

Developing Petualangan Siaga: A TGT-Based Board Game to Enhance Students' Cooperation Skills in Civic Education

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Abstract

Developing cooperation skills in first-grade students remains a challenge in Civic Education, particularly due to the limited use of interactive and collaborative learning media. This study aimed to develop "Petualangan Siaga," a board game integrated with the Teams Games Tournament (TGT) learning model, and to examine its effectiveness in improving students' cooperation skills. The study employed a Research and Development (R&D) method using the 4D model consisting of Define, Design, Develop, and Disseminate stages, combined with a quasi-experimental pretest-posttest control group design. The participants were first-grade students from seven elementary schools in Jakarta. Data were collected through expert validation sheets, teacher interviews, questionnaires, observation sheets, and cooperation skills tests. The data were analyzed using descriptive and inferential statistical techniques. The findings showed that the developed board game was valid and feasible for classroom implementation. Quantitatively, the mean difference between the pretest and posttest scores reached -18.554, and the paired sample t-test showed a statistically significant improvement ($p < 0.05$). These findings indicate that the "Petualangan Siaga" board game integrated with the TGT learning model effectively improved students' cooperation skills. The media also provides a more meaningful, interactive, and student-centered learning experience by integrating Pancasila values through collaborative gameplay and teamwork activities.

1. Introduction

Civic Education at the elementary school level plays an important role in shaping students' character and instilling the fundamental values of citizenship from an early age. According to the Decree of the Head of the Education Standards, Curriculum, and Assessment Agency of the Ministry of Education, Culture, Research, and Technology Number 033/H/KR/2022, Civic Education is designed to develop students who embody the values of Pancasila in their daily lives (Kemendikbudristek, 2022). In addition to cognitive achievement, students are also expected to develop soft skills that prepare them to face global challenges. Values such as religiosity, nationalism, independence, integrity, and mutual cooperation are considered essential character foundations that should be nurtured from early childhood education (Pratama et al., 2025). Furthermore, education in the 21st century requires students to master the 4C competencies, namely critical thinking, creativity, communication, and collaboration (Nurhayati et al., 2024). Collaboration is a key twenty-first-century competency that promotes effective communication, collective problem-solving, and shared responsibility among students (Griffin et al., 2012). Early collaborative learning provides a strong foundation for students' academic and social development. Among these competencies, collaboration or cooperation skills are particularly important in elementary education because they support students' ability to interact positively, work in teams, and participate actively in social learning environments.

However, the reality of classroom learning shows that Civic Education in first-grade elementary classrooms is still largely dominated by conventional teaching methods, such as lectures and individual assignments. Research shows that cooperative learning is more effective than teacher-centered instruction in developing young learners' social competencies. It fosters positive interdependence, individual accountability, and collaborative problem-solving, supporting both social and academic development (Gillies, 2016; Johnson & Johnson, 2009). Character reinforcement related to cooperation is often not optimally integrated into the learning process. As a result, opportunities for social interaction among students remain limited, and students' cooperation skills are not well developed. This condition aligns with the view that teacher-centered learning tends to make students passive and less involved in classroom activities (Sulistio et al., 2022). Based on teachers' observations, the weak cooperation skills among first-grade students are also influenced by their limited experience in collaborative activities and their strong egocentric tendencies. This finding is consistent with Piaget's theory of cognitive development, which explains that children aged two to seven years are in the

preoperational stage and tend to demonstrate egocentric thinking patterns (Novitasari et al, 2020). At this stage, children often focus more on themselves and experience difficulties in understanding the perspectives of others, which may affect their ability to cooperate effectively during learning activities.

To address this issue, innovative learning approaches are needed to create active, meaningful, and enjoyable learning experiences that encourage positive social interaction among students. One promising approach is the use of game-based learning media. Game-based learning enhances students' motivation, engagement, and collaborative behaviors by promoting active participation, immediate feedback, and meaningful learning experiences (Plass et al., 2015; Qian & Clark, 2016). This approach is also in line with the Deep Learning approach, which emphasizes mindful, meaningful, and joyful learning experiences that enable students not only to memorize concepts but also to deeply understand and internalize learning materials (Suwandi et al., 2024). In current Civic Education practices, teachers commonly use visual media and online educational games during classroom instruction. Visual media are considered effective in attracting students' attention and increasing their curiosity because learning materials are presented concretely through text, pictures, animation, and movement (Tawari, 2022). In addition, online educational games provide interactive and enjoyable learning experiences for students (Nurjanah et al., 2024). Nevertheless, these learning media often focus primarily on cognitive achievement and provide limited opportunities for the development of social skills, particularly cooperation. Many digital educational games are also designed for individual use, resulting in minimal collaborative interaction among students during classroom activities.

