

THE IMPACT OF AI USE ON TEACHERS' READING INTEREST AND INTELLECTUAL INDEPENDENCE IN DEVELOPING LEARNING TOOLS: A STUDY OF JUNIOR HIGH SCHOOL TEACHERS IN INDONESIA

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Abstract

This study aims to analyze the impact of the use of artificial intelligence (AI) on reading interest and teachers' intellectual independence in developing learning tools. A total of 35 teachers were involved as respondents. The approach used is mixed methods. The sequential explanatory design combines quantitative and qualitative analysis. Quantitative data was obtained from the Likert scale questionnaire. The analysis used descriptive statistics as well as Pearson correlation tests. Qualitative data were obtained from semi-structured interviews with selected teachers. Thematic methods are used to analyze qualitative data. The results show that the level of AI use by teachers is in the high category. Teachers' reading interest and intellectual independence were found to be at a moderate level. The results of the Pearson correlation analysis indicate a significant negative relationship between the use of AI and teachers' reading interest as well as their intellectual independence. Qualitative findings reinforce the quantitative results. Some teachers feel greatly helped by AI but admit to experiencing reduced engagement in reading activities and pedagogical reflection during the preparation of learning tools. This study recommends the importance of reflection-based digital literacy training to maintain a balance between the ease of technology and the strengthening of teachers' professional competencies

Keywords: AI; Reading Interest; Intellectual Independence; Learning Tools

A. Introduction

The development of artificial intelligence (AI) technology has significantly influenced the field of education. Platforms such as ChatGPT, Copilot, and similar tools enable teachers to generate teaching content quickly and efficiently, including lesson plans, teaching modules, and assessment instruments (Kasneji et al., 2023; Cooper, 2023). For teachers facing substantial administrative workloads, AI functions as a practical solution that enhances time efficiency and productivity in preparing learning tools (Fütterer et al., 2023).

However, alongside these advantages, concerns have emerged regarding the unintended consequences of AI use in teachers' professional practices. Several studies indicate that the convenience offered by AI may reduce teachers' motivation to engage in literature review and reflective learning design processes (Lo, 2023; May et al., 2024). When pedagogical preparation increasingly relies on instant AI-generated outputs, opportunities for critical reading, reflection, and experiential reasoning may gradually diminish, potentially affecting teachers' professionalism as reflective and literate learning agents (Chan, 2023).

This phenomenon has also been observed in the context of SMPN 29 Gresik, where teachers frequently utilize AI tools to support the preparation of lesson plans and assessment materials. While teachers report improved efficiency, this practice is not consistently accompanied by sustained engagement with educational literature or in-depth exploration of pedagogical references. As a result, access to books, academic journals, and official curriculum documents has reportedly declined (Montenegro-Rueda et al., 2023). These conditions raise critical questions regarding the relationship between AI use and teachers' reading interest and intellectual independence within the demands of contemporary teacher professionalism.

Reading interest constitutes a core component of teachers' professional competence. Teachers who demonstrate strong reading engagement tend to remain responsive to knowledge development, pedagogical innovation, and curriculum change, while reducing dependence on automated technological outputs (Guo & Wang, 2023; Farrokhnia et al., 2023). Similarly, intellectual independence reflects teachers' capacity for critical thinking, reflective judgment, and autonomous pedagogical decision-making (Nguyen et al., 2024). Such independence enables teachers to evaluate information critically rather than adopting external inputs uncritically, and it forms an essential foundation for continuous professional development (Lennert da Silva & Mølsted, 2022). From this perspective, the growing integration of AI into instructional planning warrants careful examination to ensure that technological support does not undermine teachers' intellectual agency (Tripathi et al., 2025; Ng et al., 2021; Celik, 2023).

