

## DEVELOPMENT OF INTERACTIVE TEAMS GAMES TOURNAMENT-BASED E-MODULES TO IMPROVE ELEMENTARY STUDENTS' SOCIAL STUDIES UNDERSTANDING

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### Abstract

*This study aims to develop an Interactive E-Module based on the Teams Games Tournament (TGT) learning model and to test its validity, practicality, and effectiveness in improving elementary students' understanding of social studies concepts. The study is motivated by the limited use of interactive learning media in social studies, which causes students to memorize facts rather than comprehend concepts deeply, leading to low motivation, limited engagement, and weak critical thinking skills. The research employs the Research and Development (R&D) approach using the ADDIE model, encompassing the stages of Analysis, Design, Development, Implementation, and Evaluation. The subjects involved fifth-grade students of SDN 02 Percontohan and SDN 04 Garegeh, social studies teachers, and expert validators in material, media, and language. Data were collected through observations, questionnaires, interviews, tests, and documentation, and analyzed both qualitatively and quantitatively. The results indicate that the Interactive E-Module achieved a very valid category with an average expert validation score of 4.56. The practicality assessment showed very positive responses from teachers (90.5%) and students (90.8%). Moreover, its effectiveness was evidenced by a significant improvement in conceptual understanding, with an average N-Gain score of 0.87 (high category). The TGT-based Interactive E-Module offers a novel contribution by integrating cooperative competition into digital learning media, enhancing student motivation and interaction beyond conventional e-modules. Practically, this module can be adapted for other subjects or educational levels as an innovative tool to promote active, engaging, and concept-oriented learning in elementary education.*

**Keywords:** Interactive E-Modules; Teams Games Tournament (TGT); social studies learning; elementary school

### Abstrak

Penelitian ini bertujuan untuk mengembangkan E-Modul Interaktif berbasis model pembelajaran Teams Games Tournament (TGT) serta menguji validitas, praktikalitas, dan efektivitasnya dalam meningkatkan pemahaman konsep Ilmu Pengetahuan Sosial (IPS) siswa sekolah dasar. Penelitian ini dilatarbelakangi oleh masih rendahnya pemanfaatan media pembelajaran interaktif dalam pembelajaran IPS, sehingga siswa cenderung menghafal materi tanpa memahami konsep secara mendalam, yang berdampak pada rendahnya motivasi, keterlibatan, dan kemampuan berpikir kritis. Penelitian ini menggunakan metode Research and Development (R&D) dengan model pengembangan ADDIE yang meliputi tahap Analisis, Desain, Pengembangan, Implementasi, dan Evaluasi. Subjek penelitian meliputi siswa kelas V SDN 02 Percontohan dan SDN 04 Garegeh, guru IPS, serta validator ahli materi, media, dan bahasa. Data dikumpulkan melalui observasi, angket, wawancara, tes, dan dokumentasi, kemudian dianalisis secara kualitatif dan kuantitatif. Hasil penelitian menunjukkan bahwa E-Modul Interaktif dinyatakan sangat valid dengan skor rata-rata hasil validasi ahli sebesar 4,56. Aspek praktikalitas memperoleh respons sangat positif dari guru (90,5%) dan siswa (90,8%). Selain itu, efektivitas media dibuktikan melalui peningkatan pemahaman konsep siswa dengan nilai rata-rata N-Gain sebesar 0,87 (kategori tinggi). E-Modul Interaktif berbasis TGT memberikan kontribusi baru dengan mengintegrasikan unsur kompetisi kooperatif ke dalam media digital, sehingga mampu meningkatkan motivasi dan interaksi belajar siswa secara lebih bermakna dibandingkan e-modul konvensional. Secara praktis, modul ini dapat direplikasi pada mata pelajaran lain atau dikembangkan untuk jenjang pendidikan yang berbeda sebagai inovasi pembelajaran aktif, menarik, dan berorientasi pada pemahaman konsep.