One learning strategy considered effective for fostering cooperation skills is the cooperative learning model Teams Games Tournament (TGT). TGT combines teamwork, games, and friendly competition within an enjoyable learning atmosphere. Studies indicate that the Teams Games Tournament (TGT) model enhances students' participation, teamwork, collaboration, and learning outcomes through structured cooperative competition and peer interaction (Slavin, 2015). Through collaborative group activities and tournaments, students are encouraged to interact, communicate, and support one another during the learning process. Educational board games also have the potential to increase student participation, develop social skills, and strengthen positive attitudes such as cooperation, empathy, and tolerance through direct experiences. In addition, learning media designed according to children's developmental characteristics can help students better understand the concepts being taught. Previous studies have shown that the implementation of the TGT cooperative learning model can improve students' cooperation skills (Wulandari et al., 2024).

Although previous meta-analyses have confirmed the educational benefits of game-based learning and gamification, most studies have focused on digital games, academic achievement, motivation, or higher-order thinking skills (Wu et al., 2012; Sailer & Homner, 2020). Relatively little attention has been given to physical educational board games integrated with cooperative learning models, particularly the Teams Games Tournament (TGT) model, for developing cooperation skills among first-grade students in Civic Education. Existing studies also tend to emphasize academic achievement and student engagement rather than focusing on affective aspects such as cooperation skills. Furthermore, few learning media have been specifically developed based on the developmental characteristics of first-grade elementary students while simultaneously integrating Pancasila values into collaborative learning activities. Therefore, this study seeks to fill this gap by developing "Petualangan Siaga," an educational board game based on the Teams Games Tournament (TGT) learning model.

The name "Petualangan Siaga" stands for *MiSI Penjaga Garuda*, reflecting the integration of Pancasila values into the learning activities. The board game is specifically designed for first-grade students and incorporates challenges, teamwork, and interactive game elements that encourage students to cooperate while learning Civic Education concepts and to examine its validity and effectiveness in enhancing students' cooperation skills in Civic Education. This study is expected to contribute to the development of innovative learning media and instructional models that support not only students' cognitive development but also the strengthening of affective competencies, particularly cooperation skills, in elementary education.

2. Method

2.1. Research Design

This study uses a Research and Development (R&D) method using a mixed-methods approach with an exploratory sequential design (see Figure 1). In this design, qualitative data were collected and analyzed first, followed by quantitative data collection to strengthen the findings (Sugiyono, 2013). This approach was chosen because the study aimed not only to develop an educational product but also to evaluate its effectiveness in improving students' cooperation skills in Civic Education. The development process followed the 4D model proposed by Thiagarajan et al., consisting of four stages: Define, Design, Develop, and Disseminate. The 4D model was selected because it provides a systematic framework for developing instructional media and is widely used in educational research. In addition, this study referred to Sukmadinata's R&D procedure, which simplifies the Borg and Gall model into three stages: preliminary study, development, and testing (Mawardi, 2014)

At the Define stage, a needs analysis was conducted to identify students' difficulties in cooperation and curriculum demands related to cooperation skills. The Design stage focused on developing the structure, content, and gameplay of the "Petualangan Siaga" board game integrated with the Teams Games Tournament (TGT) learning model. The Develop stage involved expert validation and limited field testing, while the Disseminate stage was conducted through classroom implementation to examine the effectiveness of the board game in enhancing students' cooperation skills. The synchronization between Sukmadinata's R&D procedure and Thiagarajan's 4D development model is presented in the following figure.

