

APPLYING ARTIFICIAL INTELLIGENCE IN DESIGNING START-UP ACTIVITIES TO ENHANCE THE EFFECTIVENESS OF TEACHING READING COMPREHENSION IN 10TH-GRADE LITERATURE

Dr. Ha Thi Chuyen^{1}, BA. Hoang Nhu Quynh², BA. Hoang Ngoc Khanh³, BA. Hoang Thuy Phuong⁴*

¹*Tan Trao University, Tuyen Quang Province, Vietnam*

Email address: htchuyen@tqu.edu

**Corresponding authors: Ha Thi Chuyen*

<https://doi.org/10.51453/3093-3076/2026/1408>

ARTICLE INFO

Received: 06/01/2026

Revised: 8/02/2026

Published: 28/02/2026

KEYWORDS

Artificial Intelligence (AI);

Start-up;

Activities;

10th-grade;

Literature reading.

ABSTRACT

In the era of digital transformation, the application of Artificial Intelligence (AI) in start-up activities has emerged as a groundbreaking solution to enhance 10th-grade Literature instruction. This study employs a mixed-methods approach to evaluate the current status and effectiveness of AI integration in activating students' prior knowledge and fostering intrinsic motivation. The findings confirm that AI functions as a pivotal pedagogical "hook," significantly improving students' proactive engagement and text-decoding competencies. However, practical implementation remains hindered by barriers related to teachers' digital competence and concerns regarding the preservation of their instructional guidance role. Consequently, the paper proposes strategic solutions involving infrastructure development, professional training aligned with the DigCompEdu framework, and the creation of smart learning materials to promote sustainable digital transformation in literature education.

1. INTRODUCTION

In the context of implementing the 2018 General Education Curriculum, enhancing both the quality of instruction and students' learning engagement at the upper secondary level has become a central priority. In Grade 10 Literature, the "warm-up" phase functions as a pedagogical "hook" that activates prior knowledge and bridges learners' Zone of Proximal Development (ZPD). The rapid advancement of Artificial Intelligence (AI) offers new opportunities to personalize learning pathways and optimize classroom management. In language education, AI facilitates the design of diverse interactive scenarios, enabling a shift from a "one-size-fits-all" model toward deep personalization, while effectively scaffolding initial cognitive engagement.

However, the teaching of Grade 10 literature in practice continues to face challenges related to teachers' digital pedagogical competence and concerns over the potential erosion of the teacher's guiding role. Existing studies tend to focus primarily on the general potential of AI, with a noticeable lack of in-depth investigations into its actual effectiveness during the warm-up stage.

In response to this gap, the study entitled "Applying artificial intelligence in designing warm-up activities to enhance the effectiveness of reading comprehension instruction in grade 10

literature” was conducted. The research aims to assess the current situation and examine the correlation between learners’ perceptions and the effectiveness of intelligent tools. Based on these findings, it proposes a system of pedagogically informed technical solutions, thereby contributing to sustainable digital transformation in education.

2. PROPOSED METHODOLOGY

The study adopts a mixed-methods approach, integrating both qualitative and quantitative techniques, to clarify the current situation and evaluate the effectiveness of applying Artificial Intelligence (AI) in designing warm-up activities to enhance reading comprehension instruction in Grade 10 literature. The research employs the following methods: (1) Document analysis, which synthesizes and examines relevant studies and literature on AI applications in education to establish the theoretical foundation of the study; (2) Observation and interviews, used to collect data on the current state of AI implementation through classroom observations and interviews with teachers and students regarding the extent of use, as well as the advantages and challenges encountered during implementation; (3) Statistical methods, applied to process and analyze data collected from questionnaires, tests, and experimental results, in which the effectiveness of AI integration is evaluated by comparing students’ learning outcomes before and after the implementation of AI-supported instructional activities.

