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Development of game-based learning in integrated science and social studies to enhance environmental awareness and learning outcomes of fifth-grade students at MI Muhammadiyah Kalosi

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Abstrak

Penelitian ini bertujuan (1) mengetahui gambaran kebutuhan game based learning pada mata pelajaran IPAS (2) mengetahui kevalidan game based learning pada mata pelajaran IPAS (3) mengetahui kepraktisan game based learning pada mata pelajaran IPAS (4) mengetahui keefektifan pengembangan game based learning. Penelitian ini menggunakan desain pengembangan model ADDIE yang terdiri dari analisis (*analysis*), desain (*design*), pengembangan (*development*), implementasi (*implementation*), dan evaluasi (*evaluation*). Tahap analisis dilakukan analisis peserta didik, analisis guru, dan analisis kurikulum. Tahap desain dilakukan desain pengembangan media pembelajaran berbasis game based learning yang meliputi perancangan storyboard, perancangan plot, dan uji coba kelompok kecil. Tahap pengembangan dilakukan dengan pengembangan media menggunakan aplikasi Smart Apps Creator yang terdiri dari tahap pembuatan media game pembelajaran dan tahap validasi. Tahap implementasi dilakukan dengan uji coba kelayakan media di lapangan yang terdiri dari uji coba lapangan/kelompok besar. Tahap evaluasi dilakukan untuk mengetahui keberhasilan pengembangan media pembelajaran berbasis game based learning yang terdiri dari gambaran kebutuhan pengembangan, kevalidan media game pembelajaran, kepraktisan media game pembelajaran dan keefektifan media game pembelajaran. Gambaran hasil analisis kebutuhan menunjukkan bahwa pembelajaran lebih menekankan pada keterampilan peserta didik, guru, dan kurikulum pada pengembangan media game pembelajaran. Hasil uji validitas oleh para ahli terhadap media game pembelajaran berupa angket penelitian dengan hasil 4,46 kriteria "sangat layak" sehingga media game pembelajaran untuk meningkatkan karakter peduli lingkungan dan hasil belajar peserta didik layak digunakan. Hasil uji kepraktisan melalui uji coba lapangan/kelompok besar menggunakan angket , respon peserta didik menunjukkan hasil 8,7 kriteria "sangat layak" sehingga media game pembelajaran untuk meningkatkan karakter peduli lingkungan dan hasil belajar peserta didik dinyatakan sangat praktis. Hasil uji keefektifan melalui penilaian tes yang diberikan kepada peserta didik menunjukkan bahwa hasil nilai t hitung 37,763 > t table 2,086 sehingga media game pembelajaran untuk meningkatkan karakter peduli lingkungan dan hasil belajar peserta didik dinyatakan efektif.

Kata Kunci: Game Based Learning, Media Game Pembelajaran, Karakter Peduli Lingkungan, Hasil Belajar

Abstract

This study aims to (1) describe the need assessment for game-based learning in Integrated Science and Social Studies (IPAS), (2) determine the validity of game-based learning in IPAS subjects, (3) assess the practicality of game-based learning in IPAS subjects, and (4) evaluate the effectiveness of game-based learning development. This research employs the ADDIE development model, comprising analysis, design, development, implementation, and evaluation phases. The analysis phase involved student needs analysis, teacher needs analysis, and curriculum analysis. The design phase encompassed the development of game-based learning media, including storyboard design, plot development, and small group trials. The development phase utilized Smart Apps Creator application, consisting of learning game media creation and validation stages. The implementation phase involved field feasibility

testing through large group trials. The evaluation phase assessed the success of game-based learning media development, including needs assessment, validity, practicality, and effectiveness. The needs analysis revealed that learning emphasizes student skills, teacher competencies, and curriculum alignment in educational game media development. Expert validation results yielded a score of 4.46, categorized as "highly suitable," indicating the learning game media is appropriate for enhancing environmental awareness and student learning outcomes. Practicality testing through large group field trials showed student response scores of 8.7, categorized as "highly suitable," demonstrating high practicality. Effectiveness testing through student assessments revealed a t-value of 37.763 > t-table 2.086, confirming the effectiveness of the learning game media in improving environmental awareness and student learning outcomes.
***Keywords**: Game-Based Learning, Educational Game Media, Environmental Awareness, Learning Outcomes.*

Introduction

Education constitutes a fundamental human right that persists across generations throughout human existence. The primary objective of education is to develop innovative capacity, enabling beneficial changes for life's resilience and progress. Educational processes focus on developing three psychological potentials: affective, cognitive, and conative domains (Violadini & Mustika, 2021). This framework directs expectations toward spiritual, moral, and intellectual development.

According to Indonesian Law No. 20 of 2003, education represents a conscious and planned effort to create learning environments and processes that enable students to actively develop their potential for spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves, society, nation, and state. This mandate requires all citizens to participate in educational activities through informal, formal, or non-formal channels, with human existence being enriched by learning activities.