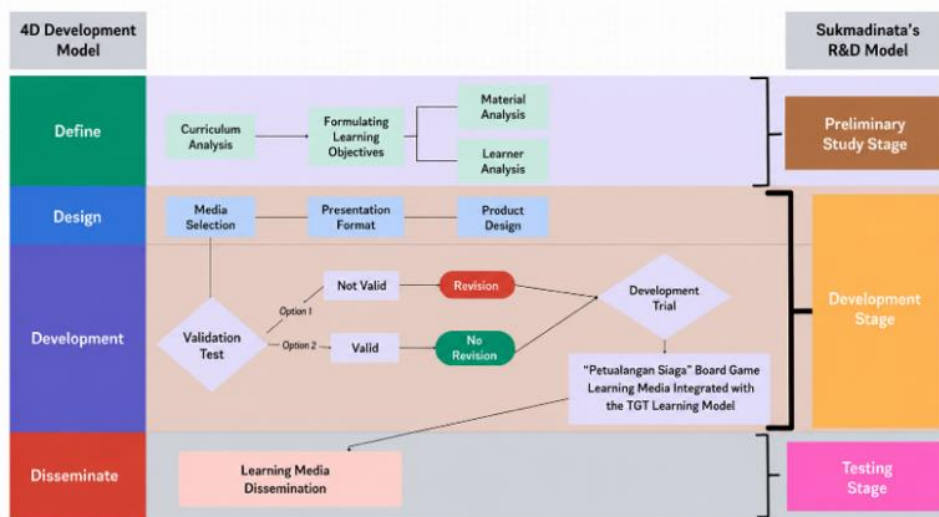


Figure 1. Synchronization of Sukmadinata's R&D Stages and Thiagarajan's 4D Development Model

2.2. Participants

The study involved 7 elementary schools in West Jakarta, Indonesia. Participants in this study were first-grade elementary school students enrolled in Civic Education classes, with a total of 193 students. The participants were divided into two groups, the experimental group and the control group. The experimental group consisted of 115 students who learned using the "Petualangan Siaga" board game integrated with the Teams Games Tournament (TGT) learning model, while the control group consisted of 78 students who learned using puzzle media accompanied by direct questioning activities from the teacher. The participants were selected using purposive sampling, considering their relevance to the research objectives, particularly first-grade students who had participated in Civic Education learning activities related to cooperation skills. This sampling technique was chosen to ensure that the implementation of the developed board game media aligned with the learning context and the developmental characteristics of the target users (Creswell, 2009).

2.3. Instrument

The instruments used in this study consisted of expert validation sheets, cooperation skills questionnaires, interview guidelines, and observation sheets. The expert validation sheets were used to evaluate the feasibility of the developed "Petualangan Siaga" board game in terms of instructional design, learning materials, media quality, and cooperation skills assessment. The validity of the instruments was established through expert judgment involving instructional design experts, Civic Education material experts, media experts, and assessment experts.

The instructional design validation referred to the Regulation of the Ministry of Education Number 16 of 2022, covering general information, core components, and supporting attachments (Kemendikbudristek, 2022). The material validation focusing on content feasibility, presentation, and language aspects adapted to Civic Education materials (Hafidzah et al., 2021). The media validation adopted the framework proposed by Arsyad including content quality, instructional quality, technical quality, and aesthetic aspects supported by Djelantik's theory (Syam et al., 2015). In addition, the cooperation skills assessment validation was aligned with the Regulation of the Minister of Primary and Secondary Education Number 10 of 2025, Article 7, which emphasizes caring attitudes, sharing behavior, and teamwork in school and family environments (Kemendikdasmen, 2025). Revisions were made based on expert feedback to improve the clarity, relevance, and suitability of the instruments for first-grade elementary school students. Reliability was supported through expert review and limited trials before implementation.

The cooperation skills questionnaire consisted of 30 items completed by students using a five-point Likert scale. Participants were asked to respond to each statement using the following scale: Strongly Agree (5), Agree (4), Slightly Agree (3), Disagree (2), and Strongly Disagree (1) (Sholekhah & Mawardi, 2024). The questionnaire

was administered as both a pretest and posttest instrument to measure students' cooperation skills before and after the implementation of the "Petualangan Siaga" board game. The questionnaire assessed several aspects of cooperation skills, including participation, teamwork, communication, responsibility, caring attitudes, and sharing behavior during learning activities. The cooperation skill indicators were developed based on the attitude components proposed by Ma'rat, namely the cognitive, affective, and conative components (Sholekhah & Mawardi, 2024).

2.4. Data Analysis Technique

Data analysis in this study was conducted using both descriptive and inferential statistics with the assistance of IBM SPSS Statistics for Windows version 25 to examine the effectiveness of the "Petualangan Siaga" board game integrated with the Teams Games Tournament (TGT) learning model in improving first-grade students' cooperation skills. The analyzed quantitative data consisted of students' questionnaire scores obtained from the pretest and posttest, as well as expert validation and response questionnaire results. Descriptive statistical analysis was used to describe the data distribution, including the mean, minimum score, maximum score, and standard deviation, and to determine the feasibility and effectivity of the developed media. Prior to hypothesis testing, prerequisite tests consisting of validity, reliability, normality and homogeneity tests were conducted.

The normality test was performed using the Kolmogorov-Smirnov test to determine whether the data were normally distributed. Data were considered normally distributed if the significance value (p) was greater than 0.05 (Sugiyono, 2013). Furthermore, the homogeneity test was conducted using Levene's Test to determine whether the data variances between groups were homogeneous. The data were considered homogeneous if the significance value was greater than 0.05 (Ghozali, 2018). After all assumptions were fulfilled, inferential statistical analysis was conducted using the paired sample t-test and independent sample t-test at a significance level of 0.05. The paired sample t-test was used to examine differences between pretest and posttest scores within each group, while the independent sample t-test was used to compare differences between the experimental and control groups.

