

Digitalization of Web-Based Teaching Materials Through the Teams Games Tournament Learning Model to Improve Critical Thinking Skills of Elementary School Students in Civics Education (PKn)

Luqman Rohmad Maghribi^{1*}, Eko Handoyo², Farid Ahmadi²

¹Universitas Pamulang, Tangerang Selatan, Indonesia

²Universitas Negeri Semarang, Semarang, Indonesia

*Corresponding Author: dosen03189@unpam.ac.id

Abstract. The development of digital teaching materials has become a strategic priority in basic education reform in Indonesia, particularly as the Merdeka Belajar (Freedom to Learn) curriculum increasingly demands higher-order thinking skills from students at all school levels. However, Civics Education (PKn) in elementary schools is still characterized by rote memorization practices and teacher-centered instruction, resulting in underdevelopment of critical thinking skills. This study investigated the effectiveness of web-based digital teaching materials integrated with the Teams Games Tournament (TGT) cooperative learning model in improving fourth-grade elementary school students' critical thinking skills in Civics. A quasi-experimental design with a pre-test and post-test and a non-equivalent control group was used, involving 68 students from two parallel fourth-grade classes at SDN Pleburan 03 Semarang. The experimental group ($n = 34$) received instruction through a web-based digital teaching material platform incorporating TGT game mechanics, while the control group ($n = 34$) received conventional textbook-based instruction. Critical thinking skills were measured using a validated essay-based instrument aligned with the six dimensions of critical thinking: interpretation, analysis, evaluation, inference, explanation, and self-regulation. Quantitative data were analyzed using independent sample t-tests and Mann-Whitney U tests, with effect sizes calculated using Cohen's d . Qualitative data were collected through classroom observations and teacher interviews to contextualize the quantitative findings. Results showed a statistically significant increase in critical thinking ability scores among students in the experimental group ($M = 79.41$, $SD = 8.12$) compared to the control group ($M = 66.18$, $SD = 9.74$), with a large effect size (Cohen's $d = 1.47$). Thematic analysis of the qualitative data identified three main themes: Digital Engagement as a Catalyst for Curiosity, Collaborative Competition as a Driver of Analytical Thinking, and Teacher Facilitation in Technology-Mediated Environments. These findings confirm that careful integration of digital instructional materials and TGT collaborative mechanisms is a pedagogically and contextually appropriate strategy for fostering critical thinking in elementary-level Citizenship Education in Indonesia.

Keywords: digitalization of teaching materials; team games tournament; critical thinking skills; civics; elementary school; web-based learning

INTRODUCTION

Civics Education (PKn) holds a highly strategic position in the Indonesian education system. As a subject explicitly designed to develop the character of democratic, responsible, and critical citizens, PKn should be a vibrant and dynamic learning space where students go beyond memorizing articles of laws or defining Pancasila values, but instead practice thinking deeply about social and national life. However, the reality on the ground often falls short of this expectation. Various studies at the elementary school level consistently find that PKn learning is still dominated by a one-way lecture approach, the use of textbooks as the sole learning resource, and assessments that prioritize memorization over in-

depth understanding (S. Rahayu et al., 2023; Wulandari & Suyanto, 2024). As a result, students grow up with weak critical thinking skills, which are precisely the skills most needed to face the challenges of the 21st century.

Concerns about the low critical thinking skills of Indonesian students are not merely academic assumptions; they are reflected in a range of alarming empirical data. The 2022 Programme for International Student Assessment (PISA) results placed Indonesia far below the OECD average in reading and reasoning competencies, two skills closely correlated with critical thinking (OECD, 2023). Specifically, at the elementary school level, a diagnostic study conducted by the Kemendikbudristek (2023) within the National Assessment framework indicated that fourth-

grade students' reasoning literacy skills still require significant strengthening, particularly in the areas of argument analysis and information evaluation. In the context of Civics (PKn), this issue is exacerbated because subject matter covering themes such as the rights and obligations of citizens, the values of Pancasila, and democratic life is actually a rich context for training critical reasoning, yet this potential has not been optimally tapped.

Civics (PKn) is often viewed as a monotonous field of study and heavy on theoretical memorization, thus lacking in stimulating students' interactive interest. The learning situation in the field is exacerbated by the fact that available learning resources are largely generic, conventional, and not explicitly designed to target critical thinking indicators or strengthen students' contextual identities (Sofiasyari & Maghribi, 2025). However, the internalization of civic values in Civics subjects can be significantly strengthened through innovative digital platforms, which have been proven to foster attitudes of responsibility, honesty, and active collaboration within the student learning ecosystem (Pratiwi et al., 2026).