Theoretically, frameworks such as Technological Pedagogical Content Knowledge (TPACK) emphasize that technology should support, rather than replace, pedagogical reasoning and content expertise (Mishra et al., 2023). Effective AI integration requires a balanced interplay between content knowledge, pedagogy, and technology, grounded in ethical and reflective practice (Celik, 2023). Nevertheless, empirical evidence suggests that AI adoption in educational contexts often occurs without sufficient digital literacy preparation. Teachers may use AI pragmatically, with limited attention to its pedagogical, ethical, and epistemic implications (Sánchez-Prieto et al., 2023; An et al., 2023). Studies in several Asian contexts further indicate that AI outputs are frequently accepted without substantive validation or contextual adaptation (Guo & Wang, 2023; Dahri et al., 2024).

Within this discourse, contrasting perspectives have emerged. While some scholars argue that AI can reduce administrative burdens and allow teachers to focus more on pedagogical interaction, others caution that excessive reliance on AI may erode teachers' independent and creative thinking (Choi et al., 2024; Tripathi et al., 2025). This tension reflects broader debates between technological efficiency and the preservation of professional values in education (Holmes et al., 2022; Gouseti et al., 2024). Despite this growing body of research, empirical studies examining the concrete impact of AI use on teachers' professional behaviors, particularly reading interest and intellectual independence, remain limited. Research employing mixed methods approaches is especially scarce, and the Indonesian junior high school context has received little focused attention (Ferrante & Ferrante, 2025; Mai et al., 2024).

Therefore, this study seeks to make both theoretical and empirical contributions by investigating the relationship between AI use, reading interest, and intellectual independence among junior high school teachers in Indonesia. Theoretically, this research extends existing discussions on AI in education by highlighting reading interest and intellectual independence as critical indicators of teacher professionalism. Empirically, it provides mixed-methods evidence from an underexplored educational context, offering insights into how AI use is associated with teachers' professional literacy and reflective practices. By combining quantitative correlation analysis with qualitative exploration of teachers' experiences, this study aims to inform more balanced digital literacy initiatives that integrate technological efficiency with the preservation of teachers' intellectual and professional capacities (Falloon, 2020; Basilotta-Gómez-Pablos et al., 2022; Zhou et al., 2024).

B. Method

This study employed a mixed methods approach using a sequential explanatory design to obtain a comprehensive understanding of the research problem. This design was selected because it allows quantitative findings to be explored and interpreted more deeply through qualitative inquiry conducted in a subsequent phase (Zhou et al., 2024). The research was conducted in two stages. The first stage involved quantitative data collection and analysis to identify patterns and relationships among variables. The second stage consisted of qualitative exploration aimed at explaining and contextualizing the quantitative results. The quantitative component adopted a descriptive correlational design. The population of this study comprised all teachers at SMPN 29 Gresik, Indonesia. A total of 35 teachers participated as respondents, representing the entire population of actively teaching staff. As all members of the population were included, a saturated sampling technique was applied, and no additional sampling procedure was required. Data were collected using a Likert-scale questionnaire measuring three main variables, namely AI use, reading interest, and intellectual independence.

The questionnaire was developed based on indicators derived from theories of digital literacy, information literacy, and teachers' intellectual autonomy. Each variable consisted of ten items measured on a five-point scale ranging from strongly disagree to strongly agree. Content validity was established through expert judgment involving educational research and measurement specialists. Construct validity was examined using exploratory factor analysis. The Kaiser-Meyer-Olkin measure of sampling adequacy indicated that the data were suitable for factor analysis, and Bartlett's test of sphericity confirmed sufficient inter-item correlations. All retained items demonstrated acceptable factor loading values, indicating that each item adequately represented its intended construct. The reliability of the instrument was tested using Cronbach's Alpha with a coefficient of >0.70 for all variables (Nguyen & Habók, 2024).

The AI use variable was operationalized through indicators reflecting the frequency, intensity, and variety of AI tool usage in developing learning tools, including lesson plans, teaching materials, assessment instruments, and administrative documents. Reading interest was measured based on the frequency of engagement with educational literature,

diversity of reading sources, and intrinsic motivation to read. Intellectual independence was measured through indicators related to critical thinking, reflective practice, and autonomy in pedagogical decision-making (Valenzuela et al., 2023; Varenina et al., 2022).

