

# Fostering Critical Thinking through Digital Game-Based Learning: A Case Study

Katrin Pepita<sup>1</sup>, Sri Setyarini<sup>2</sup>

<sup>1,2</sup>Universitas Pendidikan Indonesia, Indonesia

<sup>1</sup>katrinpepita@upi.edu, <sup>2</sup>setyarini.english@upi.edu

## Abstract

Critical thinking is increasingly recognized as a vital skill for young learners in the twenty-first century. This qualitative case study investigated how online educational games fostered critical thinking in an eight-year-old English learner. Data were collected through participatory observation, semi-structured interviews, and screen recordings, and were analyzed thematically using Facione's framework. The results indicate that game-based tasks activated several dimensions of critical thinking, particularly interpretation, analysis, inference, and evaluation, through interactive and meaningful engagement. The study also highlights the important role of adult scaffolding in supporting learners' questioning, clarification, and reflective decision-making during gameplay. These scaffolds enabled the learner to connect prior schemas with new information and refine decisions. The study offers preliminary insights into how critical thinking in young learners may be understood from both cognitive and sociocultural perspectives within digital learning environments. In practice, the findings suggest that online educational games can support the development of critical thinking when accompanied by appropriate facilitation by teachers or parents. However, the study is limited by its single-case design; therefore, future research is recommended to investigate digital game-based learning and critical thinking across broader groups of participants and educational contexts.

Keywords: critical thinking; digital game-based learning; English learning; online games; young learners

## INTRODUCTION

The social and economic demands of the twenty-first century have positioned critical thinking as an essential skill for students. The rapid circulation of information further underscores the urgency of mastering this competence (Dad & Akbar, 2023). In the Indonesian context, this skill has become increasingly important because the recent curriculum places critical reasoning as one of the eight dimensions of graduate profiles, which, under Facione's (2011) framework, belongs to the critical thinking process. Critical thinking enables individuals to make evidence-based decisions, solve problems effectively, think creatively, and enhance curiosity. It also broadens employment opportunities, nurtures innovation, strengthens life skills, and promotes efficiency in time management (Dad & Akbar, 2023; Raj et al., 2022). Furthermore, it has long been regarded as a core competence that education aims to cultivate, particularly in response to the increasing complexity of social and informational environments.

Because of its importance, scholars have proposed various definitions to clarify the nature of critical thinking. Ennis (1985) describes critical thinking as a form of reflective and reasoned thinking oriented toward making decisions about beliefs or actions.

Katrin Pepita, Sri Setyarini **1**

Building on this perspective, a consensus of experts, coordinated by Facione (1990), conceptualizes critical thinking as a deliberate and self-regulated process of judgment that involves careful consideration of evidence, context, conceptual frameworks, methods, and criteria. In line with this view, Facione (1990, 2011) further identifies a set of core skills underlying critical thinking, namely interpretation, analysis, evaluation, inference, explanation, and self-regulation. Together, these skills enable individuals to understand information, examine relationships among ideas, assess the credibility of arguments, draw and justify conclusions, and continuously refine their reasoning.

Recent studies have examined critical thinking in diverse contexts, including its relevance in the era of artificial intelligence (Darwin et al., 2024) and its relationship with instructional approaches such as flipped learning (Yulian, 2021), problem-based learning (Cosgun & Atay, 2021), self-directed learning (Algouzi et al., 2023), and textbook-based instruction (Hasnah et al., 2024). These studies suggest that critical thinking can be fostered through learning environments that encourage learners to analyze information, solve problems, and reflect on their reasoning. However, they also indicate that the development of critical thinking is strongly shaped by the learning context, instructional design, and the types of activities provided to learners.

The importance of cultivating critical thinking among children has also been reflected in research on curriculum integration, ranging from textbook analyses (Al-Rahbi et al., 2022) to the implementation of project-based learning, inquiry-based learning, and collaborative learning (Hikmayana, 2025). Studio-based art activities such as drawing, painting, and sculpting have likewise been reported to stimulate critical thinking. Furthermore, studies on educational game development for young learners highlight the potential of games to support this skill (Fitriyadi & Wuryandani, 2021).