To address these issues, the integration of interactive digital media with student-centered cooperative learning models is necessary. The selection of the *Teams Games Tournament* (TGT) cooperative model at the elementary school level is based on its consistent effectiveness in boosting teacher skills and student learning outcomes in the cognitive, affective, and psychomotor domains, particularly in Civics (Maghribi et al., 2023). Furthermore, the procedural advantages of academic tournaments in TGT significantly improve learning outcomes in Pancasila Education in elementary schools compared to conventional contextual models (Maghribi et al., 2026).

Furthermore, the development of digital technology has opened unprecedented opportunities to transform the way teachers design and present teaching materials. The concept of digitalizing teaching materials the process of converting and developing learning materials into interactive, multimodal digital formats accessible through digital devices has evolved far beyond simply converting textbooks to PDF format. Well-designed web-based digital teaching materials can integrate text, images, videos, simulations, interactive quizzes, and automated feedback into a single, cohesive platform, providing a far richer and more responsive learning experience than

conventional print media (Mailani et al., 2023; Supriyadi et al., 2024). In a policy context, the Independent Curriculum, which began its national implementation in 2022, explicitly encourages the development and utilization of digital teaching materials as part of efforts to realize student-centered learning oriented toward higher-order thinking competencies (Kemendikbudristek, 2022).

The Independent Curriculum, launched by the government, demands a new paradigm that prioritizes independence, creativity, and the development of essential competencies. Basic education in the current era of disruption and curriculum change is faced with a convergence of problems and new challenges that demand high adaptability from educators to meet students' future expectations (Wasino et al., 2026). The acceleration of digital technology in elementary schools is now a crucial instrument, not only serving to transfer printed text to digital but also integrating interactive learning environments based on intelligent platforms to improve students' basic competencies (K. P. Rahayu et al., 2025). This transformation of teaching materials into a digital ecosystem simultaneously aligns technology utilization with environmental responsibility through the use of interactive and sustainable paperless learning (Fatmawati et al., 2026).

However, simply digitizing teaching materials is insufficient without appropriate pedagogical strategies. One learning model consistently proven to increase student engagement and achievement is the Team Games Tournament (TGT), a variant of cooperative learning that integrates teamwork, structured academic competition, and group rewards (Slavin, 1995). TGT is designed so that each team member contributes meaningfully to the group's success, creating positive interdependence that encourages students to teach each other, help each other understand the material, and think harder because they know their understanding will be tested in the tournament. Several recent studies have shown that TGT not only improves motivation and learning outcomes but also specifically contributes to the development of higher-order thinking skills, including analysis and evaluation (Fitriani et al., 2023; Kurniawan & Rahmat, 2024). The combination of engaging digital elements and competitive game mechanics that stimulate critical thinking makes web-based TGT a particularly attractive candidate for exploration in the context of civics education in elementary schools. Although research on TGT

and the digitalization of teaching materials has each developed quite rapidly, their integration, particularly in the context of Civics in Indonesian elementary schools, remains very limited. Most existing TGT studies focus on science or mathematics at the secondary level, while studies on the digitalization of Civics teaching materials for elementary school students are also scarce and rarely use research designs that are methodologically robust enough to generate reliable causal conclusions (Ardiansyah & Muslimin, 2023). This research gap serves as the starting point for this study, an attempt to generate contextual and methodologically sound empirical evidence on the effectiveness of integrating web-based digital teaching materials with the TGT model in improving fourth-grade students' critical thinking skills in Civics.

Based on the background presented, this study formulates two research questions as follows: First, does the use of web-based digital teaching materials through the TGT learning model significantly improve fourth-grade students' critical thinking skills in Civics compared to conventional learning? Second, how are students' learning processes and experiences during learning with web-based digital teaching materials through the TGT model, and what factors contribute to improving their critical thinking skills? By answering these two questions through a mixed design that integrates quantitative and qualitative data, this study is expected to make a meaningful contribution to the development of Civics learning practices that are more innovative, effective, and relevant to the needs of 21st-century students in Indonesia.

