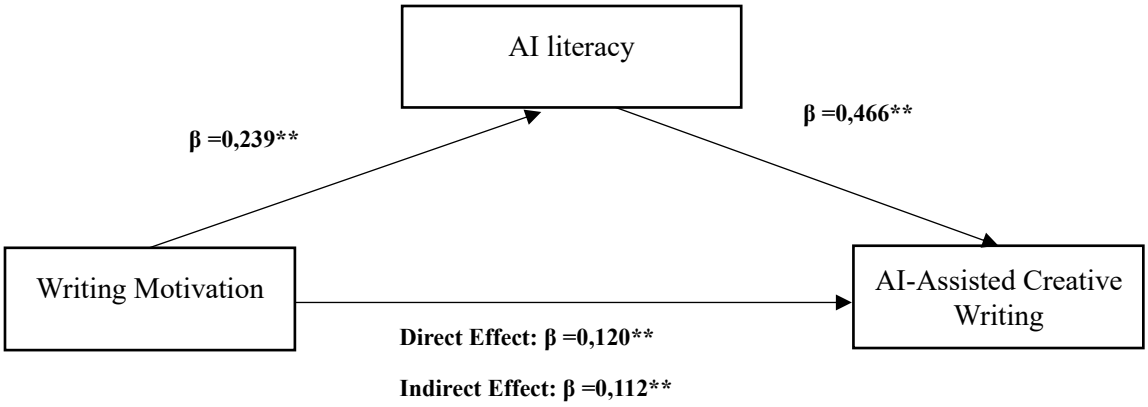


Figure 4. Mediating Model of Artificial Intelligence Literacy (WMS → AILS → AACWS)

*Note. The values on the roads indicate the non-standardized (B) coefficients, while those in parentheses indicate the standardized (β) coefficients. The dashed line indicates that the direct effect is not significant. ** p < .001; N = 249; 95% Confidence Intervals calculated by bootstrapping (5000 resampling).*

Discussion

The research findings revealed that literature teacher candidates' writing motivation, artificial intelligence literacy and artificial intelligence-supported creative writing attitudes were at medium-high levels in all three variables. This finding on writing motivation aligns with that of a longitudinal study conducted by Graham and colleagues (2022) with K-12 students; It points out that intrinsic motivation, especially the pleasure dimension, is the strongest determinant of writing behavior. As a matter of fact, the fact that the Pleasure sub-dimension exhibited the highest average in this study ($\bar{X} = 3.87$) suggests that the tendency of pre-service teachers who turned to the field of literature to internalize the act of writing was strong. The fact that the dimensions of Self-Efficacy and Instrumentality are at similar levels is consistent with the findings of Camacho and colleagues (2021) with multi-group structural equation modeling; in this study, it was shown that self-efficacy and instrumentality perception predict writing behavior in a complementary way. The relatively low recognition dimension provides evidence that extrinsic motivation components are relegated to the

background in the pre-service teacher group and that the internalized motivation pattern predicted by the Self-Determination Theory (Ryan & Deci, 2000) is valid in this group. This pattern is also in line with the FIT-Choice model, which examines the motivation for choosing a profession; It is known that teacher candidates with high intrinsic values and altruistic motives exhibit stronger writing motivation (Watt & Richardson, 2007).

The findings regarding the level of artificial intelligence literacy indicate that pre-service teachers' basic awareness and critical evaluation capacities towards artificial intelligence technologies are developed, but their practical usage skills are relatively behind. The fact that the assessment dimension averaged the highest ($\bar{X} = 3.85$) is in line with the finding put forward by Laupichler and colleagues (2023a) when developing the SNAIL scale: critical appraisal capacity is an area of competence that can develop independently of technical usage knowledge and exhibits strong correlation with educational level. From the four-dimensional framework of Ng et al. (2024), this finding suggests that pre-service teachers have a strong foundation in cognitive and evaluative dimensions, but the behavioral dimension is not yet sufficiently consolidated. A similar pattern was reported in the research conducted by Ayanwale and colleagues (2024) with primary school teacher candidates; It was observed that the conceptual awareness of the candidates about artificial intelligence was ahead of the application level. Similar dimensional differences were noted in the validity and reliability studies of the artificial intelligence literacy scale adapted to Turkish by Eniş-Erdoğan and Ekşioğlu (2024); It was stated that the dimensions of awareness and ethics were higher in the Turkish sample compared to the dimension of use. All of these findings emphasize the necessity of artificial intelligence literacy education in teacher training programs to simultaneously consider theoretical content and applied experience.