This focus is essential because early childhood is widely recognized as a crucial period for cognitive development, during which foundational thinking skills begin to emerge and expand. From the prenatal stage through approximately eight years of age, children experience rapid growth in cognitive functions, including those associated with critical thinking (Leggett, 2022). This developmental trajectory suggests that critical thinking is not exclusive to older learners but can begin to take shape in early childhood, when children start interpreting information, asking questions, comparing possibilities, and making simple decisions based on their experiences.

Research further indicates that the primary school years provide an important window for nurturing critical thinking skills in structured educational settings (Prameswari et al., 2018). Importantly, fostering critical thinking at an early age does not require compromising playful or age-appropriate learning experiences. Instead, activities that encourage questioning, reasoning, and reflection can support critical thinking while preserving the essence of childhood learning (Florea & Hurjui, 2015). Therefore, learning activities for young learners need to be designed not only to transmit knowledge but also to provide opportunities for children to explore, make choices, justify their answers, and reflect on their thinking in developmentally appropriate ways.

Regarding learning methods, game-based learning has become increasingly prevalent among young English learners, particularly in digital formats (Saputra et al., 2021). Digital games are often characterized as engaging and enjoyable, making them a promising medium for young learners' language learning (Dehghanzadeh et al., 2021). Evidence suggests that digital game-based learning can positively influence students' critical thinking by requiring learners to interpret rules, analyze information, test possibilities,

and make decisions within meaningful contexts (Mao et al., 2022). These characteristics position digital games not only as instructional tools but also as cognitive spaces where critical thinking can be actively practiced.

Nevertheless, there is still limited empirical evidence on how digital game-based instruction supports the development of specific critical thinking skills, such as analysis, evaluation, and inference, among young English language learners. Existing studies tend to discuss the general benefits of educational games rather than examine how specific critical-thinking processes emerge during children's interactions with game-based tasks. This leaves a need for more context-specific investigation into how young learners interpret information, reason through problems, draw conclusions, and evaluate their responses while engaging with online educational games. Accordingly, this study aims to investigate how educational online games facilitate the development of children's critical thinking skills within meaningful learning contexts.

## **METHOD**

This study employed a qualitative case study approach to explore the experience of an eight-year-old EFL learner engaging with online games as learning tools. A case study was selected because it enables an in-depth exploration of a real phenomenon in a specific context, particularly how interaction with online games may foster the critical thinking skills of a young learner. The participant was purposively selected based on the ability to read independently and prior exposure to basic English learning. Ethical considerations were carefully addressed by obtaining informed consent from the participant's parent and assent from the child. To ensure confidentiality, the participant's identity was anonymized using a pseudonym.

The data were collected through participatory observation via the Zoom platform over four sessions, each lasting approximately ten to thirty minutes. During the sessions, the first researcher documented the participant's verbal interactions, non-verbal expressions, and problem-solving strategies while interacting with games from [gamestolearnenglish.com](http://gamestolearnenglish.com) and [wordwall.net](http://wordwall.net). The observations were complemented by semi-structured interviews conducted after each session to explore the participant's perceptions, preferences, and challenges during gameplay.

Digital documentation, including screen recordings, interview transcripts, and field notes, was used as supplementary data to support the analysis. The data were analyzed using thematic analysis following Braun and Clarke (2012), including transcription, initial coding, thematic classification, and interpretation. The themes were subsequently mapped onto Facione's critical thinking dimensions: interpretation, analysis, evaluation, inference, explanation, and self-regulation. To enhance the trustworthiness of the study, data triangulation was conducted through observation, interviews, and documentation. In addition, an audit trail and peer debriefing were employed to strengthen the study's credibility and dependability. These procedures enabled the researchers to obtain a comprehensive understanding of how critical thinking developed within an online game-based English learning context.