**Kata Kunci:** E-Modul Interaktif; Teams Games Tournament (TGT); pembelajaran IPS; sekolah dasar

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## Introduction

Social studies learning in elementary schools is pivotal for developing students' character, social awareness, and critical thinking, serving both to convey knowledge and foster positive attitudes toward society and the environment (Anna Maria Oktaviani, 2025). Through social studies learning, students are introduced to aspects of life including culture, history, geography, and economics so that they are able to understand social reality more comprehensively (Eka, 2024). In the context of the Independent Curriculum, the objectives of social studies learning are more directed at developing students who have a deep understanding of social reality and reflective skills in solving societal problems contextually.

However, these goals have not been fully achieved in elementary schools. Several studies show that social studies learning is still often conducted conventionally, with an emphasis on lecture methods and the use of textbooks as the primary source (Safitri et al., 2024). This condition causes students to tend to memorize material without understanding the interconnections between concepts or their relevance to real life. As a result, students' motivation to learn, engagement, and critical thinking skills tend to be low. Ulya et al., (2023) emphasizes that conceptual understanding is a crucial foundation in social studies learning because these concepts are interconnected across disciplines such as history, geography, sociology, and economics. Without a deep understanding, students will have difficulty internalizing the social values contained in the learning material.

Observations in three elementary schools in Bukittinggi reveal challenges in social studies learning. At SDN 03 Pulai Anak Air, instruction remains teacher-centered and textbook-based, with students memorizing concepts without contextual understanding. At SDN 02 Percontohan, varied methods such as discussions and projects are applied, yet the lack of interactive media limits conceptual connections. At SDN 04 Garegeh, contextual learning through field trips is conducted, but the absence of reflection reduces its impact. Interviews with teachers and students further indicate that social studies learning is still perceived as monotonous, less engaging, and lacking meaningful relevance.

This problem shows that one of the factors influencing the low quality of students' conceptual understanding is the limited learning media used by teachers. Sanjaya, (2020) Elementary students, at the concrete operational stage, require real-life, interactive learning to grasp abstract concepts, consistent with Vygotsky's Zone of Proximal Development, which emphasizes enhanced understanding through teacher guidance and peer collaboration (Wahyudi et al., 2025). Besides that, Ahunaya et al., (2025) The Cone of Experience emphasizes that the more concrete a student's learning experience, the better their understanding of the material. Therefore, selecting the right learning media is key to successfully achieving social studies learning objectives.

Interactive e-modules are one innovative digital learning medium that can address these challenges. E-modules offer advantages such as flexibility, independence, and the ability to integrate material, exercises, and evaluations into a single, integrated unit (Ghifa Faizah Fitria & Ibnu Muthi, 2024). Visual elements in e-modules enhance conceptual clarity, while their interactive features align with the digital generation's needs, thereby increasing student engagement and reinforcing understanding of social studies concepts effectively.

However, learning media is not only visually appealing; it must also be supported by appropriate learning strategies. One relevant cooperative learning model for integration with e-modules is the Teams Games Tournament (TGT). The TGT model combines elements of teamwork with healthy competition in the form of educational games. Previous research has shown that TGT can increase student motivation, engagement, and learning outcomes (Setiawan et al., 2025). The TGT learning process requires students to study together in groups, then participate in academic tournaments in the form of fun quizzes. This not only reinforces conceptual understanding through meaningful repetition but also develops social skills such as cooperation, communication, and responsibility (Sembiring, 2023).

The integration of interactive e-modules with the TGT learning model is believed to be an innovative solution for improving the quality of social studies learning in elementary schools Purba & Sujatmiko, (2023) shows that interactive e-modules are effective in increasing students' interest in learning. On the other hand, Dina Sefita Erawati et al., (2024) studies have shown that TGT significantly improves collaborative skills and conceptual understanding. By combining these two approaches, social studies learning becomes not only more engaging but also more participatory and meaningful. Students not only gain a fun learning experience but are also better able to relate social studies concepts to the realities of everyday life.

Literature indicates that studies combining digital e-modules with the TGT model in elementary social studies are limited, as prior research has mostly examined the effectiveness of e-modules or the TGT model independently. This research gap underpins the importance of developing interactive TGT-based e-modules for social studies learning. This development is expected to produce valid, practical, and effective media, while also contributing to the educational literature on digital-based and cooperative learning innovations.