Environmental problems stem fundamentally from human behavior. Humans tend to exploit environments for personal gain without considering environmental sustainability. Current environmental issues require immediate resolution. Declining environmental awareness ultimately leads to various environmental problems affecting human life (Marjohan & Afniyanti, 2018). Insufficient environmental concern contributes to widespread exploitation and environmental damage, resulting in numerous disasters due to poorly maintained environments (Hastutiningsih et al., 2016). Therefore, environmental awareness plays a crucial role in maintaining natural balance and sustainability (A. M. Sari & Widiyatmoko, 2014). When implemented through foundational education, understanding and awareness of environmental quality importance can be significantly enhanced (Hamzah B. Uno, 2011).

During school age, children actively explore their surroundings, demonstrating strong motivation to understand and interact with their environment (Uyoh, Sadulloh, 2010). Early character formation regarding environmental awareness represents one approach to addressing environmental problems. Environmental concern plays a vital role in maintaining natural balance and sustainability. Environmental awareness cannot develop without internalized values of environmental care (Khairoh et al., 2014). These values enhance individual environmental consciousness, ultimately strengthening environmental preservation behaviors.

Based on observations at MI Muhammadiyah Kalosi regarding teacher and student activities during learning processes, researchers identified significantly low environmental awareness among students. This manifested in improper waste disposal behaviors. During break times, students discarded food waste in classroom gardens, inserting paper waste, plastic waste, and bottles between garden plants despite available waste bins. Additional observations revealed waste accumulation in desk drawers, including plastic waste, torn paper, pencil shavings, and decomposing food due to forgotten disposal. Despite teachers' instructions for students to maintain classroom gardens and implement daily cleaning schedules, these behaviors persist, presenting challenges for teachers in cultivating environmental awareness.

Environmental awareness character formation in schools must be meaningfully integrated into learning processes. Subject selection must align with character development objectives for environmental concern. Integrated Science and Social Studies (IPAS) represents an appropriate subject choice.

IPAS examines living organisms, non-living matter in the universe, their interactions, and human life as both individuals and social beings interacting with environments. IPAS learning requires teachers to nurture student curiosity, enabling focus on provided learning while training critical and objective thinking for solving daily life problems (Nurul Annisa, 2018). IPAS learning contributes to realizing the Pancasila Student Profile as an ideal representation of Indonesian students, helping develop curiosity about surrounding phenomena.

Current IPAS learning in schools remains predominantly teacher-centered, with educators serving as primary knowledge sources. Conventional teaching methods focus on educators, utilizing lecture methods that prevent students from comprehensively solving learning problems and maintaining concentration during lessons. Consequently, environmental awareness character formation remains minimal due to perceived monotony in IPAS lessons. This necessitates learning quality improvement through varied media, methods, models, and strategies.

Based on fifth-grade IPAS learning outcomes data for harmonious ecosystems in the 2022/2023 academic year, average daily test scores before remedial were 62, below the school's Minimum Completeness Criteria (KKM) of 70. Only 4 of 20 students achieved learning mastery, representing 20% completion rate, significantly below the required 85% classical completeness percentage.

To enhance student concentration, learning activities must be designed interactively, enabling meaningful material study through real-world conceptual connections and natural phenomena representation despite lack of direct experience. Learning media utilization represents one approach to creating meaningful learning. Character education is essential as education must develop both intelligence and character (Prananda, 2021). Meaningful learning enhances student understanding of studied materials. Attractive and user-friendly learning media includes digital technology-based media such as smartphones. Currently, rapid information technology development influences children's educational environments.

Entering the Industry 4.0 era, technology has become a life requirement. All aspects demand technology utilization, particularly digital technology like smartphones (Prasetyo & Sutopo, 2018). Information technology development has influenced various media types as learning aids, including game-based learning using Smart Apps Creator in IPAS learning. IPAS learning plays an important role in producing quality generations capable of critical, creative, character-based, and logical thinking. Android-based applications facilitate easy implementation for students.

To support this learning approach, researchers utilized an android-based natural science learning application using Smart Apps Creator (Ardiansyah & Wicaksono, 2022). This application presents IPAS learning through attractive images with audio and video explanations. Smart Apps Creator was selected for its ease in creating interactive learning media combined with animations and sound backgrounds, enhancing content appeal. The SAC application will be developed into Game-Based Learning using mobile phones, which students find engaging. Thus, mobile phones become learning media rather than mere entertainment devices.

Game-Based Learning creates enjoyable educational experiences while stimulating student learning enthusiasm, fostering motivation and encouraging innovation. According to Ley (2002), two primary roles make Game-Based Learning an attractive learning tool: 1) Inspiration through various benefits that increase student interest and enthusiasm in educational experiences; 2) Testing system enabling work with difficult-to-demonstrate, perform, or replicate real-world scenarios.

Based on these issues, this research titled "Development of Game-Based Learning in Integrated Science and Social Studies to Enhance Environmental Awareness and Learning Outcomes of Fifth-Grade Students at MI Muhammadiyah Kalosi" presents significant research value.