## RESULTS AND DISCUSSION

### Results

After a series of observations and interviews, several online games were found to facilitate the development of critical thinking skills, particularly interpretation, analysis, inference, and evaluation. Although Facione’s (1990) framework includes six core skills, not all dimensions were observed in this study. Explanation and self-regulation were not explicitly analyzed due to the participant’s limited verbalization and reflective expressions during the sessions. In addition, evaluation did not appear consistently across all game activities, as some tasks emphasized immediate responses and pattern recognition rather than reflective verification. Table 1 summarizes the critical thinking skills reflected in each game.

Table 1. Critical Thinking Skills Reflected in the Online Games Played by the Participant

Game/Activity	Interpretation	Analysis (Reasoning)	Inference	Evaluation
Crossword	Understanding the meanings of clues.	Considering possible answers and matching the number of letters in the guessed words with the blank spaces.	Drawing a conclusion about the correct answer based on the provided clues.	Evaluating the consistency of the answer by referring to the relevant clue and letters.
Anagram	Understanding the instruction to arrange jumbled letters into a word.	Trying letter combinations and recognizing possible word patterns.	Drawing a conclusion about a valid word.	Not observed.
Silhouette Matching	Understanding the instruction to match a picture with its silhouette.	Identifying visual signs and comparing them with the picture.	Drawing a conclusion about the most suitable picture.	Evaluating the accuracy of the decision when similar options were available.
Tile Puzzle (Hidden Numbers)	Understanding the rule for revealing the hidden number.	Identifying partial information from opened tiles and recognizing patterns.	Drawing a conclusion about the number that might be hidden behind the tiles.	Not observed.
Hangman	Understanding the instruction to guess words from limited letters.	Testing letters one by one and analyzing word patterns.	Drawing a conclusion about the complete word and the accurate letters.	Evaluating the accuracy of guesses to prevent repeated mistakes.
Matching Story Characters	Understanding the instruction to match words with pictures of characters.	Analyzing the words and comparing them with characters from different stories.	Drawing a conclusion about a character from another story that	Not observed.

			might suit the target word.	
Choosing Positive Words	Understanding the instruction to choose positive words.	Analyzing whether the opened words belonged to positive or negative categories.	Deciding on the intended words.	Evaluating whether the words were positive or not.

Across different games, namely crossword, anagram, silhouette matching, tile puzzle, hangman, matching story characters, and choosing positive words, critical thinking did not appear as a single skill but as a multi-process engagement. The learner began with interpretation, proceeded through analysis or reasoning, arrived at inference, and often evaluated her choices. This multiplicity highlights that game-based tasks naturally scaffold several critical thinking skills simultaneously, making them useful tools for fostering reasoning in EFL contexts.

### Interpretation

Interpretation emerged as the initial process across all games. Before engaging in problem solving, the participant first attempted to understand the instructions, clues, rules, or visual representations provided in each task. This process was important because it enabled her to identify what the game required and determine the type of response expected. For example, in the crossword and hangman activities, the participant interpreted verbal clues and letter constraints before proposing possible answers. Meanwhile, in silhouette-matching and tile-puzzle tasks, visual information became the primary basis for understanding the task and guiding her next actions. These findings indicate that interpretation functioned as the entry point for the participant’s critical thinking during gameplay.

### Analysis

Analysis was reflected in the participant’s ability to identify patterns, compare alternatives, and test possible answers before making a decision. In the crossword task, the participant initially associated the clue “It is like a doll, but it’s not! It can be made from leather” with fluffy objects and proposed responses such as *pillow*. After reconsidering the clue and the letter spacing, she revised her response to *puppet*. This revision shows that the participant did not merely guess the answer, but re-examined the available information and adjusted her response based on the relationship between the clue and the word pattern.

A similar analytical process appeared in the matching story-character activity, where the participant connected the word *giant* to a familiar cartoon character after recalling prior experiences. Analytical behavior was also observed in the anagram, hangman, and puzzle tasks. In these activities, the participant compared pieces of information, recognized possible patterns, and tested alternative responses before deciding on an answer. These processes suggest that game-based tasks provided opportunities for the participant to engage in reasoning by relating new information to prior knowledge and available task cues.