The limited integration of cooperative learning models into digital learning media highlights a research gap in optimizing student engagement and conceptual understanding. This study offers a novel contribution by developing an interactive e-module based on the Teams Games Tournament (TGT) model, which combines digital interactivity with cooperative competition to foster motivation, collaboration, and conceptual mastery in social studies learning. The integration of TGT principles into an e-module framework is still rarely explored, especially at the elementary level, making this study significant in both theoretical and practical dimensions. Practically, the developed e-module is expected to serve as an innovative learning alternative for teachers to address issues of low motivation, limited engagement, and shallow conceptual understanding among students.

The main objective of this study is to design, develop, and evaluate the validity, practicality, and effectiveness of the TGT-based interactive e-module in improving elementary students' understanding of social studies concepts.

## **Research Methods**

This research is a Research and Development (R&D) study employing the ADDIE model, providing a systematic, flexible, and adaptive framework for designing learning media. This study develops an interactive E-Module based on the Teams Games Tournament (TGT) cooperative model to enhance elementary students' social studies understanding, emphasizing collaboration, discussion, and reflection, while ensuring validity, effectiveness, and relevance through systematic development stages:

### **Analysis Stage**

The analysis phase of this research includes a literature review, curriculum analysis, needs identification, and student characteristics. The literature analysis provides a theoretical

foundation, while the curriculum analysis ensures alignment with the Learning Outcomes of the Independent Curriculum. The needs analysis was conducted through teacher observations and interviews to identify learning gaps. Student characteristics analysis included learning styles, motivation, digital skills, and learning interests to design relevant and effective Interactive E-Modules.

#### Design Stage

The design phase focuses on systematic planning of learning strategies, media selection, and the design of interactive e-module prototypes. The framework includes the integration of the syllabus, relevant materials, and digital technologies such as text, video, animation, quizzes, and educational games. The storyboard is designed based on cooperative learning principles and Mayer's multimedia learning theory, resulting in an e-module that is engaging, interactive, pedagogical, and relevant to improving elementary school students' understanding of social studies.

#### Development Stage

The development phase produced an interactive e-module prototype based on a design that utilized Canva Education, WordPress, and digital quiz integration through Wordwall, Quizizz, and Kahoot. Validation was conducted through Focus Group Discussions (FGDs) as per Suparni (2020), involving subject matter, media, and language experts to assess content, presentation, technical aspects, and readability. The input was used as the basis for revisions to improve the quality and effectiveness of the e-module.

#### Implementation Stage

The implementation phase was carried out through a limited trial at SDN 02 Percontohan and SDN 04 Garegeh involving fifth-grade students and social studies teachers. Wati et al., (2022) The trial aims to detect errors, assess practicality, appeal, understanding of the material, and technical challenges. Data is collected through participant observation and questionnaires, then analyzed to revise the product to make it more feasible, effective, and appropriate to learning needs.

#### Evaluation Stage

The evaluation stage, serving as the final phase in the ADDIE development model, holds a vital role in determining the quality, practicality, and effectiveness of the developed e-module through a comprehensive process of formative and summative evaluations. The formative evaluation involves several stages, including pre-tests, expert judgment, and the collection of feedback from teachers and students during limited trials to identify potential weaknesses and areas for improvement. In contrast, the summative evaluation focuses on assessing the overall validity, practicality, and effectiveness of the e-module after its implementation, ensuring alignment with pedagogical principles and learning objectives. The results obtained from both evaluation stages are utilized to make final revisions and refinements, thereby ensuring that the e-module produced operates effectively, meets educational standards, and is ready for large-scale implementation to enhance the quality of students' learning experiences (Ayatillah et al., 2024).

The research subjects consisted of fifth-grade students, teachers, and expert validators selected through a purposive sampling technique, considering facility availability, technological readiness, and participant willingness. A total of 61 participants were involved, including 6 students from SDN 02 Percontohan (small-group trial), 55 students from SDN 02 Percontohan and SDN 04 Garegeh (large-scale implementation), 2 fifth-grade teachers (one from each school), and 3 expert validators in material, media, and language.