3. RESEARCH RESULTS

3.1. Theoretical background

3.1.1. Warm-up activities in literature instruction

Within the framework of contemporary instructional theory, warm-up activities are established as an integral structural component and a strategic starting point for all pedagogical processes. From an educational psychology perspective, this phase functions to focus learners’ attention, facilitating the transition from a state of informal activity to one of sustained academic engagement. Drawing on constructivist theory, the warm-up catalyzes activating prior knowledge systems, enabling teachers to connect students’ Zone of Proximal Development (ZPD) with new learning objectives. International scholars such as Wong and Wong (1991) conceptualize this stage as a pedagogical “hook,” designed to capture learners’ attention and address motivational challenges by establishing the practical relevance of knowledge.

In the Vietnamese context, studies by Nguyen Thi Hong Nam (2018) and Tran Thanh Binh (2020) have affirmed that standardizing the design of warm-up activities in alignment with competency-based approaches and active learning techniques is a decisive factor in ensuring the quality of lesson introduction. Notably, within the implementation of the 2018 General Education Curriculum, Đàng Thị Hue (2022) emphasizes that warm-up activities must closely align with the specific characteristics of reading comprehension to ensure coherence and logical progression in the cognitive process. The shift from “purely entertaining” activities to those that mobilize learners’ competencies enables students to autonomously construct initial knowledge, thereby establishing a solid foundation for subsequent stages of the lesson. Furthermore, the integration of information technology, as highlighted in the work of Phan Thi Thu Hien (2021), along with the flipped classroom model proposed by Le Phan Quoc and Nguyen Van Hoang (2019), has redefined the role of warm-up activities as a digital creative space that fosters intrinsic motivation while preserving the humanistic dimension of teaching. Synthesizing these perspectives, an effective warm-up

activity should not merely create a positive classroom atmosphere but must also clearly articulate strategic objectives and optimize the overall efficiency of the pedagogical process.

3.1.2. Artificial intelligence

Artificial Intelligence (AI) is established as a core subfield of computer science, focusing on modeling cognitive processes and intelligent information processing to develop systems capable of simulating human learning behaviors (McCarthy et al., 2006). The fundamental objective of AI is to automate intelligent actions through complex algorithmic systems, enabling machines to acquire capabilities such as perception, logical reasoning, problem-solving, and adaptive learning. This extends beyond mere imitation of human behavior to the optimization of communication and autonomous learning in dynamic environments.

Emerging in the 1970s, Artificial Intelligence in Education (AIEd) has evolved into a strategic interdisciplinary field, prioritizing the integration of intelligent algorithms into teaching and learning ecosystems. According to the strategic report by UNESCO (Sector, 2021), AIEd goes beyond purely technical tools, becoming a means of human empowerment that supports personalized learning pathways and optimizes the management of educational infrastructure.

From a similar perspective, international scholarship, including Wong and Wong (1991), conceptualizes AIEd as the development of entities capable of understanding academic processes and flexibly participating in instruction as intelligent tutors. In *Intelligence Unleashed*, Luckin et al. (2016) metaphorically describe AIEd as an “invisible companion” that renders learning pathways more transparent and enables measurable evaluation of learning effectiveness.

Synthesizing these perspectives, AIEd can be understood as a system of pedagogically informed technological solutions that serves as a central driver in transforming education from a model of “mass standardization” to one of “deep personalization,” thereby ensuring adaptability and optimal efficiency in the digital knowledge era.

3.2. Statistical survey results

3.2.1. Teachers’ and students’ perceptions of the necessity of applying artificial intelligence in designing warm-up activities to enhance the effectiveness of grade 10 literature reading comprehension instruction

To investigate teachers’ perceptions of the application of Artificial Intelligence (AI) in designing warm-up activities aimed at improving the effectiveness of Grade 10 Literature reading comprehension instruction, the research team surveyed in January 2026 involving 20 teachers who were directly teaching Grade 10 Literature at several upper secondary schools in Tuyen Quang province. The survey was carried out using three methods: classroom observations, in-depth interviews with teachers, and questionnaire-based surveys combining multiple-choice and open-ended questions. The findings are presented as follows:

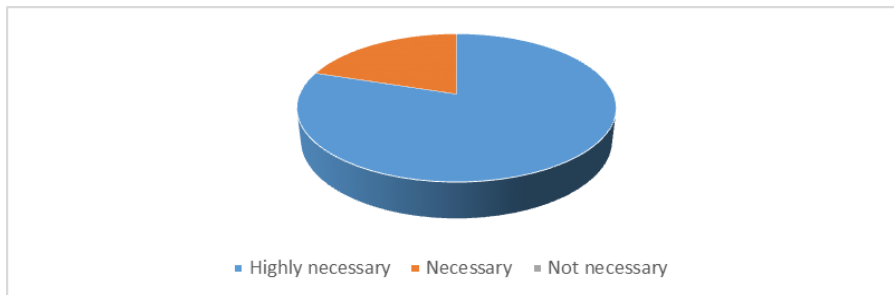


Figure 1: Teachers’ perceptions of the application of artificial intelligence in designing warm-up activities to enhance the effectiveness of grade 10 literature reading comprehension instruction

The survey results presented in Figure 1 indicate that teachers’ perceptions of the application of Artificial Intelligence (AI) in designing warm-up activities to enhance the effectiveness of Grade 10 Literature reading comprehension instruction are highly positive. Specifically, the majority of surveyed teachers (80.0%) consider the application of AI to be highly necessary, while the remaining 20% regard it as necessary. Notably, no respondents indicated that the use of AI is unnecessary. These findings reflect a strong consensus among teachers regarding the role and potential of AI in innovating Literature teaching methodologies, particularly in the warm-up phase—an essential stage for fostering student engagement and guiding reading comprehension activities. Furthermore, the complete absence of negative responses suggests that AI is increasingly perceived as an indispensable supportive tool in the context of ongoing digital transformation in education.

These findings are consistent with broader trends reported in recent studies on teachers’ perceptions of Artificial Intelligence in education. Research by Holmes et al. (2019) indicates that the majority of teachers perceive AI as a tool with strong potential to support the innovation of teaching methodologies, particularly in fostering student engagement, personalizing learning, and guiding learners’ initial cognitive activities. Similarly, Luckin et al. (2016) affirm that teachers tend to view AI as a necessary supportive tool rather than a threat to traditional pedagogical roles.

To examine students’ perceptions of the application of Artificial Intelligence in warm-up activities aimed at enhancing the effectiveness of Grade 10 Literature reading comprehension instruction in several upper secondary schools in Tuyên Quang province, a survey was conducted in January 2026 with 200 Grade 10 students. Data were collected through classroom observations, interviews, and questionnaire surveys, yielding the following

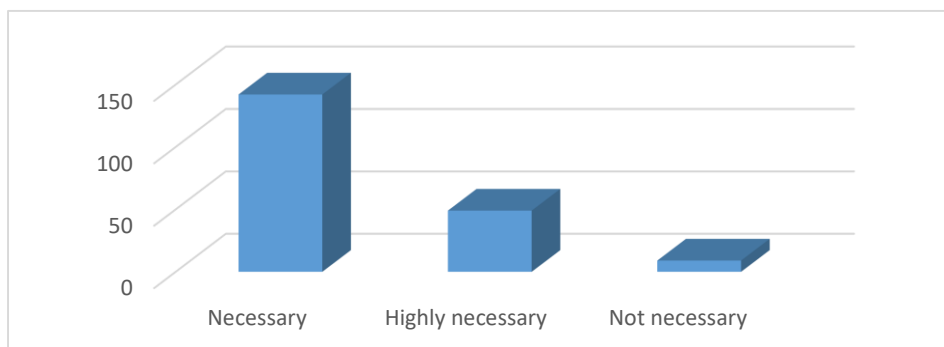


Figure 2: Students’ perceptions of the application of artificial intelligence in warm-up activities to enhance the effectiveness of grade 10 literature reading comprehension instruction