### Inference

Inference appeared when the participant made decisions based on interpreted clues and analyzed information. In the crossword task, the participant eventually selected the word *puppet* as the intended answer after considering the clue, the number of letters, and

the available spaces. In the anagram activities, she generated valid words from jumbled letters, while in silhouette matching, she selected images that appeared to fit the given shapes. These decisions show that inference occurred when the participant used partial information to draw a reasonable conclusion.

Different forms of inference were observed across the games. In crossword tasks, inference often involves making assumptions from incomplete verbal clues, requiring the participant to consider several possible answers before selecting the most appropriate one. In contrast, inference in silhouette matching relied more on deduction from visual evidence, as the participant compared the visible shape with possible image options. This difference suggests that the type of game influenced how inference was constructed during gameplay.

## **Evaluation**

Evaluation appeared inconsistently across the games. In crossword and hangman activities, the participant rechecked her answers against the clues, letter patterns, and game rules to avoid mistakes. This evaluative process was reflected when she reconsidered an initial answer, checked whether it matched the available information, and revised it when necessary. In this sense, evaluation was not limited to judging whether an answer was correct, but also involved monitoring the accuracy of her own responses during gameplay. However, in several activities, such as anagrams and tile puzzles, evaluation was not explicitly observed because the gameplay emphasized immediate recognition and quick responses. These games provided fewer opportunities for the participant to pause, verify, or justify her answers. Therefore, evaluation appeared more clearly in games that required answer checking, rule confirmation, or comparison between clues and responses, suggesting that not all game types offer the same opportunities for evaluative thinking.

## **Discussion**

### **Critical Thinking as a Sequential Process in Game-Based Learning**

The findings suggest that critical thinking in online games did not emerge as a set of isolated skills, but as a sequential and interconnected process. The learner appeared to begin with interpretation, proceed through analysis, arrive at inference, and, in some situations, evaluate her responses. This pattern was reflected across several game activities, particularly when the learner needed to understand clues, compare possible answers, and check whether her responses matched the task requirements. While Facione (2011) conceptualizes critical thinking as comprising several cognitive skills, the present study suggests that, within game-based learning, these skills may unfold dynamically during task completion. In this sense, digital games may provide a learning space in which young learners engage in staged reasoning through meaningful and interactive tasks.

### **Interpretation as the Entry Point of Critical Thinking**

Interpretation appeared to function as a gateway to subsequent reasoning processes. Before the learner could analyze information or draw inferences, she first needed to understand the clues, instructions, rules, or visual representations presented in the games. This supports Facione's (2011) notion of interpretation as a process of meaning construction and may explain why interpretation consistently emerged across all game activities. This process may also reflect evocation, as described by Florea and Hurjui (2015), in which prior knowledge is activated before problem solving occurs. The findings are also consistent, to some extent, with Gee (2007), who argues that digital games encourage players to construct meaning actively by connecting prior experiences with

new information presented during gameplay. Thus, the consistent emergence of interpretation across activities suggests that meaning-making served as the foundational stage of reasoning in the learner's game-based interactions.

### **Analysis and the Role of Scaffolding**

Analytical thinking appeared to develop through the interaction between prior knowledge and contextual support. The participant revised her initial assumptions after receiving prompts and cues, suggesting that analysis involved not only identifying possible answers but also reconsidering them in relation to the available information. This process reflects Piaget's (1923) concepts of assimilation and accommodation, as the learner connected new clues with existing schemas and adjusted her understanding when the initial response did not fit the task. At the same time, guided questioning and feedback seemed to support her reasoning, resonating with Vygotsky's (1978) concept of scaffolding and socially mediated cognition. This finding also aligns with Hmelo-Silver et al. (2007), who highlight that scaffolding in inquiry-based and problem-solving activities can support learners in developing higher-order thinking skills. In this study, analytical reasoning appeared to be more visible when external support was gradually provided during challenging tasks.