The research instruments were developed systematically following the ADDIE model, covering the stages of needs analysis, validation, implementation, and evaluation to ensure data validity and reliability. Data collection was conducted through observations, questionnaires, tests, interviews, and documentation, allowing for triangulation to obtain comprehensive, valid, and reliable results regarding the feasibility, practicality, and effectiveness of the interactive e-module. Several specific instruments were employed, including validation sheets using a Likert scale (1–5) to assess material accuracy, media presentation, and language clarity; practicality questionnaires for teachers and students to measure ease of use, clarity, attractiveness, navigation, and time efficiency; and learning achievement tests consisting of 20 pretest and posttest items (multiple choice, short answers, and essays) to evaluate students' conceptual understanding of economic activities and the creative economy.

In this study, data analysis techniques were used to analyze qualitative and quantitative data obtained from the trial of the E-Module based on the cooperative learning model.

#### Qualitative Data Analysis

Qualitative data analysis was carried out through systematic stages of reduction, presentation, and drawing conclusions. This process aims to filter relevant information, present data in a structured manner, and ensure the validity and reliability of the findings, thereby supporting the effective development of differentiated learning-based e-modules.

#### Quantitative Data Analysis

Quantitative data analysis was used to measure the effectiveness of the e-Module in improving students' understanding of social studies concepts. The product was tested using pretests and posttests, which were then analyzed using the following analysis techniques:

##### Validity Analysis

The validity of the e-module was tested by subject matter experts, media experts, and education experts using a Likert scale. The following are the validity assessment categories:

**Table 1.** Interactive Media Validity Assessment Scores

Category	Score
Very Valid	5
Valid	4
Quite Valid	3
Invalid	2
Totally Invalid	1

The formula for calculating the average validation score:

$$V = \frac{\sum X}{N}$$

Information :

V = average validation score

X = score given by the validator

N = number of validators

Interpretation of validation results using the following criteria:

**Table 2.** Interpretation of Validation Results

Score	Interpretation
4.21 – 5.00	Very valid
3.41 – 4.20	Valid

2.61 – 3.40	Quite valid
1.81 – 2.60	Less valid
1.00 – 1.80	Invalid

**Practicality Analysis**

The practicality of the e-module was assessed based on teacher and student questionnaire responses after the trial. The practicality percentage was calculated using the formula:

$$P = \frac{X}{N} \times 100\%$$

Information :

P = percentage of practicality

X = total score obtained

N = maximum number of scores

Practical Interpretation:

**Table 3.** Interpretation of Practical Results

Score	Interpretation
81% – 100%	Very practical
61% – 80%	Practical
41% – 60%	Quite practical
21% – 40%	Less practical
0% – 20%	Not practical

**Effectiveness Analysis**

The effectiveness of the e-module was measured through pretests and posttests to assess students' understanding of social studies concepts. Several formulas used in the effectiveness analysis are:

$$N\text{-Gain} = \frac{\text{Posttest Score} - \text{Pretest Score}}{\text{Maximum Score} - \text{Pretest Score}}$$

Interpretation of Results:

**Table 4.** Interpretation of N-Gain

N-Gain	Criteria
N-Gain > 0.7	Tall
0.3 ≤ N-Gain < 0.7	Currently
N-Gain < 0.3	Low

The calculation results are then matched with the effectiveness assessment criteria by Hake (1999) which can be seen in the table:

**Table 5.** Criteria for Learning Effectiveness with E-Modules

Percentage	Category
< 40	Ineffective
40 – 54	Less effective
55 – 74	Quite Effective
≥ 75	Effective

Next, to calculate the percentage of students who achieve the minimum passing grade, the following formula is used:

$$\text{Classical Completion} = \frac{\text{Number of Students Completed}}{\text{Total Students}} \times 100\%$$

## Result and Discussion

This study developed an interactive e-module based on the TGT model using the ADDIE framework. Designed with Canva and AI integration, it includes videos, modules, games, and quizzes. Results indicate the e-module is feasible, practical, and effective in enhancing conceptual understanding and student engagement.