Quantitative data analysis techniques include descriptive and inferential statistics. Descriptive statistics are used to calculate the mean, standard deviation, highest score, and lowest score of each variable. The categorization of variable levels is determined based on the score range: 1.0-2.5 = Low, 2.6-3.5 = Sufficient, 3.6-5.0 = High. The Pearson correlation test was used to analyze the relationship between AI use and reading interest and intellectual independence. The analysis prerequisite test is carried out first to ensure that the data meets the assumptions of normality and linearity.

The type of qualitative research used is phenomenological studies. A phenomenological approach was chosen to explore the meaning and life experiences of teachers in using AI (Alsaigh & Coyne, 2021; Emery & Anderman, 2020). The research subjects were selected purposively based on quantitative results. The selection criteria included teachers with high levels of AI use but with varying reading interest and intellectual independence scores (high and low).

Five teachers were selected as qualitative informants, consisting of two teachers with relatively high reading interest and intellectual independence and three teachers with lower scores on these variables. The number of informants was considered methodologically sufficient, as data saturation was achieved when no new themes or substantial variations emerged during the later stages of the interviews. Recurrent patterns and consistent narratives across participants indicated that thematic saturation had been reached, thereby strengthening the credibility of the qualitative findings. Data were collected through semi-structured interviews lasting approximately 45 to 60 minutes per participant.

Qualitative data analysis was conducted using thematic analysis. The process began with repeated reading of interview transcripts to achieve data familiarization. Initial coding was then applied to relevant data segments. Codes sharing similar patterns were grouped into categories and subsequently synthesized into overarching themes. Data reduction, categorization, and interpretation were carried out iteratively to ensure analytical rigor and depth.

The integration of quantitative and qualitative methods was intended to capitalize on the strengths of both approaches. Quantitative analysis provided an objective overview of variable patterns and relationships, while qualitative analysis offered contextual depth and insight into teachers' experiences that could not be fully captured through numerical data alone (Zhou et al., 2024). Together, these approaches enabled a more holistic understanding of the relationship between AI use, reading interest, and intellectual independence among teachers.

C. Finding and Discussion

Quantitative Analysis Results

Descriptive statistical analysis of 35 respondents produced a comprehensive picture of the third level of the research variables. The data obtained showed interesting variations

between the variables measured. Table 1 presents a summary of the results of the descriptive analysis for each research variable.

Table 1. Descriptive Statistics of Research Variables

Variable	Highest Score	Lowest Score	Average	Std. Deviation	Category
Use of AI	4.7	3.7	4.2	0.42	Tall
Reading Interest	3.5	2.8	3.1	0.35	Enough
Intellectual Independence	3.6	3.0	3.3	0.29	Enough

The AI use variable demonstrated the highest mean score of 4.2, indicating that teachers at SMPN 29 Gresik intensively utilize AI tools in developing learning tools. The relatively low standard deviation of 0.42 suggests a consistent pattern of AI use among respondents. The range of scores further confirms that most teachers fall into the category of active AI users. This finding reflects the rapid normalization of AI as a routine component of teachers' instructional preparation rather than as a supplementary or experimental tool.

The reading interest variable yielded an average score of 3.1, categorized as sufficient. This result indicates a moderate level of engagement with educational literature among teachers. The variation reflected in the standard deviation of 0.35 suggests differences in individual reading habits. From an analytical perspective, this moderate level becomes significant when juxtaposed with the high intensity of AI use, as it signals a potential imbalance between technological reliance and traditional professional literacy practices.

Pearson correlation analysis was conducted to examine the relationship between AI use and both reading interest and intellectual independence. Preliminary assumption tests confirmed that the data met the requirements of normality and linearity. The results of the correlation analysis are presented in Table 2.