The survey results presented in Figure 2 reflect students’ perceptions of the application of Artificial Intelligence (AI) in warm-up activities aimed at enhancing the effectiveness of Grade 10 Literature reading comprehension instruction. The findings indicate that the majority of students consider the use of AI to be necessary, followed by those who regard it as highly necessary, while only a very small proportion perceive it as unnecessary. This trend suggests that students view AI as a useful supportive tool in the warm-up phase, contributing to increased learning engagement and guiding their approach to reading comprehension texts. Moreover, the minimal proportion of negative responses reflects a relatively positive reception among learners toward pedagogical innovations incorporating technology, highlighting the potential for the widespread implementation of AI-based warm-up activities in upper secondary Literature instruction. These findings also demonstrate systematic alignment with contemporary educational theoretical frameworks. Specifically, students’ positive responses reaffirm Phan Thi Thu Hien’s (2021) assertion regarding the role of technology in stimulating curiosity and fostering intrinsic motivation prior to engaging with texts. The perception of AI as “necessary” is also consistent with the findings of Holmes et al. (2019) on the strategic potential of AI in guiding initial cognitive processes, enabling learners to engage more actively in text interpretation. Notably, the minimal proportion of negative responses provides empirical support for Luckin et al.’s (2016) characterization of AI as an “invisible companion” that facilitates personalized and transparent learning pathways rather than imposing technical pressure. Taken together, these correspondences not only confirm the effectiveness of pedagogical innovation but also underscore the strong potential for scaling AI-based instructional models in Literature education.

3.3.2. Challenges in applying artificial intelligence in warm-up activities to enhance the effectiveness of teaching reading comprehension in grade 10 literature

Although artificial intelligence (AI) offers transformative potential, its application in specific contexts inevitably encounters certain barriers. Based on a survey investigating the challenges of applying AI in warm-up activities to enhance the effectiveness of teaching reading comprehension in Grade 10 Literature at several upper secondary schools in Tuyen Quang Province in January 2026, the following results were obtained:

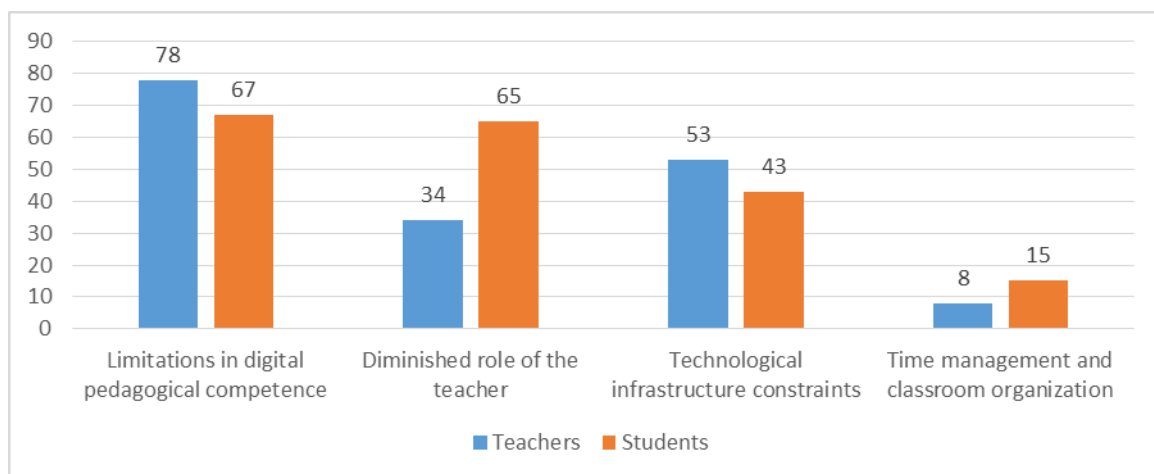


Figure 3: Challenges in applying artificial intelligence in warm-up activities to enhance the effectiveness of grade 10 literature reading comprehension instruction (%)

The survey results presented in Figure 3 indicate that the major challenges in applying artificial intelligence to warm-up activities aimed at enhancing the effectiveness of teaching reading comprehension in Grade 10 Literature are perceived from two groups: teachers and students. For teachers, limitations in digital pedagogical competence are identified as the most significant challenge (78%), followed by constraints in technological infrastructure (53%) and the potential decline in the teacher's guiding role (34%). Meanwhile, students more clearly recognize the risk of the diminished role of teachers (65%) and limitations in digital pedagogical competence (67%), suggesting learners' sensitivity to shifts in pedagogical roles when technology is integrated into the classroom. In both groups, difficulties related to time management and classroom organization account for the lowest proportions (teachers: 8%; students: 2.8%), indicating that organizational issues are not considered major barriers to the implementation of AI-supported warm-up activities. Overall, these findings suggest that although perceptions of AI's potential are generally positive, both teachers and students express considerable concerns regarding implementation capacity and pedagogical roles. This underscores the need to enhance digital pedagogical competence and to provide appropriate guidance on the effective integration of AI in literature teaching.