### Analysis Stage

The analysis phase in this study was conducted comprehensively by examining three main aspects: the curriculum, student characteristics, and analysis of learning materials. The Independent Curriculum emphasizes the importance of active, collaborative, contextual learning, and is oriented towards the development of 21st-century competencies and literacy. The characteristics of fifth-grade elementary school students indicate a need for visual, interactive, and enjoyable learning media, thus motivating and facilitating diverse learning styles. Analysis of the material on the topic "Economic Activities and Creative Economy in the Surrounding Environment" indicates the need for innovative media so that abstract concepts can be presented more concretely, systematically, and easily understood. The TGT-based interactive e-module is relevant for enhancing the effectiveness of social studies learning in elementary schools.

### Design Stage

The design stage focused on creating the structure, flow, and visual presentation of a TGT-based Interactive E-Module aligned with curriculum objectives and elementary students' characteristics. The design was carried out through the preparation of a content framework, interface design, and the integration of interactive activities in the form of quizzes, games, simulations, and group tournaments. The E-Module was designed not only as a source of information, but also as a collaborative, contextual, and enjoyable medium, thus increasing students' learning motivation and understanding of social studies concepts more meaningfully.



Figure 1. E-Module Home Page



Figure 2. Interactive Button Page



Figure 3. Ask AI Page



Figure 4. Quiz Page

### Development Stage

The development phase aims to realize the design into an Interactive E-Module product based on the Teams Games Tournament (TGT) learning model that is ready for use. The initial product was designed using Canva, interactive PowerPoint, flipbook, ZepQuiz, Google Form,

and YouTube videos, with a user-friendly display, clear navigation, and interactive features in the form of quizzes, simulations, and educational games. Interactive elements encourage active student participation through reflection, collaboration, and contextual practice. The feasibility test was carried out through Focus Group Discussions (FGDs) with teachers, supervisors, and validator lecturers, resulting in input regarding the completeness of the cover, button navigation, and the addition of digital economic materials.

**Implementation Stage**

The implementation phase of the TGT-based Interactive E-Module was carried out in grade V of SDN 02 Percontohan and SDN 04 Garegeh with 55 students. The learning took place enthusiastically through materials, discussions, interactive quizzes, and group tournaments that fostered motivation and active learning.

**Limited Trial**

A limited trial was conducted with six randomly selected fifth-grade students of SDN 02 Percontohan to evaluate the interactive E-Module’s usability, navigation, learning flow, interactivity, and potential technical issues. The trial, held in one meeting, involved technical guidance, group access to the E-Module, and questionnaire completion. Findings provided essential input for revising and refining the E-Module to ensure its suitability for fifth-grade social studies learning. The results of the testing of the Interactive E-Module in this small group are as follows:

**Table 6.** Results of Small Group Trials on Students

No	School	Number of participants	Total Value educate	Flat-Average Value	Presentation	Category
1.	SDN 02 Percontohan	6	89	4.55	91%	Very Feasible

The small-scale trial with six students yielded a total feasibility score of 1365, an average of 4.55, or 91%, categorized as "Very Feasible." Thus, the Interactive E-Module is appropriate for learning community economic activities and the creative economy in the surrounding environment.

**Large-Scale Implementation**

The implementation carried out in this study was to determine the effectiveness of the TGT-based Interactive E Module to improve the conceptual understanding of elementary school students in grade V. The implementation was carried out during 2 meetings in two schools where students were able to use Android/laptops or Chromebooks. In the implementation, students were divided into heterogeneous TGT groups. Learning activities included providing material through the Interactive E Module, group discussions and playing interactive quizzes, group tournaments to answer questions and earn points.

**Implementation of Interactive E-Modules Based on Teams Games Tournament (TGT) at SDN 02 Percontohan**

The first meeting involved a pretest on economic activities and the creative economy, yielding an average score of 67.7 (low category), indicating the need for intervention. In the second meeting, the TGT-based Interactive E-Module was implemented through presentations,

discussions, games, tournaments, and assessments. Supported by digital materials, quizzes, and simulations, student participation increased significantly. Posttest results showed an average score of 90.18 (effective category), demonstrating a substantial improvement in understanding social studies concepts.