Table 2. Pearson Correlation Test Results

Variable Relationships	Correlation Coefficient (r)	Significance (p)	Interpretation
The Use of AI - Reading Interest	-0.584	0.000	Moderate, significant negative correlation
The Use of AI - Intellectual Independence	-0.512	0.002	Moderate, significant negative correlation

The correlation analysis revealed a significant negative relationship between AI use and reading interest. The correlation coefficient indicates that higher levels of AI use are associated with lower levels of reading interest. Rather than implying a direct causal effect,

this finding suggests a patterned association in which increased reliance on AI coincides with reduced engagement in reading activities. The statistical significance confirms that this relationship is unlikely to occur by chance.

A similar pattern was identified between AI use and intellectual independence. Teachers who reported more intensive AI use tended to demonstrate lower levels of intellectual independence in critical thinking and pedagogical reflection. Conceptually, this relationship highlights a potential shift from reflective pedagogical reasoning toward procedural adoption of AI-generated outputs. These findings align with concerns raised in prior studies regarding the erosion of professional agency in technology-mediated educational practices (Nguyen et al., 2024; Lennert da Silva & Mølsted, 2022).

Results of Qualitative Analysis

Qualitative data obtained from in-depth interviews with five informants provided deeper insight into teachers' experiences with AI use. Thematic analysis revealed four central themes that contextualize and elaborate the quantitative findings. The first theme concerns perceptions of efficiency and dependence. All informants acknowledged that AI significantly improved efficiency in preparing learning tools, particularly under time pressure. One teacher stated, "Using AI really saves time. What used to take hours can now be done in twenty minutes." However, this efficiency was often accompanied by a growing sense of dependence. Another informant noted, "Sometimes I feel I start everything from AI first, instead of from my own ideas." These accounts suggest that efficiency may subtly reposition AI as the primary cognitive starting point in lesson planning.

The second theme relates to changes in literature reading habits. Most informants reported reduced engagement with educational literature after adopting AI tools. One teacher explained, "Before, I had to read books or journals to design lessons. Now, I feel less urgency because AI already provides structured content." This finding indicates not only a decrease in reading frequency, but also a shift in how professional knowledge is accessed and valued within teachers' daily practices.

The third theme highlights changes in pedagogical reflection. Informants described reflective processes becoming less intensive following AI adoption. As one participant stated, "I used to think deeply about students' needs and strategies, but now I often just adjust what AI suggests." This narrative supports the quantitative finding that AI use is associated with intellectual independence, suggesting that reflective judgment may be partially displaced by automated scaffolding when used uncritically.

The fourth theme reflects teachers' ambivalence toward AI. Teachers simultaneously appreciated AI's benefits and expressed concern about its impact on professionalism. One informant remarked, "AI helps me a lot, but sometimes I worry that I'm not thinking as deeply as before." Importantly, several teachers emphasized that the issue lies not in AI itself, but in how it is used without reflective intention.

From a conceptual perspective, these qualitative findings reinforce the interpretation that the observed relationships are conditional rather than deterministic. The data do not indicate that AI inherently diminishes reading interest or intellectual independence.

Instead, they suggest that unreflective and instrumental use of AI tends to be associated with reduced engagement in literacy and reflection.

Counter narratives in the literature highlight that AI can function as a cognitive scaffold when used reflectively, supporting teachers in exploring diverse sources, synthesizing complex texts, and stimulating critical inquiry (Ng et al., 2021; Celik, 2023). In such conditions, AI literacy emerges as a crucial moderating variable, enabling teachers to evaluate AI outputs critically rather than accept them uncritically. When teachers possess strong AI literacy and reflective habits, AI may enhance rather than undermine professional literacy and pedagogical quality.

Therefore, the central issue emerging from this study concerns the conditions under which AI is used. Reflective, critical, and pedagogically guided AI integration may strengthen teachers' professional literacy and intellectual autonomy, whereas uncritical reliance risks reinforcing surface-level engagement with knowledge. This distinction carries important conceptual implications for teacher professionalism in the digital age, positioning AI not as a determinant of professional decline, but as a mediating tool whose impact depends on teachers' literacy, agency, and reflective capacity.