### **Differences Between Assumption and Deductive Inference**

An important finding concerns the distinction between assumption-based and deductive inference, as observed in the crossword and silhouette matching activities. Inference involving assumptions appeared to require greater support and seemed more cognitively demanding than deduction based on clearer evidence. This may indicate that reasoning under uncertainty is more challenging for young learners, particularly when they need to select an answer from incomplete or implicit clues. This finding is in line with Kuhn (1999), who argues that the development of critical thinking involves gradual improvement in reasoning and in the ability to evaluate uncertain information. A similar pattern was also reported by Ninković et al. (2025), in which students demonstrated stronger performance in deduction than in assumptions. This suggests that reasoning based on explicit evidence may be more accessible to learners than reasoning that involves implicit, ambiguous, or uncertain information.

### **Uneven Emergence of Evaluation and Self-Regulation**

Evaluation did not consistently appear across activities, suggesting that not all online games equally foster reflective thinking. However, moments of answer revision and response checking may indicate an emerging form of metacognitive monitoring. This may reflect an early stage of self-regulated thinking, in which learners begin to monitor and adjust their responses during problem-solving activities (Zimmerman, 2002). In this respect, game-based learning environments may partly support self-regulated learning processes, such as monitoring, regulation, and goal-oriented problem solving (Zheng et al., 2024).

On the other hand, games emphasizing speed and immediate recognition offered fewer opportunities for verification, whereas clue-based games encouraged answer checking and monitoring. This distinction suggests that the design of the game task may influence whether learners merely respond quickly or engage in deeper checking and reflection. This finding supports Kiili's (2007) argument that different game mechanics shape different cognitive processes, including opportunities for reflection and evaluation.

## **Pedagogical Implications for EFL Learning**

These findings imply that online games can be intentionally selected to promote different dimensions of critical thinking in young EFL learners. Teachers may particularly benefit from games that require interpretation, reasoning, and answer verification, especially when these games are accompanied by scaffolding to support more demanding inferential processes. In addition, integrating guided questioning and reflective prompts during gameplay may help learners externalize their reasoning processes and strengthen critical thinking development in EFL contexts. The findings also suggest that game-based learning may provide meaningful opportunities for young learners to engage in interactive and cognitively stimulating language learning experiences. Therefore, online games should not only be viewed as tools for increasing motivation or enjoyment, but also as learning environments that can support reasoning when they are carefully selected and pedagogically guided.

## **CONCLUSION**

This study demonstrates the potential of digital game-based learning to support the development of critical thinking in young EFL learners. By engaging in varied game tasks, the participant demonstrated that interpretation, analysis, inference, and evaluation are not isolated skills but interconnected processes that can be activated through playful interaction. The findings also suggest that deduction emerged more readily than assumption, highlighting the importance of adult support when learners engage in more implicit reasoning. Despite its single-case design, this study offers preliminary insights into how digital learning environments may support the development of early critical thinking in young EFL contexts.

Practically, these findings suggest that teachers and parents can purposefully integrate digital games into language learning by combining gameplay with guided questioning and reflective prompts that encourage learners to justify their responses and evaluate their decisions. Such strategies may help externalize higher-order thinking processes, particularly evaluation and self-regulation, which are often less observable in young learners. Future research is recommended to involve larger participant groups, different age ranges, and longer observation periods to better understand the development of critical thinking in digital learning environments. Further investigation into how specific game genres or scaffolding techniques influence particular dimensions of critical thinking would also provide valuable insights.

## **REFERENCES**

- Algouzi, S., Alzubi, A. A. F., & Nazim, M. (2023). Enhancing EFL students' critical thinking skills using a technology-mediated self-study approach: EFL graduates and labor market in perspective. *Plos one*, 18(10), e0293273. <https://doi.org/10.1371/journal.pone.0293273>
- Al-Rahbi, A. M., Al-Mekhlafi, A. M., Al-Barwani, T., & Omara, E. (2022). Challenging the status quo: Critical thinking skills integration in the EFL curriculum of young learners. *Journal of Curriculum and Teaching*, 11(8), 79-96. URL: <https://doi.org/10.5430/jct.v11n8p79>
- Braun, & Clarke. "Thematic Analysis." *APA Handbook of Research Methods in Psychology, Vol 2: Research Designs: Quantitative, Qualitative, Neuropsychological, and Biological.*, edited by Harris Cooper et al., American Psychological Association, 2012, pp. 57-71. [https://www.researchgate.net/publication/269930410\\_Thematic\\_analysis](https://www.researchgate.net/publication/269930410_Thematic_analysis)
- Cosgun, G., & Atay, D. (2021). Fostering critical thinking, creativity, and language skills in the EFL classroom through problem-based learning. *International Journal of Curriculum and Instruction*, 13(3), 2360-2385. <https://eric.ed.gov/?id=EJ1312851>

