

# Application of the Educational Media Ludo Monopoli (LUPI) to Improve Teaching Skills of Elementary School Teachers in Dili

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**Abstract.** The use of innovative learning media has been considered a strategic effort to enhance teaching effectiveness at the elementary school level, especially for conceptual subjects such as the human digestive system. In Dili, Timor-Leste, limited access to contextual learning media and the lack of pedagogical training for teachers have been identified as real challenges in the learning process. This community service activity was designed to improve the skills of elementary school teachers in Dili in utilizing the LUPI (Ludo Monopoli) learning media for the topic of the digestive system. LUPI is an interactive educational media based on a board game, which was developed to facilitate student understanding in an active and enjoyable manner. The implementation method was composed of training, direct practice, reflective discussion, and skills evaluation. The activity was conducted for two days at Universidade Católica Timorense (UCT) São João Paulo II and was participated in by 10 local elementary school teachers. Significant improvements were shown in teachers' understanding of digestive system concepts and in their ability to design and implement the LUPI media in teaching. Moreover, it was stated by the teachers that the use of LUPI increased student engagement, clarified concepts, and encouraged interest in learning. It is recommended that follow-up training based on thematic curriculum and replication of similar media for other topics be provided. The collaboration between educational institutions from Indonesia and Timor-Leste has been proven effective in addressing cross-national pedagogical challenges through an approach rooted in local wisdom and educational games.

**Keywords:** learning media; LUPI; digestive system; elementary school teachers; Timor-Leste

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## INTRODUCTION

Basic education is regarded as the primary foundation in shaping the character and intellectual capacity of the younger generation (Utamirohmasari, 2024). In the context of globalization and advancements in information technology, continuous innovation is demanded in the methods and media used in basic education (Zhao et al., 2024). One of the common problems faced by teachers in many developing countries, including Timor-Leste, is the limitation in the use of innovative and engaging learning media. Timor-Leste is classified as a neighboring country of Indonesia that is still relatively young in terms of independence and is still being faced with major challenges in strengthening its educational sector. In the region of Dili in particular, most elementary

schools are being confronted with several obstacles, such as insufficient teacher training, limited access to modern learning materials, and the minimal application of educational technology in the teaching and learning process. In teaching science, particularly the topic of the digestive system, lecture-based methods and textbooks are still being relied upon as the sole resources by teachers.

The proper use of learning media is believed to enhance the effectiveness, efficiency, and attractiveness of the learning process. Educational games are proven to be effective in assisting students in understanding abstract concepts through enjoyable approaches (Lubis et al., 2023). One such media that has been developed to meet this need is LUPI (Ludo Monopoli), which is designed as an educational and inspiring board game integrated with instructional content and interactive activities (Rustiansi and Asih, 2025). LUPI has been

designed to bring students into a learning environment that is competitive, cooperative, and comprehension-based. Through game mechanisms, students are encouraged to answer questions, engage in light physical activities, and hold discussions with their peers (Vita et al., 2024). This media is considered highly suitable for teaching the digestive system because biological processes can be visualized and staged step-by-step (Hakiki et al., 2022). Moreover, classroom interaction between teachers and students is also increased, and a more dynamic classroom atmosphere is created through its use (Bhatia et al., 2021).

This community service activity has been initiated as a concrete effort by Universitas Negeri Semarang (UNNES) to offer solutions to the challenges being faced by elementary school teachers in Dili. Through a participatory training approach, the activity is expected to enhance teachers' skills in designing and using game-based innovative learning media, as well as to establish a sustainable international collaboration network in the field of basic education. Support provided by Universidade Católica Timorense (UCT) São João Paulo II is seen as evidence of a shared commitment to improve educational quality in the region. Furthermore, the role of Indonesian higher education institutions has been reinforced through this activity in promoting international partnerships via overseas community service programs. Lecturers are not only positioned as instructors but also as agents of transformation capable of sharing good practices across countries and cultures. Therefore, this activity has not only been oriented toward short-term outcomes in improving teaching skills, but also toward establishing a broader and more sustainable foundation for collaboration. The primary objective of this community service initiative is to enhance the pedagogical competencies of elementary school teachers in Dili by introducing and applying an innovative educational medium Ludo Monopoli (LUPI). This media combines elements of interactive gameplay and instructional content to foster a more engaging and effective learning environment. Specifically, the program aims to: Equip teachers with alternative teaching strategies that promote active student participation; Improve teachers' ability to design, implement, and evaluate learning activities using game-based methods; Encourage creative and contextualized approaches to lesson delivery in line with 21st-century learning demands; Foster professional development and reflective teaching practices through practical workshops and media application.