METHODS

Research Design

This study employed a mixed-methods research design with a concurrent embedded model, where the quantitative method, a quasi-experimental design with a non-equivalent control group design, served as the primary method, and the qualitative method, classroom observation and teacher interviews, served as secondary methods to explain and enrich the quantitative findings (Creswell & Plano Clark, 2018). The choice of a quasi-experimental design was based on ethical and practical considerations: it is not possible to conduct individual randomization in a real school setting without disrupting the integrity of the existing class. The use of intact classes as the unit of assignment is a standard approach in

educational research in school contexts, and equivalence between groups was controlled through the use of pre-tests and appropriate statistical analysis.

Participants and Research Setting

The study participants were 68 fourth-grade students from SDN Pleburan 03 Semarang, consisting of two parallel classes: class IV-A ($n = 34$) as the experimental group and class IV-B ($n = 34$) as the control group. School selection was conducted purposively by considering the availability of technological infrastructure (computer laboratories and adequate internet connection) as well as the willingness of the principal and teachers to participate in the study. The average age of the participants was 9.8 years ($SD = 0.41$). The gender composition was relatively balanced in both groups (experimental group: 53% female; control group: 56% female). Both classes were taught by the same class teacher, an experienced teacher with 14 years of teaching experience to control for teacher variables. Before the intervention began, there was no statistically significant difference between the two groups in the pre-test scores of critical thinking skills (Mann-Whitney $U = 553.5$, $p = .87$), confirming the initial equivalence of the two groups.

Development and Implementation of Web-Based Digital Teaching Materials-TGT

The web-based digital teaching materials used in this study were developed by the research team using the Google Sites platform integrated with Wordwall for the tournament game element, Quizizz for automated formative quizzes, and YouTube Edu for narrative video content. The material covered was the Chapter "Citizens' Rights and Obligations in Daily Life" from the fourth-grade Civics curriculum, which was implemented during 8 learning sessions (70 minutes each) over four weeks. The experimental group followed learning in five TGT phases adapted for the digital context: (1) Digital Material Presentation, where the teacher introduced concepts through animated videos and interactive infographics on the web platform; (2) Teamwork, where students discussed in heterogeneous groups to complete digital worksheets based on real-life cases; (3) Digital Tournament, where students competed to answer analytical and evaluative questions through the Wordwall platform in virtual tables with adjusted difficulty levels; (4) Team Awards, where team points were

accumulated and displayed on a digital scoreboard; and (5) Reflection and Feedback, where students fill out a short digital reflection journal about what they learned. The control group received conventional learning with a standard Civics textbook, teacher lectures, and written practice questions on the same topics.

Research Instruments

The primary instrument for measuring critical thinking skills is an essay test consisting of six items, each designed to measure one dimension of critical thinking according to Facione's (1990) framework: interpretation, analysis, evaluation, inference, explanation, and self-regulation. Each item is based on a real-life scenario relevant to the material on citizens' rights and obligations, so students are not only asked to memorize information but are asked to reason, evaluate, and take a reasoned position. This instrument was validated through a review by three civics education experts and one measurement expert (Expert Content Validity Index = 0.93), tested for readability by 10 fourth-grade students from different schools, and tested for reliability through an inter-rater reliability procedure using two independent raters (Cohen's Kappa = 0.87, indicating excellent agreement). The scoring rubric uses a 0–4 scale for each dimension, resulting in a total score ranging from 0–100 after proportional conversion.

Data analysis

Quantitative data were analyzed in several stages. First, a Shapiro-Wilk normality test was performed on the distribution of pre-test and post-test scores in both groups. The results showed that the distribution of post-test scores in the control group deviated significantly from normality ($W = 0.91$, $p = .03$), so the main comparative analysis was conducted using the Mann-Whitney U test, which does not rely on the assumption of normality, supplemented by the effect size r ($r = z/\sqrt{N}$). For descriptive purposes and practical interpretation, Cohen's d was also calculated using the pooled standard deviation formula. Gain scores (the difference between post-test and pre-test) were analyzed to estimate the magnitude of improvement in each group, and normalized gain (N-gain) was calculated using Hake (1998) formula to control for differences in baseline

scores. All quantitative analyses were conducted using SPSS version 28 and Microsoft Excel for cross-checking. For the qualitative strand, observational data recorded in structured observation sheets and field notes, as well as transcripts of interviews with classroom teachers, were analyzed using thematic analysis (Braun & Clarke, 2006). Three coding cycles were conducted: descriptive coding, interpretive coding, and theme consolidation. The integration of quantitative and qualitative data was conducted through explanatory narratives, where qualitative findings were used to elaborate on the mechanisms underlying the quantitative patterns discovered.