In addition, qualitative data were collected through teacher interviews, student interviews, and classroom observations to identify students' learning characteristics, classroom needs, and responses toward the implementation of the "Petualangan Siaga" board game. The qualitative data were analyzed using MAXQDA to identify recurring themes related to cooperation skills, classroom conditions, and instructional needs. The findings from the qualitative analysis were used to support the development and implementation of the learning.

3. Results and Discussion

This section presents the results of the study based on the research objectives. The findings are divided into two parts: (1) the feasibility of the "Petualangan Siaga" board game based on expert validation, and (2) the effectiveness of the board game in improving first-grade students' cooperation skills in Civic Education learning.

3.1. Results

This section presents the findings of the study based on the research objectives, namely identifying the learning media currently used in Civic Education learning, analyzing the limitations of existing media in fostering cooperation skills, and examining the feasibility and effectiveness of the "Petualangan Siaga" board game integrated with the Teams Games Tournament (TGT) learning model.

3.1.1. Existing Learning Media in Civic Education Learning

The results of interviews and classroom observations showed that the learning media commonly used in first-grade Civic Education classes were visual media, such as pictures and videos, as well as online educational games. Teachers stated that these media were effective in attracting students' attention and supporting cognitive understanding of the material. However, most learning activities were still conducted individually, resulting in limited opportunities for students to interact and cooperate with their peers during the learning process. Observation results also indicated that students tended to show egocentric behavior during classroom activities. Several students preferred to work independently, had difficulty sharing tasks, and were less active in helping group members. These findings suggest that the existing learning media had not optimally facilitated the development of students' cooperation skills in Civic Education learning.

3.1.2. Needs Analysis and Limitations of Existing Learning Media

The findings revealed several limitations of the learning media currently used in the classroom. First, the media mainly focused on cognitive achievement rather than affective aspects such as cooperation skills. Second, most classroom activities were teacher-centered and provided limited opportunities for collaborative interaction among students. Third, online educational games were generally designed for individual play, causing students to wait for turns and reducing active participation during learning activities. Teachers also reported that students often experienced difficulties in group work activities, particularly in sharing

responsibilities, communicating with peers, and respecting others' opinions. Therefore, a more interactive and collaborative learning medium was considered necessary to support the development of cooperation skills among first-grade students. At the analysis stage, data collection was carried out through interviews with the first-grade teacher and classroom observations. The network map generated from the interview and observation results is presented in Figure 2.