The presence of a medium-high level of AI-assisted creative writing attitude ($\bar{X} = 3.70$) reveals that pre-service teachers approach this technology with a cautious openness. In their experimental research conducted with EFL students, Song and Song (2023) found that ChatGPT significantly increased academic writing motivation and performance, showing that this effect was particularly evident in the outlining and idea generation stages. The findings of this research also coincide with this trend, indicating that pre-service teachers are embracing AI as a potential facilitator in the writing process. In a randomized controlled study conducted by Nazari et al. (2021) in the context of higher education, it was found that AI-powered digital writing assistants increased users' writing performance and confidence levels, indicating that positive attitudes towards technology are associated with tangible outcomes. However, the

caveat of Niloy et al.'s (2024) findings should not be overlooked: over-reliance on AI can undermine creative writing originality and critical thinking capacity, making it pedagogically critical to maintain a balance between attitude level and critical use awareness.

Correlation findings reveal that the relationship between writing motivation and AI-assisted creative writing attitude is low-to-moderate and significant ($r = .21$, $p < .01$), while the relationship between AI literacy and AI-assisted creative writing is significantly stronger ($r = .49$, $p < .01$). The fact that the Effort and Self-Efficacy sub-dimensions exhibit the strongest correlations with AACWS is in line with Camacho and colleagues' (2023) growth mindset intervention research; In the study in question, labor investment in the writing process and self-efficacy perception were among the strongest predictors of participation in technology-supported writing activities. The relationship between the Assessment dimension of artificial intelligence literacy and AACWS gives the highest correlation ($r = .62$), which is theoretically compatible with Long and Magerko's (2020) framework that focuses on critical evaluation capacity when defining artificial intelligence literacy. In their study examining the relationship between writing and motivation in online learning environments, Dong et al. (2022) found that contextual technology use affects motivation indirectly rather than directly; This indirect mechanism of influence theoretically supports the mediation model of the current research. The general pattern of correlation findings suggests that AI literacy is associated with both writing motivation and technology-assisted writing processes, and therefore can serve as a functional bridge between the two variables.

The results of the mediation analysis, which make the most original contribution of the research, revealed that artificial intelligence literacy plays a full mediating role in the relationship between writing motivation and artificial intelligence-supported creative writing. The total indirect effect was statistically significant ($B = 0.132$, $\beta = 0.112$; 95% CI [0.052, 0.220]); It was observed that the direct effect lost its significance after the intermediary variable was added to the model ($p = .075$). This pattern of complete mediation, when considered within the framework of Self-Determination Theory, supports the argument that the effect of writing motivation on creative writing processes operates through the perception of competence and the experience of autonomy; because artificial intelligence literacy is a variable that directly shapes an individual's sense of competence in the face of technology (Ryan & Deci, 2000; Shahzad et al., 2024). When evaluated from the perspective of Expectation-Value Theory, it can be said that artificial intelligence literacy updates the individual's expectations and value perceptions towards the use of technology, enabling motivation to turn into creative writing

behavior (Wigfield & Eccles, 2000). In the research conducted by Chen and colleagues (2024) with EFL students, it was shown that the effect of artificial intelligence literacy on the desire to communicate is mediated by self-efficacy and anxiety; This finding confirms that AI literacy has become a central mediator in multiple motivational processes. Kasneci and colleagues (2023), on the other hand, emphasized that the transformative potential of AI in educational processes is determined by individual literacy level, and pointed out that AI literacy functions as a meta-competence that regulates the quality of technology use.

The practical implications of the research findings for teacher training programs strongly coincide with the qualitative research conducted by Dilek et al. (2025) with primary school teacher candidates; In the study in question, it was emphasized that the integration of artificial intelligence literacy into pedagogical processes is only possible in an environment of critical co-discovery. The current research's finding of full mediation suggests that AI literacy should be positioned as an integral component of creative writing pedagogy, not just as a technical competence area in programs for aspiring literature teachers. In their comprehensive study by Troia et al. (2012), in which they systematically reviewed their writing motivation research, it was emphasized that motivational interventions should be combined with contextual supports in order to lead to long-term effects; This contextual support can be interpreted as artificial intelligence literacy education itself in today's conditions. Zawacki-Richter and colleagues' (2019) systematic review of AI applications in higher education has highlighted that educators are largely left out of this transformation, suggesting that equipping prospective teachers with AI competencies has become an urgent policy priority. In this context, the current research provides quantitative evidence that strengthening writing motivation and developing artificial intelligence literacy together can lead to mutually reinforcing educational outcomes in teacher training programs, and reveals the necessity of planning these two goals together with an integrated approach in program design.