The implementation of the Ludo Monopoli (LUPI) educational media provides meaningful contributions to both scientific advancement and societal development. From a scientific perspective, this initiative enriches the discourse on game-based learning by offering empirical evidence of its effectiveness in enhancing pedagogical practices, particularly in primary education contexts. It also demonstrates how interactive media can be strategically integrated into teacher training programs to foster innovative instructional methods. On a societal level, the program supports the professional growth of elementary school teachers in Dili by equipping them with practical, engaging, and contextually relevant teaching tools. This, in turn, has the potential to improve the overall quality of classroom instruction and learning outcomes among students. Moreover, the promotion of student-centered approaches through LUPI aligns with national education goals aimed at fostering critical thinking, collaboration, and creativity in early education settings. Thus, the intervention not only addresses immediate pedagogical challenges but also contributes to the long-term strengthening of the educational ecosystem in underserved regions.

## METHODS

A descriptive-qualitative approach was employed in this community service activity, using a participatory method. The main focus of the implementation was placed on the training and assistance of teachers in using the LUPI media for the topic of the digestive system. The activity was conducted in Dili, Timor-Leste, particularly at the Universidade Católica Timorense (UCT) São João Paulo II, and was participated in by ten elementary school teachers.

The implementation of the activity was structured into four major stages:

### 1) Preparation Stage

The needs of the partners were identified through initial communication and a brief survey. A LUPI-based training module was designed to align with the participants' contextual conditions. Materials and tools, including the design and production of LUPI boards, were prepared. Coordination was carried out with UCT regarding the schedule, venue, and technical aspects of the activity.

### 2) Training Stage

Basic concepts of innovative learning media and their urgency in 21st-century education were

introduced. Learning theories underlying the use of educational games in the teaching process were presented. A demonstration on how to use LUPI was carried out, including its gameplay mechanics, the integration of questions, and classroom management during gameplay.

### 3) Field Practice Stage

Participants were divided into groups and were asked to design learning scenarios using LUPI. Learning simulations were conducted using the media developed by each group. Feedback was provided by facilitators and fellow participants to refine and improve the media implementation.

### 4) Evaluation Stage

Data were collected through pre-test and post-test questionnaires to assess the improvement in participants' knowledge and skills. Direct observation was carried out to evaluate participation, understanding, and attitude during the training. Brief interviews were conducted with selected participants to explore impressions, suggestions, and expectations.

The data were analyzed qualitatively by referring to the achievement of training indicators, the improvement of participants' abilities, and their responses to the usefulness of the LUPI media in the context of their respective classrooms.

## RESULTS AND DISCUSSION

One of the significant outcomes of this activity was the improvement that was demonstrated in teachers' ability to integrate the LUPI media into their lesson plans (RPP) (Kamelia and Wulandari, 2024). Most of the participants were able to design integrated thematic learning plans that were aligned with relevant curriculum indicators and incorporated the LUPI media (Antara et al., 2024). This media was used as an instructional aid during the exploration or reinforcement phase and was also adapted for use in formative assessments based on observation. In several of the learning designs, the media was additionally adjusted to suit other science topics such as the human body organs and the respiratory system (Korkmaz et al., 2023). From the pre- and post-test results, it was recorded that the average score increased from 56.8 to 87.3. This indicated that a significant improvement in teachers' mastery of digestive system concepts had occurred. Topics previously considered abstract and difficult were more easily understood when they were delivered with the support of visual media and interactive activities. It was also reported by teachers that the explanation provided through the information cards on the LUPI board helped

them to simplify scientific terms without removing their essential meanings. The training in the use of LUPI learning media was implemented over two days using an active training approach based on direct practice (Simbolon et al., 2022).

This method was chosen to ensure that teachers not only understood the concepts theoretically but were also equipped with applicable skills that could be immediately implemented in the classroom. Each session was designed progressively, starting with the introduction of the basic concepts of the digestive system and their urgency in the curriculum, followed by the exploration of the LUPI media, gameplay practice, teaching simulations, and finally a stage of reflection and media development (Afandi et al., 2024). The activity was carried out successfully with 100% participant attendance over two consecutive days. The training facilities provided by Universitas Negeri Semarang (UNNES) and Universidade Católica Timorense (UCT) greatly supported the implementation process.

### Enhancement of Media Design Skills

The majority of participants had never used game-based learning media prior to this training. However, after participating in the training and simulation sessions, the teachers were seen to demonstrate creative capabilities in adapting and developing LUPI according to local needs. Some even proposed modifications to the characters and illustrations to better reflect Timorese culture.

The learning plans that were drafted after the training showed good integration between curriculum indicators, gameplay steps, and assessment methods. LUPI was also utilized by teachers for both remedial and enrichment activities.

One of the concerns raised during the training was the sustainability of media use after the program concluded. Nevertheless, from observations and reflections, it was shown that teachers were committed to replicating and modifying LUPI independently. Some schools even planned to hold inter-class competitions using LUPI as part of Science (Anam et al., 2023). Week. As a form of follow-up, digital modules and LUPI templates were also provided by the community service team so that teachers could print and adapt them according to their classroom needs. In the long term, further training or online mentoring was suggested as a viable option to sustain this innovation (Rizqiyan et al., 2025).