D. Discussion

The results of the study show that the use of AI among teachers of SMPN 29 Gresik is relatively high. These findings are in line with the growing global trend of AI adoption in education. The study of Kasneci et al. (2023) and Fütterer et al. (2023) shows that ChatGPT and similar AI tools have become an integral part of teacher practice in various geographic contexts. Ease of access and user-friendly interface drive mass adoption without requiring high technical skills (Scherer et al., 2019).

The high use of AI can be explained through the Technology Acceptance Model (TAM). Teachers perceive AI as a technology that is very useful (perceived usefulness) and easy to use (perceived ease of use). These two factors are the main predictors of technology use intentions and behaviors (Scherer et al., 2019; Granić, 2022). The context of high administrative workload in Indonesia also strengthens teachers' motivation to adopt efficient solutions (Sánchez-Prieto et al., 2023).

However, the high use of AI turns out to be inversely proportional to teachers' interest in reading. The results of significant negative correlations confirm the concerns raised by some researchers about the impact of instant technology on literacy culture (Lo, 2023; May et al., 2024). When information is available instantly and in a structured manner, the intrinsic motivation to search, read, and explore various sources of literature decreases dramatically. This phenomenon reflects a broader shift in cognitive behavior in the digital age.

Qualitative findings strengthen and deepen quantitative results. Teachers not only reduce the frequency of reading but also change their information consumption patterns. The habit of deep, critical, and reflective reading is replaced by the rapid, superficial, and passive consumption of information. This transformation is worrying because in-depth literacy is the foundation of sustainable teacher professional development (Falloon, 2020; Farias-Gaytan et al., 2023).

A decline in reading interest cannot be considered a phenomenon separate from the professionalism of teachers. Professional literacy is a core competency that distinguishes teachers as professionals who continue to learn versus stagnant practitioners. Teachers who maintain a high interest in reading tend to be more adaptive to curriculum changes, more creative in designing learning, and more effective in addressing pedagogical challenges (Nguyen & Habók, 2024; Basilotta-Gómez-Pablos et al., 2022).

The same impact can be seen in the aspect of intellectual independence. A significant negative relationship between AI use and intellectual independence indicates that reliance on AI erodes teachers' reflective capacity. These findings support a theoretical argument about the importance of agency and autonomy in teacher professionalism (Nguyen et al., 2024; Lennert da Silva & Mølsted, 2022). Teachers who lose intellectual independence become mechanical executors instead of reflective learning designers.

The concept of reflective practice emphasizes that professional teachers must continuously reflect on their practice to identify strengths, weaknesses, and areas of development. This reflection requires time, cognitive effort, and a commitment to think critically about pedagogical assumptions and decisions (Alsaigh & Coyne, 2021). When AI provides instant solutions, the room for reflection becomes limited. Teachers tend to accept AI output without questioning the underlying pedagogical assumptions.

Interviews reveal that teachers often do not make substantive adaptations to AI results. They tend to make cosmetic modifications without an in-depth analysis of their suitability to the context of their specific class. This phenomenon is in line with the findings of An et al. (2023) and Dahri et al. (2024) in the Asian context which show that teachers often use AI pragmatically without deep pedagogical integration.

The reduction of the reflection process has an impact on the quality of learning. Effective learning requires a deep understanding of student characteristics, sociocultural contexts, and specific classroom dynamics. AI, while sophisticated, cannot replace the contextual knowledge and professional judgment of teachers. When teachers no longer reflect on these aspects, learning becomes generic and less responsive to the diverse needs of students (Tripathi et al., 2025).

The ambivalence expressed by the informant reflects the broader tensions in the teaching profession in the digital age. Teachers want efficiency but also realize the value of deep intellectual processes. These tensions are not unique to the context of AI but are part of a broader discourse on professionalism in the age of technology (Holmes et al., 2022; Gouseti et al., 2024). The fundamental question is: how can teachers leverage technology without losing the essence of their professionalism?