- Dad, H. & Akbar, R. A. (2023). Critical thinking as a twenty first century skill. *Journal of Educational Research and Social Sciences Review (JERSSR)*, 3(1), 8-15. <https://www.jerssr.org.pk/ojs/index.php/jerssr/article/view/138>
- Darwin, Rusdin, D., Mukminatien, N., Suryati, N., Laksmi, E. D., & Marzuki. (2024). Critical thinking in the AI era: An exploration of EFL students' perceptions, benefits, and limitations. *Cogent Education*, 11(1), 2290342. <https://doi.org/10.1080/2331186X.2023.2290342>
- Dehghanzadeh, H., Fardanesh, H., Hatami, J., Talaei, E., & Noroozi, O. (2021). Using gamification to support learning English as a second language: a systematic review. *Computer Assisted Language Learning*, 34(7), 934-957. <https://doi.org/10.1016/j.ijals.2025.100945>
- Ennis, R. (1985). A Logical Basis for Measuring Critical Thinking Skills. *Educational Leadership*, 43, 44-48. [https://files.ascd.org/staticfiles/ascd/pdf/journals/ed\\_lead/el\\_198510\\_ennis.pdf](https://files.ascd.org/staticfiles/ascd/pdf/journals/ed_lead/el_198510_ennis.pdf)
- Facione, Peter A. (2011). *Critical Thinking: What It Is and Why It Counts*. California: The California Academic Press. [https://www.researchgate.net/publication/251303244\\_Critical\\_Thinking\\_What\\_It\\_Is\\_and\\_Why\\_It\\_Counts](https://www.researchgate.net/publication/251303244_Critical_Thinking_What_It_Is_and_Why_It_Counts)
- Facione, Peter A., 1990, *Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction, Research Findings and Recommendations Prepared for the Committee on Pre-College Philosophy of the American Philosophical Association*, ERIC Document ED315423. <https://files.eric.ed.gov/fulltext/ED315423.pdf>
- Fitriyadi, N., & Wuryandani, W. (2021). Is educational game effective in improving critical thinking skills?. *Jurnal Prima Edukasia*, 9(1), 107-117. doi:<https://doi.org/10.21831/jpe.v9i1.35475> [https://www.researchgate.net/publication/348413548\\_Is\\_educational\\_game\\_effective\\_in\\_improving\\_critical\\_thinking\\_skills](https://www.researchgate.net/publication/348413548_Is_educational_game_effective_in_improving_critical_thinking_skills)
- Florea, N.M., & Hurjui, E. "Critical Thinking in Elementary School Children." *Procedia - Social and Behavioral Sciences*, vol. 180, May 2015, pp. 565-72. DOI.org (Crossref), <https://doi.org/10.1016/j.sbspro.2015.02.161>. <https://www.sciencedirect.com/science/article/pii/S1877042815015074>
- Gee, J. P. (2007). *What video games have to teach us about learning and literacy* (2nd ed.). Palgrave Macmillan.
- Hasnah, Y., Ginting, P., Supiatman, L., Kharisma, A. J., & Siahaan, H. S. (2024). How do locally produced EFL textbooks endorse critical thinking skills in Indonesia? A content analysis. *Journal of Language Teaching and Research*, 15(1), 190-200. [https://www.researchgate.net/profile/Pirman-Ginting/publication/377071968\\_How\\_Do\\_Locally\\_Produced\\_EFL\\_Textbooks\\_Endorse\\_Critical\\_Thinking\\_Skills\\_in\\_Indonesia\\_A\\_Content\\_Analysis/links/6695bb73cb7fbf12a455bbe9/How-Do-Locally-Produced-EFL-Textbooks-Endorse-Critical-Thinking-Skills-in-Indonesia-A-Content-Analysis.pdf](https://www.researchgate.net/profile/Pirman-Ginting/publication/377071968_How_Do_Locally_Produced_EFL_Textbooks_Endorse_Critical_Thinking_Skills_in_Indonesia_A_Content_Analysis/links/6695bb73cb7fbf12a455bbe9/How-Do-Locally-Produced-EFL-Textbooks-Endorse-Critical-Thinking-Skills-in-Indonesia-A-Content-Analysis.pdf)
- Hikmayana, D. (2025). Developing Critical Thinking Skills among Young Learners through Innovative Learning Models. *International Journal of Multidisciplinary Research and Innovation*, 1(1), 50-62. <https://doi.org/10.64084/ijmri.v1i1.48>
- Hmelo-Silver, C. E., Duncan, R. G., & Chinn, C. A. (2007). Scaffolding and achievement in problem-based and inquiry learning: a response to Kirschner, Sweller, and. *Educational psychologist*, 42(2), 99-107.
- Kiili, K. (2007). Foundation for problem-based gaming. *British Journal of Educational Technology*, 38(3), 394-404. <https://doi.org/10.1111/j.1467-8535.2007.00704.x>
- Kuhn, D. (1999). A developmental model of critical thinking. *Educational Researcher*, 28(2), 16-25. <https://doi.org/10.3102/0013189X028002016>