#### Implementation of Interactive E-Modules Based on Teams Games Tournament (TGT) at SDN 04 Garegeh

The first meeting involved a pretest on economic activities and the creative economy, with an average score of 68.75 (low category), indicating suboptimal understanding. In the second meeting, the TGT-based Interactive E-Module was applied through presentations, discussions, games, tournaments, and assessments, fostering collaborative and competitive learning. Posttest results averaged 90.00 (very effective category), confirming a significant improvement in students' understanding of social studies concepts and achievement of learning success indicators.

#### Evaluation Stage

Evaluation and revision are carried out continuously through formative and summative evaluations. Formative evaluation includes pre-tests, expert validation, and teacher and student responses. Summative evaluation, through post-tests, assesses the effectiveness of the Social Studies Interactive E-Module for fifth-grade elementary school students.

#### Interactive Module E Validity Test Results

Based on the validation results by three validators, namely material, language, and media experts, the validity test data for the Interactive E-Module was obtained, which is presented in the following table:

**Table 7.** Validation Results of Interactive Module E

Validation	Total Value	Average Value	Presentation	Category
Material Validation	70	4.67	93.33%	Very Worthy
Language Validation	69	4.46	92.00%	Very Worthy
Media Validation	66	4.40	88.00%	Very Worthy
<b>Final Proceeds</b>		<b>4.51</b>	<b>91.11%</b>	<b>Very Worthy</b>

The final validation of the TGT-based Interactive E-Module yielded an average score of 4.51 (91.11%), categorized as very feasible, indicating it can be implemented in social studies learning with minor revisions.

#### Practicality of Interactive E-Modules

#### Practicality Test by Teacher

The teacher practicality test was administered to class VA teachers at SD N 02 Percontohan Kota Bukittinggi. The teachers assessed the practicality of media use, which was divided into 9 variable criteria detailed into 20 indicators on a questionnaire sheet previously provided by the researcher. The following is the data from the practicality test results for the teachers.

**Table 8.** Results of the Practicality Test Questionnaire for Teachers

Aspect	Variable Criteria	Indicator	Teacher's Score		Percentage per Indicator (%)
			Teacher 1	Teacher 2	
Practicality	Material	1	5	5	100
	Suitability	2	5	4	90
		3	4	5	90

Benefits	4	4	4	80
	5	5	5	100
Implementation	6	5	4	90
of the TGT	7	5	5	100
Model	8	4	5	90
Ease of Use	9	5	5	100
	10	4	4	80
Effectiveness of	11	4	4	80
Learning Time	12	5	4	90
Student	13	4	4	80
Engagement	14	5	5	100
Appearance	15	4	5	90
Appeal	16	4	5	90
Appropriateness	17	5	4	90
to Student				
Development				
Feasibility of	18	5	4	90
Implementation	19	4	4	80
	20	5	5	100
<b>Amount</b>		<b>91</b>	<b>90</b>	<b>90.50%</b>
<b>Average</b>			<b>4.52</b>	
<b>Percentage Score</b>				

The practicality test by teachers yielded an average score of 4.52 or 90.50%, categorized as "Very Practical," indicating the TGT-based Interactive E-Module is suitable for social studies learning. Although some indicators, such as alignment with student characteristics, motivation, time efficiency, and active involvement, were not fully optimal, overall, the module met the criteria of usability, material relevance, usefulness, and visual appeal, making it highly feasible for classroom implementation.

#### Practicality test by students

The practicality test was conducted on 55 fifth-grade students at SDN 02 Percontohan and SDN 04 Garegeh, Bukittinggi City. The results of the practicality test for the students are as follows.