The findings of this study have important implications for policy and practice. First, the adoption of AI in education should not happen without a comprehensive digital literacy program. Digital literacy is not only about technical ability to use technology but also about a critical understanding of the implications of technology (Ng et al., 2021; Celik, 2023). Teachers need to be equipped with the ability to evaluate the quality of AI output, identify biases and limitations, and integrate AI in a pedagogically meaningful manner.

Second, teachers' professional development programs must integrate approaches that balance technological efficiency and strengthening traditional literacy. Teachers need to be encouraged to maintain the habit of reading academic literature, keep up with theoretical developments, and get involved in the professional community. Reflective activities such as action research, peer observation, and professional learning communities must remain a priority (Falloon, 2020; Farias-Gaytan et al., 2023).

Third, policies on the use of AI in schools must be accompanied by clear ethical and pedagogical guidance. Teachers need to understand when and how to use AI appropriately. Frameworks such as Intelligent-TPACK developed by Celik (2023) can be a guide for ethical and pedagogical AI integration. Schools also need to create a culture that values intellectual processes and not just the end result.

Fourth, this study shows the importance of developing AI literacy as a competence for 21st century teachers. AI literacy includes the ability to understand how AI works, evaluate the quality and reliability of outputs, identify algorithmic biases, and use AI ethically and responsibly (Ng et al., 2021). Teachers who have high AI literacy can utilize AI as a tool without losing intellectual independence.

The limitations of this study need to be acknowledged for a more careful interpretation. First, the study was conducted in one school with a relatively small sample number (35 respondents). Generalization of findings to a broader context needs to be done carefully. Second, the correlational design does not allow for definitive causal inference. Third, the use of self-report in variable measurement can contain social response bias. Future research is recommended to use longitudinal or experimental designs and direct observation methods.

E. Conclusion

This study yields three interrelated findings that contribute to understanding the relationship between AI use and teacher professionalism. First, the level of AI use among teachers at SMPN 29 Gresik was categorized as high, with an average score of 4.2 on a five-point scale. Teachers intensively utilized AI tools such as ChatGPT in developing learning tools. Teachers' reading interest was found to be at a sufficient level with an average score of 3.1, while teachers' intellectual independence was also categorized as sufficient with an average score of 3.3. Although these levels are moderate, they warrant attention given the central role of literacy and intellectual independence in sustaining teachers' professional competence.

Second, the quantitative analysis revealed a significant negative relationship between AI use and reading interest and between AI use and intellectual independence. The correlation coefficients indicate that higher levels of AI use are associated with lower levels of reading interest and intellectual independence. It is important to emphasize that these findings reflect relational patterns rather than causal effects. The results do not suggest that AI use directly causes a decline in teachers' reading interest or intellectual independence, but rather indicate a meaningful association in which increased reliance on AI coincides with changes in teachers' professional literacy and reflective practices.

Third, qualitative findings provided deeper insight into how these relationships are experienced in practice. Teachers reported reduced engagement with educational literature and more superficial pedagogical reflection when AI-generated outputs were used without critical evaluation. At the same time, teachers expressed ambivalence toward the impact of AI. They acknowledged the efficiency and practical benefits of AI while also recognizing a perceived loss in reflective depth and intellectual engagement. This ambivalence highlights that the observed relationships are shaped by how AI is used rather than by the technology itself.

Based on these findings, several practical implications can be identified. Schools are encouraged to develop clear and structured policies regarding AI use that emphasize ethical and pedagogical considerations. Teachers require guidance on reflective and critical AI integration, supported by institutional cultures that value intellectual processes in addition to efficiency. Reflection based digital literacy training programs should therefore be implemented to help teachers balance technological convenience with the preservation of professional autonomy and critical thinking.

In addition, this study suggests an agenda for future research. Further studies should employ longitudinal or experimental designs to examine how patterns of AI use and teacher professionalism evolve over time and to explore potential causal mechanisms more rigorously. Future research may also investigate moderating variables such as AI literacy, professional development experiences, and institutional support that could shape the relationship between AI use, reading interest, and intellectual independence. Expanding research to diverse educational levels and cultural contexts would further strengthen the generalizability and conceptual development of this research area.

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