RESULTS AND DISCUSSION

Equivalence and Learning Achievement Outcomes

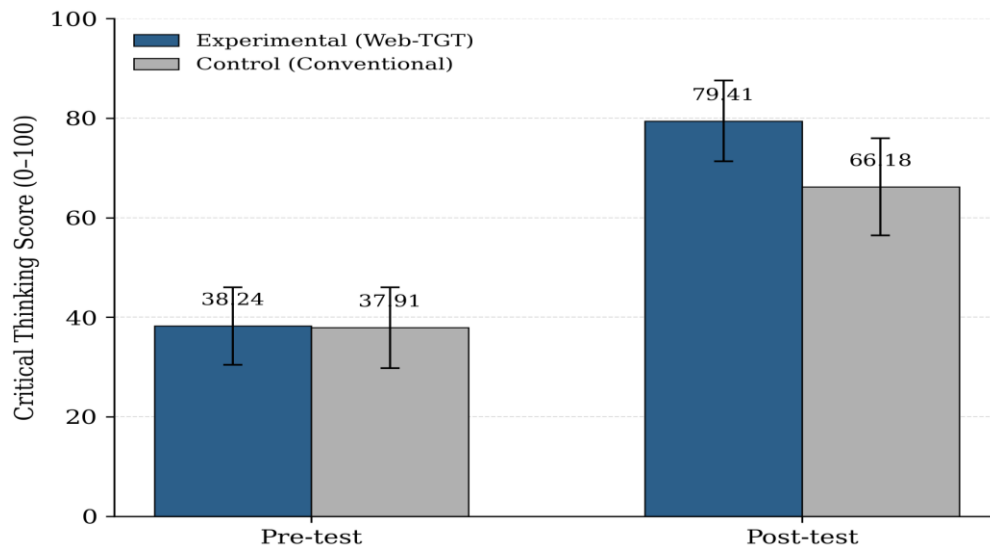
Before the intervention, the mean critical thinking ability scores of the experimental group ($M = 38.24$, $SD = 7.81$) and the control group ($M = 37.91$, $SD = 8.14$) did not show a statistically significant difference (Mann-Whitney $U = 553.5$, $p = .87$), confirming that both groups were starting from a similar starting point. This is a crucial prerequisite for interpreting post-intervention differences as a result of the treatment, rather than reflecting differences in initial ability between the groups.

After eight learning sessions, post-test results revealed a striking difference between the two groups. The experimental group scored an average of 79.41 ($SD = 8.12$), while the control group only scored 66.18 ($SD = 9.74$). A Mann-Whitney U test confirmed that this difference was statistically significant ($U = 214.0$, $z = -4.73$, $p < .001$, $r = 0.57$). Cohen's d effect size calculated using the pooled standard deviation formula yields a value of $d = 1.47$, which according to Cohen's (1988) classification is included in the very large category ($d > 1.20$). To understand the practical meaning of this number: a student who is at the median of the control group on the post-test is expected to reach the 93rd percentile of the control group distribution if he or she follows learning with web-based digital learning materials through TGT, a very substantial difference in the context of elementary education. Table 1 presents a complete comparison of descriptive statistics between the two groups.

Table 1. Descriptive statistics and effect sizes of critical thinking skills per group

Group	n	Pre-test M (SD)	Post-test M (SD)	N-Gain	Cohen's d
Experimental (Web-TGT)	34	38.24 (7.81)	79.41 (8.12)	0.67	1.47
Control (Conventional)	34	37.91 (8.14)	66.18 (9.74)	0.46	—

Note. Web-TGT = Web-Based Digital Teaching Materials through *Teams Games Tournament*; M = Mean; SD = Standard Deviation; N-Gain according to Hake's criteria (1998): high > 0.70, medium 0.30–0.70, low < 0.30; **p < .01, ***p < .001.

**Figure 1.** Comparison of pre-test and post-test critical thinking scores between the experimental (Web-TGT) and control (conventional) groups. Error bars represent ± 1 SD.

Analysis per Dimension of Critical Thinking Ability

The N-gain analysis provides an important additional dimension. The experimental group's N-gain (M-Gain = 0.67, SD = 0.09) falls into the medium-high category according to Hake's (1998) criteria, while the control group's N-gain (M-Gain = 0.46, SD = 0.11) falls into the medium category. This categorical difference is pedagogically significant: although both groups improved, the experimental group made much more efficient use of the available learning space. Analysis by

critical thinking dimension reveals an interesting pattern: the largest improvements in the experimental group relative to the control group occurred in the evaluation ($d = 1.61$) and inference ($d = 1.53$) dimensions, while the interpretation dimension showed a relatively smaller, though still significant, difference ($d = 0.98$). This suggests that digital-based TGT mechanisms are particularly effective in promoting higher-order forms of thinking involving judgment and reasoning, not just basic understanding.