Limitations

Although this research presents important findings, it should be evaluated within the framework of some limitations. The sample of the study was limited to 249 teacher candidates studying in literature teaching programs of certain universities. This group, which was formed by a non-probability sampling method, has a limited capacity to represent the literature teacher candidate population in Turkey and the findings cannot be generalized for different geographical regions, teaching fields or education levels. Collecting all variables with scale data based on self-report brings with it the problem of common method bias; This may

artificially inflate the observed correlations between variables and necessitate a careful approach to the findings. In addition, the use of a cross-sectional design does not allow the establishment of a causality relationship between the variables; It should be taken into account that the mediation model reflects only a statistical pattern and causal inferences can only be tested through longitudinal or experimental studies. The fact that the research adopts only a quantitative design makes it difficult to obtain process-oriented and in-depth information about pre-service teachers' AI-assisted writing experiences; A qualitative or mixed-method design could have provided the opportunity to access rich descriptive data that would give meaning to the findings.

Conclusion

This research examined the writing motivations, artificial intelligence literacy levels and attitudes of pre-service literature teachers towards artificial intelligence-supported creative writing processes; He tested the relational structure between these three variables and the mediating role of artificial intelligence literacy with quantitative data. The findings revealed that pre-service teachers exhibited a moderate-high level profile in all three variables and showed that pleasure and self-efficacy dimensions came to the fore among the sub-dimensions of writing motivation, while critical evaluation capacity was the most developed dimension in artificial intelligence literacy. Positive and significant correlations were found between all variables; In particular, it has been observed that the relationship between artificial intelligence literacy and artificial intelligence-supported creative writing differs significantly from other relationships in terms of power.

The results of the mediation analysis, which constitutes the most original contribution of the research, revealed that artificial intelligence literacy plays a full mediating role in the relationship between writing motivation and AI-supported creative writing, and this indirect effect was statistically confirmed by the bootstrapping method. This finding shows that writing motivation does not directly determine participation in creative writing technologies; shows that this determinism is mediated by artificial intelligence literacy and that most of the relationship operates through this variable. The pattern in question exhibits a strong theoretical harmony with both the motivational mechanisms of the Self-Determination Theory based on competence and autonomy and the decision-making processes of the Expectation-Value Theory based on the perception of expectation-value. The model explained 25.1% of the variance in AI-assisted creative writing attitudes, indicating a significant predictive power when compared to the effect sizes of similar studies conducted in the field.

In conclusion, this research provides important theoretical and practical evidence that writing motivation and AI literacy should not only be considered as independent educational outcomes, but also within a relational system that regulates and reinforces each other. The ability of literature teacher candidates to use artificial intelligence technologies in the classrooms of the future with a pedagogically conscious and critical attitude is not only technical competence; It depends on an integrated development process that includes the love of writing, self-efficacy beliefs, and the capacity for critical technology evaluation. Designing and supporting this integrated development process stands out as one of the most up-to-date and critical tasks in front of teacher training programs.

Recommendations

The research findings reveal that teacher training programs should not address the dimensions of writing education and artificial intelligence integration separately, but with an integrated design approach that feeds each other. Based on the mediation finding, it is recommended that interventions to strengthen teacher candidates' writing motivation should be planned simultaneously with artificial intelligence literacy training; because considering these two goals separately may limit the impact of each of them. Applied writing workshops that use artificial intelligence tools critically, ethically and creatively should be included in the curriculum; these workshops should be designed to meet the autonomy and competence conditions stipulated by the Self-Determination Theory. Considering the finding that literacy in the assessment dimension is strong and the usage dimension is relatively weak, structured experience environments should be created in the programs that will transform theoretical awareness into practical application. In curriculum development processes, the development profiles of teacher candidates should be regularly monitored by using multidimensional monitoring assessments covering both writing motivation and artificial intelligence literacy, and individualized support based on this data should be provided.

For researchers, it is recommended to expand the existing research with longitudinal studies; The fact that the cross-sectional design does not allow to establish a causality relationship shows that the causal dynamics of the mediation model can only be tested with long-term follow-up data. Studies to be carried out with larger samples covering different teaching fields and universities will increase the generalizability of the findings and reveal possible field differences. In order to explain the mediating role of artificial intelligence literacy more comprehensively, testing extended structural models that include components such as attitude, anxiety and self-regulation along with motivational variables will add theoretical depth

to the literature. Finally, it is evaluated that the adoption of mixed-method research designs and the qualitative data accompanying the quantitative findings will contribute to the development of a process-oriented understanding of the pre-service teachers' AI-supported creative writing experiences.

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