**Table 9.** Results of Student Practicality Test

Aspect	Variable Criteria	Indicator	Score	Maximum Score	Percentage per Indicator (%)
Practicality	Material Suitability	1	245	275	89,09
		2	255	275	92,73
		3	250	275	90,91
	Benefits	4	260	275	94,55
		5	230	275	83,64
		6	240	275	87,27
	Implementation of the TGT Model	7	225	275	81,82
		8	254	275	92,36
		9	264	275	96,00
	Ease of Use	10	240	275	87,27
		11	235	275	85,45
		12	246	275	89,45
	Effectiveness of Learning Time Student	13	267	275	97,09
		14	257	275	93,45
		15	268	275	97,45

Appearance Appeal	16	258	275	93,82
Appropriateness to Student Development	17	252	275	91,64
Feasibility of Implementation	18	245	275	89,09
	19	265	275	96,36
	20	239	275	86,91
<b>Amount</b>		<b>4995</b>		<b>90.82%</b>
<b>Average Percentage Score</b>		<b>90.82</b>		

Information :

Maximum score = 275 = total number of students (55) x maximum score per indicator (5)

Expert and practitioner assessments indicate that the TGT-based Interactive E-Module obtained a total score of 4,995 out of 5,500, with an average percentage of 90.82%, placing it in the “Very Practical” category. This result demonstrates that the e-module is highly feasible, easy to use, and effectively supports learning.

#### Effectiveness of Interactive E-Modules

This study measures the effectiveness of an interactive e-module based on the Teams Games Tournament (TGT) model by improving students' understanding of social studies concepts in the Community Economic Activities and Creative Economy material. Effectiveness was analyzed by comparing pretest and posttest results using 20 multiple-choice, fill-in-the-blank, and essay questions:

**Table 10.** Effectiveness Test Results

No	Pretest Average	Posttest Average	Average N-Gain Score	Category	Average N-Gain Score (%)	Category
1	69.30	91.63	0.87	Tall	87.76	Very Effective

The effectiveness test results show that the TGT-based Interactive E-Module significantly improved social studies learning outcomes. The average score rose from 69.30 at the first meeting to 91.63 at the second, with 90.90% mastery. N-Gain analysis reached 0.8776 (87.76%), categorized as high, with 52.7% of students in the high category, 43.6% in the medium, and only 3.6% in the low. These findings indicate that over 90% of students experienced improved conceptual understanding, confirming the Interactive E-Module's effectiveness in enhancing social studies learning outcomes.

The interactive e-module based on the TGT model was developed using the ADDIE framework, ensuring systematic, valid, practical, and effective outcomes. The analysis revealed elementary students' difficulties in understanding abstract social studies concepts, especially the topic “*Community Economic Activities and the Creative Economy.*” This finding is in line with the views of Ramadani et al., (2025) analyzing student needs and characteristics is crucial for producing appropriate, interactive, and learner-centered learning media. Therefore, the development of e-modules is aimed at providing engaging learning media that is relevant to the Independent Curriculum and capable of increasing student motivation.

In the design phase, researchers structured the learning flow using flowcharts and storyboards to ensure the sequence of materials, learning activities, and TGT-based evaluations. The platforms used, such as Canva Education, WordPress, and the integration of quiz tools (Wordwall, Quizizz, Kahoot), were chosen because they support both interactive presentation

of materials and educational games. The visual display was designed with the principles of simplicity, easy navigation, and an attractive color combination to increase student engagement. This aligns with the recommendations of the Shabrina et al., (2025) that learning media must have clear content, suitability to learning objectives, and a display that supports student involvement.

The development phase involved producing an e-module prototype that integrated text, images, animations, instructional videos, and TGT-based games. The multimedia learning principles applied were intended to strengthen conceptual understanding and reduce cognitive load. The content was structured in stages, starting with an introduction to the concept of community economics, its application in everyday life, and reinforcement through quizzes and tournaments. The game aspect was chosen as the core of TGT to encourage active student engagement, in accordance with research Arini & Sukriono, (2024) as well as Zalza Luthfiatun Nisa, Lutfi Ardiansyah, Isna Rahmawati, (2024) which proves that game-based learning can significantly increase motivation and understanding of social studies concepts.

The implementation phase was conducted through a limited trial in two elementary schools, SDN 02 Perpilot and SDN 04 Garegeh, involving fifth-grade students and social studies teachers. The trial results showed that the e-module was easy to use, had an attractive interface, and encouraged student engagement in group discussions and tournaments. Teachers assessed that the e-module helped explain abstract material more concretely, while also supporting active and collaborative learning. This is in line with the views of Ningki & P, (2023) which emphasizes that limited implementation is important to identify shortcomings before the product is used more widely.