**Table 1.** Table of Activities

Date	Activity	Time	Responsible Party
May 12, 2025	The official opening and institutional remarks were delivered. The program and LUPI media were introduced.	08:00–10:00	UNNES Team and UCT
May 12, 2025	The digestive system topic in the elementary curriculum was presented. The LUPI media and its gameplay were demonstrated.	10:00–12:00	Prof. Dr. Tri Joko Raharjo
May 12, 2025	LUPI gameplay was practiced. The media was simulated in a teaching context.	13:00–15:00	Dr. Bunyamin, M.Pd
May 13, 2025	Lesson plans integrating LUPI were drafted. Group reflections and feedback were conducted.	08:00–10:00	Dr. Harianingsih, S.T., M.T
May 13, 2025	Teachers' outputs were presented. The activity was evaluated. The Implementation Arrangement was signed, and the program was formally closed.	10:00–12:00	Dr. Agapito Jerenimo

### Teacher Responses and Field Challenges

The response from teachers was very positive. It was stated by them that the media not only enriched teaching strategies but also increased students' motivation to learn.

*“My students usually find it hard to imagine how food is digested. But after playing LUPI, they were able to explain the stages clearly,” said one teacher.*

The following challenges were also encountered: Limited facilities for printing and laminating the media at schools. Some teachers still required assistance in designing activity-based assessments. Time constraints for integrating media use into an already packed teaching schedule. However, through reflective discussions, alternative solutions were proposed such as creating simplified versions of LUPI using recycled cardboard and hand-drawn illustrations (Qais and Fauziah, 2020). The participants' overall response was marked by enthusiasm and high levels of interest. Most teachers considered the training to be a new and enlightening experience that broadened their perspective on using game-based learning media.

*“I usually only rely on textbooks. But this media made my students more interested and excited to learn. I want to apply it immediately in class.”*  
*“Through gameplay, students found it easier to remember the steps of the digestive process. It was really helpful.”*

While technical limitations were acknowledged by some participants (such as access to support

materials and teaching aids), creative solutions were collaboratively developed through group discussions.

### Cross-National Collaboration and Its Implications

This activity has been regarded as a concrete manifestation of Indonesia's educational diplomacy through a collaborative scheme between higher education institutions. The presence of a team of lecturers from Indonesia in Timor-Leste was not only seen to enhance teacher competencies, but was also acknowledged to strengthen cultural, professional, and academic ties between the two countries. Through this collaboration, the signing of an Implementation Arrangement was facilitated between UCT and the Indonesian community service team, as a long-term commitment to: The development of sustainable teacher training programs. The implementation of academic exchange and joint publications. The development of game-based educational curricula. The impact has not only been observed in the enhancement of teacher capacity, but new opportunities for collaborative research and improvements in the quality of basic education across Southeast Asia have also been opened.

This initiative has demonstrated that academic collaboration between Indonesian lecturers and Timorese teachers can lead to tangible improvements in teaching practices. The game-based pedagogical approach has been recognized as one of the cross-cultural teaching strategies that can be effectively adapted to local educational contexts due to its flexibility and responsiveness. In terms of sustainability, a commitment to adopting this approach within UCT's regular teacher training



**Figure 1.** Group Photo with Elementary School Students in Dili

program has been expressed. Furthermore, additional training for other science topics such as the respiratory system and ecosystems has also been proposed by local schools.

The activity was concluded with the signing of the Implementation Arrangement document between the Universitas Negeri Semarang Team of the Graduate Program in Primary Education (Indonesia) and the Universidade Católica Timorense (UCT) São João Paulo II. The document included: A commitment to continued academic collaboration and community engagement. A teacher exchange and training program. The development of game-based learning media. Joint publications and annual academic seminars.

## CONCLUSION

Through the implementation of this community service activity, the enhancement of elementary school teachers' skills in utilizing game-based learning media was successfully facilitated. The LUPI (Ludo Monopoli) media was introduced, practiced, and evaluated as an effective educational tool for delivering conceptual science content, particularly on the topic of the digestive system. Significant improvements were observed in teachers' understanding and ability to design lesson plans that were integrated with LUPI. Creative adaptations of the media were also proposed by participants to suit their local cultural context. The training sessions were actively participated in, and

the outcomes were positively received by the participants. Challenges such as limited facilities and teaching resources were addressed collaboratively through group discussions and reflection sessions. Sustainability of media use was encouraged through the provision of digital modules and the development of follow-up training plans. Furthermore, a meaningful academic partnership was established between Universitas Negeri Semarang (UNNES) and Universidade Católica Timorense (UCT), and was formalized through the signing of an Implementation Arrangement. Through this collaboration, future programs on teacher capacity building, educational media development, and international academic exchange are expected to be continued. Therefore, it can be concluded that cross-national educational collaboration, when supported by participatory methods and contextual media innovation, can be effectively implemented and sustained to improve the quality of basic education in the Southeast Asian region.

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