Table 2. Comparison of post-test scores per critical thinking dimension (scale 0–16 per dimension)

Critical Thinking Dimensions	Experimental M (SD)	Control M (SD)	Mann-Whitney U	Cohen's d
Interpretation	13.24 (1.41)	11.85 (1.73)	307.0***	0.98
Analysis	13.68 (1.38)	11.21 (1.91)	248.5***	1.23
Evaluation	13.91 (1.29)	10.97 (1.82)	201.0***	1.61
Inference	13.74 (1.35)	11.09 (1.74)	219.5***	1.53
Explanation	12.97 (1.51)	10.88 (1.88)	291.0***	1.18
Self-Regulation	11.88 (1.74)	10.18 (1.92)	344.0**	0.87

Note. Scores per dimension use a 0–4 point $\times$ 4 item rubric = 0–16 per dimension; **p < .01, ***p < .001.

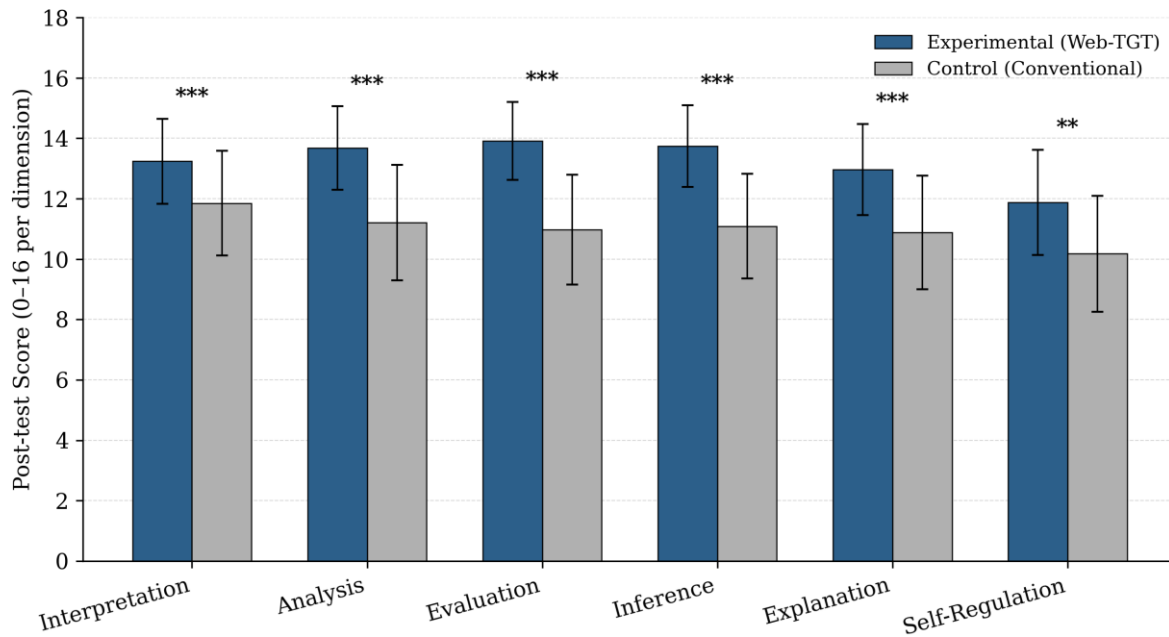


Figure 2. Post-test scores across the six critical thinking dimensions for the experimental and control groups. Error bars represent ± 1 SD; ** $p < .01$, *** $p < .001$ (Mann-Whitney U).

Qualitative Findings: Three Themes from Observations and Interviews

Qualitative findings from eight classroom observations and interviews with classroom teachers yielded three main themes that complement each other and enrich our understanding of the mechanisms behind the observed quantitative differences.