- Leggett, N. (2022). Creative and critical thinking in early childhood. In N. Rezaei (Ed.), *Integrated education and learning* (Integrated Science, Vol. 13). Springer. [https://doi.org/10.1007/978-3-031-15963-3\\_7](https://doi.org/10.1007/978-3-031-15963-3_7)
- Mao, W., Cui, Y., Chiu, M. M., & Lei, H. (2022). Effects of game-based learning on students' critical thinking: A meta-analysis. *Journal of Educational Computing Research*, 59(8), 1682-1708. <https://doi.org/10.1177/07356331211007098>
- Ninković, S. O., Adamov, J., & Rakita, A. (2025). Determinants of students' critical thinking skills. *Krugovi detinjstva-časopis za multidisciplinarna istraživanja detinjstva*, 13(1), 18-27. <https://doi.org/10.53406/kd.v13i1.117>
- Piaget, J. (1923) *The Origin of Intelligence in the Child*. Routledge & Kegan Paul Ltd, .International Library of Psychology, Philosophy, and Scientific Method.
- Prameswari, Salvina Wahyu, et al. Inculcate critical thinking skills in primary schools. *Social, Humanities, and Educational Studies (SHES): Conference Series*, vol. 1, no. 1, Nov. 2018. DOI.org (Crossref), <https://doi.org/10.20961/shes.v1i1.23648>
- Raj, T., Chauhan, P.K., Mehrotra, R., & Sharma, M. (2022). Importance of Critical Thinking in the Education. *World Journal of English Language*. <https://doi.org/10.5430/wjel.v12n3p126>
- Saputra, A. D., Septiani, L., Adriani, R., & Sundari, H. (2021). Game-based English learning for young learners: A systematic review. *JEdu: Journal of English Education*, 1(3), 109-122. <https://doi.org/10.30998/jedu.v1i3.4752>
- Vygotsky, L.S. (1978). *Mind in Society: The Development of Higher Psychological Processes*. Harvard Univ. Press.
- Yulian, R. (2021). The flipped classroom: Improving critical thinking for critical reading of EFL learners in higher education. *Studies in English Language and Education*, 8(2), 508-522. <https://doi.org/10.24815/siele.v8i2.18366>
- Zheng, X. L., Tu, Y. F., Hwang, G. J., Yu, J., & Huang, Y. B. (2024). Interweaving of self-regulated learning and game-based learning in higher education: A review of academic publications from 2009 to 2020. *Educational technology research and development*, 72(6), 3185-3216.
- Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory Into Practice*, 41(2), 64-70. [https://doi.org/10.1207/s15430421tip4102\\_2](https://doi.org/10.1207/s15430421tip4102_2)