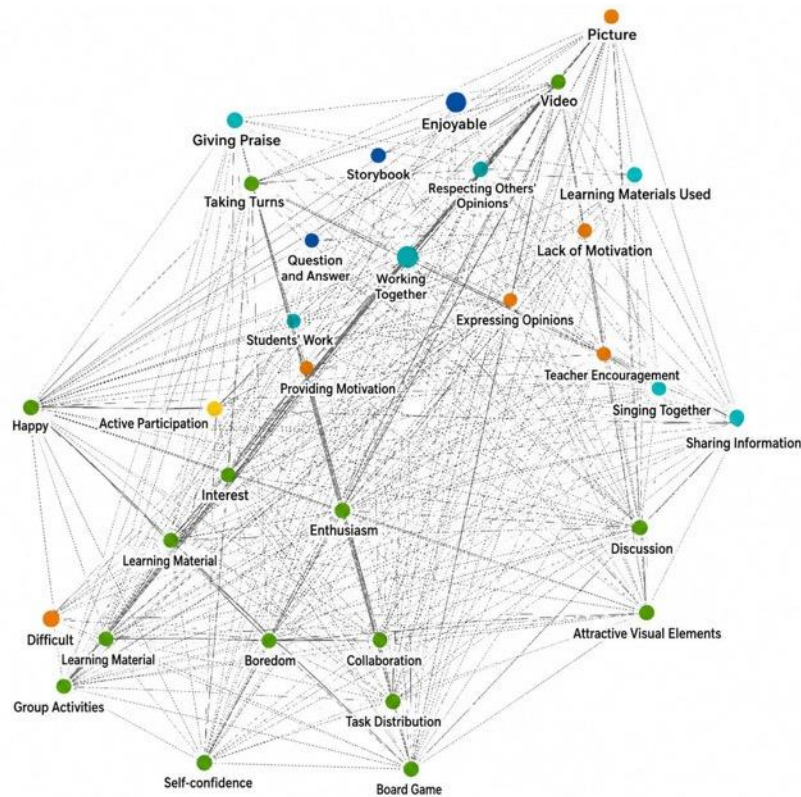


Figure 2. Network Map of Interview and Observation Results Generated by MAXQDA

3.1.3. Feasibility of the “Petualangan Siaga” Board Game

The development stage began with designing the “Petualangan Siaga” board game using graphic design software. The board game consisted of several components, including a game board, challenge cards, question cards containing Pancasila content, game pawns, and a user guide (see Figure 3). The media was designed to be attractive and suitable for first-grade elementary school students. The game also integrated the Teams Games Tournament (TGT) learning model to encourage students to cooperate, communicate, and participate actively during learning activities.



Figure 3. Board Game and Flash Card Design

After the development process was completed, the board game was validated by a Civic Education material expert, an instructional design expert, a media expert before it is used in the classroom. The validation process aimed to examine whether the developed media met instructional standards and was appropriate for use in first-grade Civic Education learning. The level of product validity was determined based on the percentage score obtained from expert validation results. The validity criteria and product revision categories used in this study are presented in Table 1.

Table 1. Criteria for Validity Level

Percentage Range	Validity Level	Criteria
81%-100%	Very High	No Revision Required
61%-80%	High	No Revision Required
41%-60%	Fair	Revision Required
21%-40%	Low	Revision Required
1%-20%	Very Low	Revision Required

The expert assessment focused on content suitability, instructional design, media quality, language clarity, and cooperation skill indicators, as specified in the validation instruments. The results of the expert validation are presented in Table 2, Table 3 and Table 4.

Table 2. Results of Material Expert Validation Test

No	Aspect	Score
1	Feasibility	54
2	Presentation	43
3	Language	39
Total Score		136
Percentage (Total Score/Maximum Score) x 100% = (136/ 155) x 100%		88%

Table 3. Results of Media Expert Validation

No	Aspect	Score
1	Content and Objective Quality	10
2	Instructional Quality	14
3	Technical Quality	9
4	Scientific	16
5	Philosophical	18
Total Score		67
Percentage (Total Score/Maximum Score) x 100% = (67/ 100) x 100%		67%

The validation results indicated that the developed board game was categorized as highly feasible for classroom implementation.

Table 4. Results of Instructional Design Validation

No	Aspect	Score
1	General Information	12
2	Core Components	24
3	Appendix	4
Score		40
Percentage (Total Score/Maximum Score) x 100% = (40/ 50) x 100%		80%

The instructional design expert stated that the board game activities were aligned with the learning objectives and the characteristics of first-grade elementary school students. The material expert confirmed that the Civic Education content integrated into the game was appropriate and relevant to the curriculum. Meanwhile, the media expert evaluated the board game positively in terms of visual appearance, technical quality, and attractiveness for young learners.

Based on the expert validation results across all evaluated aspects (Tables 2, 3, and 4), the “Petualangan Siaga” board game learning media obtained an average validity score of 78.33%, which was categorized as high validity. The validation results indicated that the developed board game was categorized as highly feasible for classroom implementation and well aligned with the instructional objectives aimed at improving elementary students’ cooperation skills.

3.1.4. Descriptive Statistics of Students' Cooperation Skills

The assessment expert specifically evaluated the suitability of the cooperation skills questionnaire indicators, scoring system, clarity of statements, and alignment with the objectives of measuring students' cooperation skills.

Table 5. Results of Assessment Validator Test

No Of Item	Aspect	Score
1- 7	Content Validity	35
8 - 12	Construct Validity	20
13 - 16	Language Aspect	16
17 - 18	Construction Aspect	5
19 - 20	Context Suitability	10
Total Score		86
Percentage (Total Score/Maximum Score) x 100% = (86/ 100) x 100%		86%

The results of the expert validation conducted by the assessment validator showed that the pretest and posttest instruments obtained a percentage score of 86%, which was categorized as highly valid and appropriate for use as research instruments. In addition, before used, the instruments were tested on 32 students to examine item validity using Pearson Correlation analysis through IBM SPSS Statistics. The instruments that had passed the validity and reliability tests were then administered to students before and after the treatment. The pretest and posttest data measured students' cooperation skills in both the experimental and control groups. All the items were found to meet the requirements for validity and had sufficient reliability for the purposes of research. The results can be seen in the following tables. The validity test used in the study was product moment correlation techniques. A question item is declared as valid if the value of $r_{count} > r_{table}$. The research sample was 32, $df (n-2)$ 30, then the r table value was 0.349. The results of the validity test can be seen in Table 6.