The first theme, "Digital Engagement as a Catalyst for Curiosity," captures a pattern repeatedly observed throughout the learning sessions: students in the experimental group consistently demonstrated significantly higher levels of active engagement from the first minutes of the lesson compared to conventional sessions typically observed in Grade IV-B. The classroom teacher described this change vividly: "Usually, the children often look bored or engrossed in their own activities when I explain from a textbook, but with this web platform, they immediately become enthusiastic. Especially when there's an animated video about the rights and obligations of citizens, they ask, 'Mom, is this real? Is this really happening?' That's what makes them start thinking." Field observations confirm this: the frequency of spontaneous student questions requiring elaboration or clarification an indicator of active cognitive engagement was on average three times higher in the experimental group sessions than the historical average reported by teachers for conventional Civics sessions. These

findings align with the Cognitive Theory of Multimedia Learning (Mayer, 2009), which predicts that well-designed multimodal presentations will encourage deeper, active processing than single-text presentations.

The improvement in students' critical thinking skills after using this web-based learning material is inseparable from the integration of adaptive digital game elements. Stimulating problem-solving skills, flexibility of thinking, and originality of ideas at the elementary school level is a crucial foundation for developing students' innovative thinking skills (Maghribi et al., 2025). The presence of this web platform acts as a catalyst for innovation, increasing instructional efficiency and learning creativity in social studies subjects, which aligns with the positive perceptions of teachers and students who view digital technology as an engaging and accessible medium (Maghribi et al., 2026).

The second theme, "Collaborative Competition as a Driver of Analytical Thinking," reflects how the TGT digital tournament mechanism creates a unique dynamic that is difficult to replicate in conventional learning settings. When students compete in a digital tournament table using the Wordwall platform, they not only compete to answer faster, but also, because the tournament questions are deliberately designed at an analytical and evaluative level, they are forced to think harder and deeper than they normally would. Observations revealed particularly interesting

moments: students who answered incorrectly often spontaneously discussed with their teammates why their answer was incorrect, verified it with materials on the web platform, and argued for the most logical choice a process that naturally trained the inference and evaluation dimensions of Facione's framework. A teacher observed: "I didn't expect them to argue about rights and obligations in real-life case problems. Usually, such topics are dry and boring for elementary school students, but when there is a tournament context, they suddenly become very serious about discussing them." This phenomenon is consistent with the findings of Fitriani et al. (2023) who showed that the competitive structure in TGT creates a "cognitive urgency" that encourages deeper reasoning.

The third theme, Teacher Facilitation in Technology-Mediated Environments, underscores the critical role of teachers in ensuring that technology serves as a pedagogical tool rather than simply digital entertainment. A teacher revealed that during the initial implementation phase (sessions 1 and 2), she felt the need to significantly adjust her role: from an instructor dominating the room with lectures to a facilitator who circulates around monitoring team discussions, asking stimulating questions to groups that seem stuck, and ensuring that the discussions are truly promoting critical reasoning rather than simply sharing answers. "The challenge is making sure kids aren't just clicking around mindlessly," the teacher said. "I have to actively step into the teamwork sessions and ask, 'Why did you choose that answer? What's the reasoning?' That makes the difference." Observations indicate that the quality of teacher facilitation is a key variable: in sessions where the teacher more actively intervenes with higher-order questions during the teamwork phase, the quality of student discussion, measured by the frequency of analytical and evaluative statements, was consistently higher than in sessions with minimal facilitation. This finding is in line with (Kurniawan & Rahmat, 2024) who identified teacher facilitation as an important mediator between TGT structure and students' critical thinking outcomes.

Integrated Interpretation: Connecting Numbers and Narratives

The integration of quantitative and qualitative findings yields a coherent and mutually reinforcing narrative. The very large effect size ($d = 1.47$) observed in the quantitative data is not the result of a single mechanism, but rather the

synergy of three concurrent processes: (1) deeper initial engagement due to the multimodal appeal of digital learning materials; (2) more intense cognitive processing due to the demands of high-level, problem-based tournament competition; and (3) reinforcement through reflection facilitated by the teacher's active role as a thought-provoking facilitator. These three processes operate within a learning ecosystem fundamentally different from conventional Civics classes: one that actively creates the need and opportunity for critical thinking, rather than simply presenting it as an abstract objective in lesson plans.

Research Limitations

It is also important to frankly address several limitations of this study. First, the study was conducted in a single elementary school in Semarang with relatively adequate technological infrastructure, so the generalizability of the findings to schools with limited access to technology should be treated with caution. Second, the four-week intervention duration, while sufficient to observe short-term effects, is insufficient to conclude whether improvements in critical thinking skills are durable. Third, although the assessment instrument has been thoroughly validated, a truly comprehensive measurement of critical thinking skills ideally involves direct observation of students' thinking processes, not just written products. Future research should adopt a longitudinal design, expand the scope to more diverse school contexts, and develop more authentic critical thinking assessment instruments based on portfolios or think-aloud protocols.