Validity test results show that the TGT-based Interactive E-Module received a "very appropriate" rating from experts. Material experts gave a score of 93.33%, assessing that the content aligns with the Independent Curriculum, is conceptually correct, and contextual. Linguists gave a score of 92%, assessing that the language is communicative, in accordance with EYD rules, and able to increase student learning motivation. Meanwhile, media experts gave a score of 88%, assessing that the visual display is attractive, navigation is easy, and interactivity is high through quizzes and simulations. These findings are consistent with the media effectiveness indicators according to Juriah et al., (2025) and Pangestuti et al., (2024), which emphasizes the importance of content relevance, design quality, and language readability.

The results of the practicality test showed that the e-module was very practical to use, both by teachers and students. In the small group trial, a percentage of 91% was obtained (very suitable category), while in the large-scale implementation, students showed high enthusiasm, actively discussed, and participated in the TGT tournament. Teachers stated that the e-module supported differentiated learning, facilitated integration into the learning flow, and was well accessible through digital devices. Students responded positively to the visual display, interactivity, and ease of use. This strengthens the view Prinanda, (2025) that indicators of success of learning media include usability, cross-device accessibility, and minimal technical barriers.

The effectiveness of the E-Module was proven through a significant increase in student learning outcomes. At SDN 02 Percontohan, the average pretest score of 67.7 increased to 90.18 on the posttest (an increase of 22.48 points). Meanwhile, at SDN 04 Garegeh, the average pretest score of 68.75 increased to 90.00 on the posttest (an increase of 21.25 points). The completion percentage in both schools exceeded 88%, indicating that the TGT-based E-Module is effective in improving understanding of social studies concepts. These results align with Piaget and

Bruner's constructivist theory, which emphasizes that active, experiential learning encourages students to construct their own knowledge, as well as Vygotsky's social learning theory, which emphasizes the importance of peer learning in the zone of proximal development. Through the TGT tournament, students learn collaboratively and competitively, making conceptual understanding easier to achieve (Salsabila, 2024).

The findings of this study are also consistent with previous research. Aprillia & Cholifah, (2024) found a 20% increase in social studies learning outcomes through TGT-based interactive media with digital quizzes. Dewi et al., (2025) recorded an N-Gain of 0.72 and a 23% increase in learning outcomes with similar media. Cahyani et al.,(2025) showed a 25% increase in conceptual understanding with the integration of interactive quizzes. Morisson et al., (2024) emphasizes the importance of learning videos to increase student engagement, while Septin et al., (2025) demonstrated that TGT effectively improves students' critical thinking skills in creative economics. Comparatively, this study reinforces the finding that the TGT model consistently improves students' motivation, conceptual understanding, and collaborative skills, with the added benefit of integrating digital economic simulations and leaderboards for added interactivity.

## Conclusion

Based on the research findings, it can be concluded that the development of an Interactive E-Module based on the Teams Games Tournament (TGT) learning model in social studies learning for fifth-grade elementary school students meets the criteria of being very valid, practical, and effective. The validity of the e-module is confirmed through expert evaluations in the areas of material, media, and language, all of which achieved scores within the *very valid* category. The practicality is reflected in the positive responses from teachers and students, particularly regarding the clarity of content, user-friendliness, and visual design that facilitates independent and collaborative learning. The effectiveness of the e-module is evidenced by a significant improvement in students' understanding of social studies concepts, particularly in economic and creative economy topics, with an N-Gain score of 0.87, categorized as *high*. In terms of pedagogical implications, the integration of the TGT-based Interactive E-Module effectively promotes collaborative learning, enhances motivation through gamified activities, and deepens conceptual understanding by engaging students in interactive and competitive learning experiences. This e-module can serve as an alternative primary learning medium to foster active, enjoyable, and student-centered learning environments. For future research, it is suggested to expand the development of the TGT-based Interactive E-Module to cover a wider range of social studies content and other subjects, as well as to incorporate advanced interactive and adaptive features that align with the competencies required in 21st-century learning.

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