Table 6. Validity Test Results

No of Item	Attitude Components	Pearson's Correlation	r table	Result
1	Cognitive Component	.796	.349	Valid
2		.788	.349	Valid
3		.850	.349	Valid
4		.730	.349	Valid
5		.787	.349	Valid
6		.739	.349	Valid
7		.725	.349	Valid
8		.651	.349	Valid
9		.739	.349	Valid
10		.773	.349	Valid
11	Affective Component	.765	.349	Valid
12		.777	.349	Valid
13		.811	.349	Valid
14		.695	.349	Valid
15		.777	.349	Valid
16		.844	.349	Valid
17		.788	.349	Valid
18		.758	.349	Valid
19		.836	.349	Valid
20		.850	.349	Valid
21	Conative Component	.713	.349	Valid
22		.850	.349	Valid
23		.775	.349	Valid
24		.691	.349	Valid
25		.793	.349	Valid
26		.833	.349	Valid
27		.738	.349	Valid
28		.833	.349	Valid
29		.788	.349	Valid
30		.757	.349	Valid

The results showed that all 30 questionnaire items obtained a significance value of $p < 0.05$, indicating that all items were valid and met the feasibility criteria for measuring students' cooperation skills. Furthermore, the reliability of the instrument was analyzed using Cronbach's Alpha through IBM SPSS Statistics. Reliability test is a test to see the consistency of respondents' answers to questions in the questionnaire. According to Arikunto, the variable is said to be reliable if it has a Cronbach Alpha value > 0.60 (Saputri et al., 2023). The reliability test results of a Cronbach's Alpha coefficient of 0.977, indicating that the instrument had very high reliability.

Therefore, the instrument was considered reliable and consistent in measuring the variables examined in this study. The validity and reliability results support the use of the instrument during the data collection process and strengthen the trustworthiness of the research findings.

3.1.5. Effectiveness of the “Petualangan Siaga” Board Game

The effectiveness of the “Petualangan Siaga” board game was examined through pretest and posttest results in both the experimental and control groups. The findings showed that students in the experimental group demonstrated higher improvement in cooperation skills compared to students in the control group. Pre-test and post-test results data were analyzed using descriptive and inferential statistics with IBM SPSS Statistics. The first stage is to describe the distribution of the data through the calculation of means, medians, and standard deviations. The second stage is the testing of parametric statistical assumptions using the Shapiro-Wilk test for the normality test and the Levene's test for the homogeneity test of variance. If both assumptions are met, the analysis is followed by an paired sample t-test. To show the distribution of students’ cooperation skills before and after the intervention, the pre-test and post-test descriptive statistics are presented in Table 7.

Table 7. Descriptive Statistics Pre-Test and Post-Test

Central Tendencies	Pre-Test		Post-Test	
	Control	Experiments	Control	Experiments
Mean	90.99	90.41	99.54	115.75
Median	91.00	91.00	99.50	115.00
Std. Deviation	4.362	4.768	4.974	8.508
Minimum	83	81	88	93
Maximum	102	103	111	136

Based on the pretest results, the cooperation skills of the experimental and control groups were relatively equivalent, indicating that both groups had similar abilities before the treatment was implemented. However, the posttest results showed that the experimental group using the “Petualangan Siaga” board game integrated with the TGT learning model demonstrated greater improvement in cooperation skills compared to the control group. The higher mean score achieved by the experimental group indicates that the use of the board game media contributed positively to improving students’ cooperation skills during Civic Education learning activities. The analysis included assumption testing through normality and homogeneity tests, followed by independent sample t-tests and paired sample t-tests to analyze differences within and between groups. As a prerequisite analysis, the normality of the pretest and posttest data was examined using the Kolmogorov-Smirnov test.

Table 8. Pre-Test and Post-Test Normality Test

Test	Group	Kolmogorov-Smirnov			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Pre-Test	Control	.077	78	.200	.981	78	.291
	Experiment	0.74	115	.175	.982	115	.119
Post-Test	Control	.077	78	.200	.986	78	.554
	Experiment	.073	115	.183	.988	115	.422

The results indicated that both datasets were normally distributed ($p > 0.05$), thereby meeting the assumptions for conducting parametric statistical analysis. In the experimental group, the normality test produced significance values of $p = 0.119$ for the pretest and $p = 0.422$ for the posttest, indicating that the data were normally distributed. Similarly, the control group showed significance values of $p = 0.291$ for the pretest and $p = 0.554$ for the posttest, which also met the assumption of normal distribution.