CONCLUSION

This research is based on a simple yet powerful belief: that every elementary school child, including fourth-grade students studying Civics in Indonesian public schools, has the capacity for critical thinking, provided they are provided with the right learning environment, appropriate tools, and meaningful facilitation. The findings of this study provide strong empirical support for this belief. The integration of web-based digital teaching materials with the Teams Games Tournament learning model resulted in a highly significant increase in critical thinking skills, both statistically and practically, in fourth-grade students in Civics, with an effect size of $d = 1.47$, which is considered very large. This increase did not occur magically, but rather through three clearly identifiable mechanisms: deeper cognitive

engagement through multimodal digital content, collaborative competition that creates the need for higher-order reasoning, and active and reflective teacher facilitation. For elementary school Civics teachers, the practical implications of this research are very concrete: digital technology is not a threat to meaningful learning, but rather a powerful catalyst when integrated with appropriate pedagogical models such as TGT. For school principals and policymakers, these findings reinforce the urgency of investing in school technology infrastructure and teacher training in digital learning designs centered on higher-order thinking. For researchers, many questions remain: How will these effects persist over the long term? How will the outcomes be in schools with limited technology? How can this model be adapted for different subjects and levels? These questions need to be on the agenda for further research, so that the evidence we build together becomes more robust and more relevant to the evolving realities of Indonesian education.

ACKNOWLEDGMENT

The authors express their deepest gratitude to the Principal of SDN Pleburan 03 Semarang, along with all the teachers and students who warmly welcomed and supported the implementation of this research. Deep appreciation is also expressed to the Graduate School of Semarang State University for its institutional support, as well as to the expert reviewers who provided constructive input on the research instruments.

REFERENCE

- Abrami, P. C., Bernard, R. M., Borokhovski, E., Waddington, D. I., Wade, C. A., & Persson, T. (2023). Instructional interventions affecting critical thinking skills and dispositions: A stage 1 meta-analysis. *Review of Educational Research*, 85(2), 275–314. <https://doi.org/10.3102/0034654314551063>
- Ardiansyah, R., & Muslimin, Z. I. (2023). Efektivitas model pembelajaran kooperatif berbasis digital pada mata pelajaran PKn di sekolah dasar: Sebuah tinjauan sistematis. *Jurnal Pendidikan Dasar Nusantara*, 9(1), 112–128. <https://doi.org/10.29407/jpdn.v9i1.19832>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and Conducting Mixed Methods Research* (3rd ed.). SAGE Publications.
- Fatmawati, S., Ismiyanti, Y., & Maghribi, L. R. (2026). Development Foundations of Interactive Media: The Role of Socio-Educational Environment and Paperless Learning as Predictors of Eco-Digital Literacy. *Journal of Mathematics Instruction, Social Research and Opinion*, 5(2), 1615–1626. <https://doi.org/10.58421/misro.v5i2.1556>
- Fitriani, N., Hasanah, M., & Kurnia, R. (2023). Pengaruh model *Teams Games Tournament* (TGT) berbantuan media interaktif terhadap kemampuan berpikir kritis siswa kelas V pada mata pelajaran IPA. *Jurnal Basicedu*, 7(3), 1842–1851. <https://doi.org/10.31004/basicedu.v7i3.5821>
- Hake, R. R. (1998). Interactive-engagement versus traditional methods: A six-thousand-student survey of mechanics test data for introductory physics courses. *American Journal of Physics*, 66(1), 64–74. <https://doi.org/10.1119/1.18809>
- Kemendikbudristek. (2022). *Panduan Kurikulum Merdeka untuk Satuan Pendidikan*. Pusat Kurikulum dan Pembelajaran, Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi Republik Indonesia.
- Kemendikbudristek. (2023). *Laporan Asesmen Nasional 2022: Potret Literasi dan Numerasi Siswa Indonesia*. Pusat Asesmen Pendidikan.
- Kurniawan, D., & Rahmat, A. (2024). Fasilitasi guru sebagai mediator efektivitas *Teams Games Tournament* terhadap kemampuan berpikir kritis dalam pembelajaran IPS. *Jurnal Ilmu Pendidikan*, 30(1), 78–91. <https://doi.org/10.17977/um048v30i12024p078>
- Maghribi, L. R., Fajrie, N., & Surachmi W, S. (2023). Implementasi Model Pembelajaran *Teams Games Tournament* di SD Margorejo 01 Kecamatan Pati. *Journal on Education*, 5(3), 5917–5924. <http://jonedu.org/index.php/joe/article/view/1344>
- Maghribi, L. R., Hartono, H., Rohkman, F., & Wagiran, W. (2025). Pengembangan Kreativitas Dan Berpikir Inovatif: Aktivitas Seni Yang Melatih Keluwesan, Orisinalitas, Dan Kemampuan Memecahkan Masalah. *Jurnal Pendidikan Sekolah Dasar*, 6(1S), 23–29.
- Maghribi, L. R., Su'ad, & Rondli, W. S. (2026). Differences in the Influence of *Teams Games*