The results indicate that limitations in teachers' digital pedagogical competence constitute the most prominent challenge (78%). This finding is consistent with the conclusions of Redecker and Punie (2017) within the DigCompEdu digital competence framework, which identifies teachers' digital pedagogical competence as a key determinant of the effective integration of technology and AI in the classroom. Similarly, D'Mello (2021) highlights that insufficient capacity to design technology-enhanced learning activities represents one of the most significant barriers to the implementation of AI in general education.

Students' clear recognition of the potential risk of diminishing the teacher's guiding role (65%) is also aligned with the findings of Luckin et al. (2016) and Holmes et al. (2019), which emphasize that learners often express concern that AI may obscure the role of teachers if it is implemented without a sound pedagogical orientation. These scholars affirm that AI can only be effective when teachers maintain a central role in guiding, orchestrating, and interpreting knowledge.

3.2.3. Proposed solutions to address challenges in applying artificial intelligence to warm-up activities for enhancing the effectiveness of teaching reading comprehension in grade 10 literature

a. Measures to address limitations in digital pedagogical competence

In the process of educational digital transformation, teachers constitute the key factor determining the success or failure of all innovation strategies. However, current practice indicates that the primary barrier does not lie in technical infrastructure but rather in resistance to change and the gap between technological skills and modern pedagogical approaches. To address this limitation comprehensively, it is first necessary to initiate a transformation in mindset, enabling teachers to perceive technology as an effective "support tool" rather than an administrative burden; this, in turn, facilitates proactive engagement with advanced models such as the *flipped classroom* and *blended learning*.

Simultaneously, teacher training should shift toward hands-on, practice-oriented approaches through workshops focused on designing interactive lessons on digital platforms and leveraging

artificial intelligence to optimize lesson planning. The maintenance and development of professional learning communities on social media also represent an essential solution for sharing teaching resources and addressing technical challenges in a timely manner.

Furthermore, each teacher should align their professional development trajectory with international digital competence frameworks such as DigCompEdu to self-assess, enhance, and refine their competencies, thereby ensuring adaptability in the digital era.

Despite their technological advantages, students often lack the skills to effectively utilize digital tools for academic purposes. To cultivate competent “digital citizens,” four groups of solutions should be implemented: (1) developing information management skills, including the ability to identify misinformation and conduct academic research; (2) fostering self-directed learning and discipline through learning management systems such as Google Classroom and Microsoft Teams; (3) promoting digital safety and ethics, with emphasis on data security and online behavior; and (4) encouraging digital content creation through multimedia products as alternatives to traditional assignments. This integrated approach enables students to consolidate knowledge while establishing a solid foundation for the knowledge economy.

Notably, to enhance the effectiveness of teaching reading comprehension in Literature through AI-supported warm-up activities, it is essential to clearly affirm the teacher’s central role in orchestrating technology use. AI should function merely as an “assistant” that provides data, prompts situations, or reconstructs cultural-historical contexts, while teachers retain control over pedagogical scenarios to guide students’ emotions and thinking. Establishing standardized operational procedures for digital warm-up activities will help regulate lesson timing and prevent disruptions in classroom organization. Direct teacher–student interaction in interpreting AI-generated outputs remains a critical factor in preserving the humanistic and in-depth characteristics of Literature education in a digital environment.

b. Measures to address the diminished role of teachers

In the context of the rapid expansion of artificial intelligence, addressing the diminishing role of teachers requires a well-structured classroom management strategy that positions teachers as central coordinators and students as active beneficiaries. First, a systemic awareness must be established across all pedagogical activities: AI functions solely as a supporting tool, whereas teachers play the primary role in guiding thinking, leading instructional processes, and evaluating learning outcomes.