Prior to the hypothesis testing, prerequisite tests consisting of normality and homogeneity tests were conducted. Furthermore, the homogeneity test using Levene’s Test showed significance values of 0.439 for the pretest and 0.000 for the posttest, indicating that the data fulfilled the homogeneity assumption.

Table 9. Homogeneity Test Results

Data Set	F	Sig.(p-Value)
Pre-Test	.600	.439
Post-Test	21.711	.000

Since all prerequisite assumptions were satisfied, further analysis using the paired sample t-test was conducted. The effect of the “Petualangan Siaga” board game on students’ cooperation skills was analyzed using parametric statistical analysis through the paired sample t-test. The results of the paired sample t-test are presented in Table 10.

Table 10. Paired Sample T-Test Result of Pre-Test and Post-Test Score

		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
					Pair 1	Pre-Test Post-Test			

The paired sample t-test showed a significance value of Sig. (2-tailed) = 0.000 ($p < 0.05$), indicating a significant difference between the pretest and posttest scores. This result shows that the “Petualangan Siaga” board game integrated with the TGT learning model significantly improved students’ cooperation skills. The results of the paired sample t-test indicated a significant difference between students’ pretest and posttest scores in the experimental group. In addition, the independent sample t-test showed a significant difference between the cooperation skill scores of the experimental and control groups. These findings indicate that the implementation of the “Petualangan Siaga” board game integrated with the Teams Games Tournament (TGT) learning model was effective in enhancing first-grade students’ cooperation skills in Civic Education learning.

3.2. Discussion

The needs analysis conducted in this study found that Civic Education learning in first-grade classrooms was still dominated by teacher-centered instruction and individual learning activities. As a result, students had limited opportunities to interact, collaborate, and develop cooperation skills during the learning process. This condition caused students to become less active and less engaged in classroom activities, particularly in activities that required teamwork and social interaction. Therefore, there is a need for interactive and collaborative learning media that can encourage students to participate actively and work together with their peers.

Based on these conditions, the “Petualangan Siaga” board game integrated with the Teams Games Tournament (TGT) learning model was developed to support cooperation skill development in Civic Education learning. The result of this study showed that the developed media was both feasible and effective in improving first-grade students’ cooperation skills. The improvement was reflected in students’ participation, communication, teamwork, responsibility, caring attitudes, and sharing behavior during classroom learning activities. These findings indicate that the board game not only supported cognitive learning outcomes but also facilitated students’ social and affective development through collaborative learning experiences.

The effectiveness of the TGT learning model found in this study is supported by several previous studies. Research showed that the TGT learning model can improve students’ cooperation and social interaction skills through group competition and collaborative learning activities (Wulandari et al., 2024). The implementation of the TGT learning model successfully improved elementary school students’ collaborative skills through teamwork and peer interaction during classroom instruction (Teladaningsih et al., 2019). The TGT learning model effectively strengthened students’ cooperation attitudes in Civic Education learning by encouraging active participation, communication, and shared responsibility among group members (Sati et al., 2024). These findings support the results of the present study, where the integration of teamwork, games, and friendly competition created a more interactive and enjoyable learning environment that encouraged students to help peers, communicate actively, and work toward common goals together.

These findings are consistent with previous reviews showing that educational games are most effective when they encourage collaboration, interaction, and active learner participation rather than merely increasing engagement through competition alone (Wu et al., 2012; Sailer & Homner, 2020). The result also strengthens previous research regarding the effectiveness of game-based and collaborative learning in elementary education. Previous research found that the TGT learning model effectively improved students’ cooperation skills through collaborative group activities and peer interaction (Sari et al., 2023). Another research on the traditional Gobak Sodor game showed that collaborative play activities can strengthen children’s cooperation, communication, and social interaction skills. Research on traditional games for early childhood education also explained that play-based collaborative activities help children develop positive social behavior and cooperation skills from an early age (Puspitasari et al., 2022). These findings indicate that collaborative gameplay provides meaningful social experiences that are highly relevant to the developmental characteristics of elementary school students.

Educational board games promote communication, teamwork, and shared decision-making through face-to-face interaction, making them effective for developing young learners’ collaborative skills (Hofmann, 2025; Gkogkidis & Dacre, 2021). In addition to the learning model, the use of board games as learning media also played an important role in improving students’ engagement and participation during learning activities. In contrast to many online educational games that mainly emphasize individual achievement and knowledge acquisition, The “Petualangan Siaga” board game was specifically designed to promote direct social interaction,

communication, and teamwork among students. This finding is consistent with previous research which found that the use of the Edison Board Game integrated with the TGT learning model effectively increased students' motivation and learning outcomes through collaborative and competitive learning activities (Hasanah & Erman, 2018). Board games designed with cooperative play mechanics can support students' collaboration, communication, and social interaction during the learning process (Setiawan & Jayanti, 2019). Board games that designed for character education can strengthen students' teamwork, responsibility, social values, and cooperative behavior through interactive adventure-based activities (Alamin, 2019). Furthermore, another stated that educational board games can improve students' participation and cooperation in elementary school classrooms (Rahmadani et al., 2024). These findings support the results of the present study, which demonstrated that the "Petualangan Siaga" board game provided meaningful collaborative learning experiences that strengthened students' cooperation skills and character values.