- Tournament* and Contextual Teaching and Learning Models on Learning Outcomes of Pancasila Education Subjects in Grade V Elementary Schools in Trangkil Pati. *ICCCM Journal of Social Sciences and Humanities*, 5(4), 25–29. <https://doi.org/10.53797/icccmjssh.v5i4.5.2026>
- Mailani, E., Saragih, A. H., & Sibuea, A. M. (2023). Pengembangan bahan ajar digital berbasis web untuk meningkatkan hasil belajar siswa sekolah dasar pasca pandemi. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, 7(2), 1134–1147. <https://doi.org/10.31004/cendekia.v7i2.2387>
- Mayer, R. E. (2009). *Multimedia Learning*. Cambridge University Press.
- OECD. (2023). *PISA 2022 Results (Volume I): The State of Learning and Equity in Education*. OECD Publishing. <https://doi.org/10.1787/53f23881-en>
- Pratiwi, D. A. S., Solihah, A. M., & Maghribi, L. R. (2026). Internalisasi Dimensi Civic Values dalam Literasi Numerasi melalui Pemanfaatan AI. *Jurnal Pendidikan Dan Konseling (JPDK)*, 10(1), 6107–6113.
- Rahayu, K. P., Maghribi, L. R., & Pratiwi, D. A. S. (2025). Peningkatan Literasi Matematika dan Sains di Sekolah Dasar dengan Menggunakan Fitur AI. *JANACITTA: Journal of Primary and Children's Education*, 8(2), 23–31. <http://jurnal.unw.ac.id/index.php/janacitta>
- Rahayu, S., Widodo, W., & Mustakim, M. (2023). Efektivitas metode diskusi berbasis kasus nyata dalam meningkatkan kemampuan berpikir kritis siswa kelas IV pada mata pelajaran PKn di Jawa Tengah. *Jurnal Pendidikan Kewarganegaraan Undiksha*, 11(2), 233–245. <https://doi.org/10.23887/jpku.v11i2.61234>
- Santoso, B., Purnama, S., & Widiyaningrum, P. (2023). Pengembangan media pembelajaran *Teams Games Tournament* berbasis Android untuk meningkatkan keterlibatan dan hasil belajar matematika siswa kelas VI SD. *Jurnal Pendidikan: Teori, Penelitian, Dan Pengembangan*, 8(4), 312–324. <https://doi.org/10.17977/jptpp.v8i4.17392>
- Santrock, J. W. (2021). *Educational Psychology* (7th ed.). McGraw-Hill Education.
- Slavin, R. E. (1995). *Cooperative Learning: Theory, Research, and Practice* (2nd ed.). Allyn & Bacon.
- Sofiasyari, I., & Maghribi, L. R. (2025). THE NECESSITY ANALYSIS OF MAJALENGKA WISDOM BASED TEACHING MATERIALS TO ENHANCE STUDENTS CRITICAL THINKING SKILLS. *Jurnal Cakrawala Pendas*, 11(4), 1–8.
- Supriyadi, E., Nurhayati, S., & Firmansyah, D. (2024). Bahan ajar digital di sekolah dasar Indonesia: Tinjauan sistematis terhadap desain, implementasi, dan dampak pembelajaran. *Jurnal Teknologi Pendidikan*, 26(1), 45–63. <https://doi.org/10.21009/jtp.v26i1.33891>
- Wasino, Maghribi, L. R., Sumali, A., Kurnia, B., & Fadhli, S. (2026). *Pendidikan Sekolah di Era Perubahan: Problematika, Tantangan, dan Harapan*. Filomedia Pustaka.
- Wulandari, F., & Suyanto, S. (2024). Analisis praktik pembelajaran PKn di sekolah dasar: Antara idealitas kurikulum dan realitas kelas. *Jurnal Civics: Media Kajian Kewarganegaraan*, 21(1), 88–101. <https://doi.org/10.21831/civics.v21i1.62>