Particularly in the warm-up phase, AI-integrated pedagogical scenarios must be designed based on the teacher’s planning; AI should only provide raw data, suggest situations, or generate learning hypotheses under the teacher’s control. To ensure both humanistic values and practical effectiveness—especially in literature education—it is essential to maximize direct interaction between teachers and students. Teachers’ immediate feedback, questioning, and emotional engagement not only reinforce their guiding role but also prevent overreliance on technology, thereby preserving the core educational values of inspiration and character development.

c. Measures to address technological infrastructure constraints

To effectively overcome infrastructural barriers in integrating artificial intelligence into literature teaching, a flexible system of solutions must be implemented to ensure compatibility between technological capacity and real-world conditions.

At the institutional level, schools should establish phased investment and upgrading plans, prioritizing the alignment of infrastructure modernization with pedagogical innovation. Mobilizing and optimizing social resources will help build a sustainable technological foundation capable of supporting digital platforms in general education.

For teachers and students, emphasis should be placed on selecting and utilizing lightweight AI applications that operate reliably on commonly available devices, ensuring accessibility even under limited technical conditions. Teachers should also proactively design flexible instructional strategies based on blended models, balancing technology-integrated activities with traditional methods. This approach not only ensures continuity in the teaching process but also fosters students' adaptive thinking, reduces overdependence on digital devices, and maintains the pedagogical depth and distinctive nature of Literature as a subject.

d. Measures to address limitations in time management and classroom organization

To optimize time management and maintain classroom discipline when integrating artificial intelligence into the warm-up phase, a coordinated system of pedagogical and technical solutions should be implemented, promoting the proactive engagement of both teachers and students.

From the perspective of teachers' organizational competence, emphasis should be placed on standardizing lesson design processes. Warm-up activities should be streamlined, with clearly defined objectives and strictly controlled time frames, ensuring their introductory function without encroaching upon the core reading comprehension process. Before instruction, teachers should develop a "technology operation scenario," including tool testing and contingency plans to effectively manage unexpected technical issues and eliminate downtime during lessons.

From the perspective of student interaction and responsibility, effective classroom management is maintained through clear task allocation. Students should be explicitly guided regarding their roles, positions, and procedures for interacting with AI tools from the outset of the activity. Establishing clear behavioral expectations and learning outcomes not only ensures classroom order but also enhances students' self-regulation and meaningful participation.

This coordinated approach enables the integration of AI to proceed smoothly, transforming time-related pressures into drivers of innovation, thereby improving pedagogical efficiency without disrupting the overall lesson structure.

4. CONCLUSION AND FUTURE DEVELOPMENT

The study affirms that the integration of artificial intelligence (AI) into the design of warm-up activities in Grade 10 Literature has generated positive transformations. Serving as a pedagogical "hook," AI facilitates the activation of prior knowledge and stimulates intrinsic motivation, thereby enabling students to actively engage with and master complex texts. Concurrently, this technology allows teachers to optimize instructional design processes and personalize learning pathways, thus improving overall system efficiency. However, practical implementation continues to face notable challenges, particularly limitations in digital pedagogical competence and concerns regarding the potential diminution of the teacher's guiding role. AI can only fully realize its value when deployed in alignment with clear pedagogical intentions and within a coherent digital competence framework. To maximize the potential of AI in education (AIEd), the study proposes three strategic solutions: (1) investing in compatible technological infrastructure; (2) enhancing digital pedagogical

competence in accordance with the DigCompEdu framework to maintain the teacher's coordinating role; and (3) developing intelligent learning resource repositories tailored to the specific characteristics of Grade 10 Literature genres. These solutions aim to foster a humanistic, adaptive, and creative learning environment in the digital era. Nevertheless, as this study was conducted within a limited scope—specifically in several upper secondary schools in Tuyên Quang Province—the generalizability of the findings may be constrained. Future research should expand the sample to include diverse geographical contexts.

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