Civic Education promotes not only civic knowledge but also cooperation, democratic values, and responsible participation, making collaborative learning an appropriate instructional approach (Print, 2007; Torney-Purta et al., 2015). The integration of Pancasila values within the board game activities also contributed to the development of students' soft skills, particularly cooperation, empathy, responsibility, caring attitudes, and respect for others. Integrating Pancasila values into elementary learning activities can support the development of both hard skills and soft skills needed in 21st-century education (Pratama et al., 2025). Therefore, the "Petualangan Siaga" board game functioned not only as an instructional tool but also as a character education tool that promoted positive social values through interactive and collaborative learning experiences. Through collaborative gameplay and group activities, students learned to listen to others' opinions, share responsibilities, follow group rules, and solve problems together. This suggests that cooperative learning activities supported by game-based media can help develop students' social interaction and cooperation skills at an early age.

Overall, this study contributes to the development of innovative and student-centered learning media in Civic Education, particularly in strengthening cooperation skills among first-grade elementary school students. The integration of the board game, the TGT learning model, and Pancasila values provides a meaningful learning experience that supports character education, collaboration, and social skill development in elementary education.

3.3. Implications

The findings of this study have practical, theoretical, and educational implications for elementary education. Practically, the "Petualangan Siaga" board game integrated with the Teams Games Tournament (TGT) learning model can be used as an alternative learning medium to enhance students' cooperation skills through interactive and enjoyable activities. Theoretically, this study supports the use of cooperative and game-based learning to develop students' social and affective skills, while also supporting Piaget's theory of children's social development. Educationally, the findings highlight the importance of integrating character education and 21st-century skills into Civic Education learning through meaningful and student-centered learning experiences.

3.4. Limitations

This study has several limitations that should be considered. First, the research was conducted in a limited number of elementary schools with a relatively small sample size, which may affect the generalizability of the findings to broader educational contexts. Second, students with special needs required additional assistance during the implementation of the "Petualangan Siaga" board game, particularly in understanding game instructions and participating in collaborative activities. Future studies are recommended to involve larger samples and longer implementation periods to further examine the effectiveness of the "Petualangan Siaga" board game in broader educational contexts.

4. Conclusion

This study aimed to develop the "Petualangan Siaga" board game integrated with the Teams Games Tournament (TGT) learning model to enhance first-grade elementary school students' cooperation skills in Civic Education learning. Based on expert validation results, the developed board game was considered feasible for use in classroom learning in terms of instructional design, learning materials, media quality, and cooperation skills assessment. The effectiveness test further showed a significant improvement in students' cooperation skills, as indicated by higher posttest scores compared to pretest scores after the implementation of the board game learning activities increasing by an average of 25.34 points compared to the pretest ($p < 0.05$). The use of game-based cooperative learning provided students with interactive, meaningful, and enjoyable learning experiences that encouraged participation, communication, teamwork, responsibility, caring attitudes, and sharing behavior during classroom activities. Through the integration of Pancasila values and collaborative game challenges, students were actively involved in social interaction and group problem-solving activities appropriate to their developmental stage. Therefore, the "Petualangan Siaga" board game integrated with the TGT learning model can serve as an effective alternative learning medium to strengthen cooperation skills in Civic Education learning at the elementary school level. This study also highlights the importance of student-

centered and game-based learning approaches in supporting not only cognitive achievement but also students' social and character development. Teachers may use board game-based learning as an innovative strategy to create more active, collaborative, and meaningful learning experiences for young learners.

Author Contributions

Andriani Ika Prasanti: conceptualization, methodology, investigation, data collection, development of the board game, data analysis, writing of the manuscript and editing. Mawardi and Adi Winanto: supervision, conceptual guidance, and manuscript review. All the authors have read and approved the final manuscript.

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Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declaration on AI Use

The authors used AI to assist with sentence construction, language editing, and improving the clarity of the manuscript. After using these tools, the authors carefully reviewed, edited, and verified all content. All conceptual, analytical, and scholarly content presented in this manuscript originates exclusively from the authors.

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