Method

This study employs a Research and Development (R&D) methodology aimed at developing game-based learning media using Smart Apps Creator for adjustment journal materials. The research adopts the ADDIE model developed by Dick and Carey (1996), encompassing five stages: Analysis, Design, Development, Implementation, and Evaluation. The development procedure follows a systematic approach to create and validate the educational game product.

The Analysis stage involves conducting needs analysis at the 5th grade of MI Muhammadiyah Kalosi, Enrekang Regency, to identify learning difficulties and student boredom in the independent curriculum learning process. The game-based media is expected to provide solutions for teachers and students while enhancing the versatility of instructional media. During the Design stage, researchers design product models and materials suitable for the research topic, with the product design arranged comprehensively in storyboard format. A small group trial is conducted with 10 fifth-grade students divided into 5 groups of 2 members each.

The Development stage involves creating the game product using Smart Apps Creator based on the planned design. This stage includes two validation phases: Validation I by subject matter experts and media experts, followed by Revision I based on their input, and Validation II by learning practitioners (teachers), followed by Revision II based on their feedback. The Implementation stage conducts field trials with 30 fifth-grade students from MI Muhammadiyah Kalosi, Enrekang Regency, where researchers monitor activity progress during students' use of the learning media. The final Evaluation stage measures the success of product development objectives by analyzing the final product's feasibility results.

Data collection techniques utilize both qualitative and quantitative data types. Qualitative data consists of criticisms and suggestions from subject matter experts, media experts, and students, while quantitative data comprises evaluation results from various experts and student responses. The data collection instruments include questionnaire methods using a 5-point Likert scale for experts and a 4-point scale for environmental care attitudes, test methods using true-false multiple choice tests to measure students' environmental care knowledge, and effectiveness tests using learning achievement data through pre- and post-media use learning outcome tests.

Data analysis techniques are applied differently for qualitative and quantitative data. Qualitative data from suggestions and input from subject matter experts, media experts, learning practitioners, and students are analyzed descriptively. Quantitative data analysis involves converting qualitative data to quantitative using a 1-5 scale, calculating mean scores for each indicator, and interpreting results based on feasibility criteria: Very Feasible (>4.20), Feasible (3.40-4.20), Adequate (2.60-3.40), Not Feasible (1.80-2.60), and Very Not Feasible (1-1.80).

The effectiveness test employs a One Sample t-test using SPSS application to compare sample means with existing population means. The normality test requirement must be fulfilled (sig > 0.05), and decision-making is based on significance values: if Sig.(2-tailed) < 0.05, the null hypothesis is accepted. This comprehensive research methodology aims to produce feasible and effective game-based learning media to enhance adjustment journal material learning at the elementary school level, providing a systematic approach to educational technology development and validation.

Hasil dan Pembahasan

Needs analysis is related to the problems and characteristics of students and the use of learning game media in the learning process, analysis of teacher needs and competency standards, basic competencies contained in learning game media. The analysis stage is carried out through observation of the activities of teachers and students at MI Muhammadiyah Kalosi, the purpose of the observation is to better understand the core problems experienced by teachers during the learning process. The results of the observations made were obtained as a result of the lack of environmental care of students and the use of media in the teaching and learning process in the classroom. This is not in line with the attitude of caring for the environment, especially schools and the development of technology that is increasingly developing, this makes teachers should make changes for the better.

The curriculum used at MI Muhammadiyah Kalosi is the Independent Curriculum. The media is adjusted to the learning outcomes and learning objectives in the subject of IPAS Chapter V of the Ecosystem Harmony material which is focused on the third part, namely a harmonious ecosystem according to the material related to the development of Learning Game Media. Media development is very suitable for related materials because it can explain the material in a real way that can make students easily understand the material presented.

The design stage is the planning stage of the media to be created, including the

design of the storyboard, the preparation of backgrounds, sounds, animations and buttons, as well as the installation of learning game media making applications on laptop devices so that every part of the product can be seen.

Storyboard Planning

Storyboard is Smart Apps Creator's entire set of rocky Learning Game Media that includes a front page, materials, games and evaluations. Everything from the beginning to the end of the creation of Smart Apps Creator Learning Game Media will be summarized on the Storyboard

Plot Planning

The plot design is carried out to determine how the flow and events of the Smart Apps Creator Learning Game Media are interesting and structured so that it can improve the character of caring for the environment and learning outcomes of students.

Small Group Trials

In the first test, a small group trial was carried out on 10 students, and given questions and questionnaires to determine the feasibility of the media in terms of material about students' understanding. The results of the questionnaire and evaluation assessment are as follows

Questionnaires are given to students to find out the feasibility as a learning game medium. The results of the questionnaire in the small group trial are shown in the following table:

Table 2.1 Small Group Trials

No.	Indicator	mean	Category
1.	Aspects of attracting students	3,97	Highly Worth It
2.	Aspects of material presentation	4,03	Proper
3.	Aspects of increasing students' attention	3,5	Proper
4.	Motivational aspects	4,4	Highly Worth It
Rata-rata Keseluruhan		3,98	Proper

Table 2.1 shows the results of the small group trial questionnaire of 3.98, if converted in a formula with a result of 3.98 < 4.20 it is categorized **as "Feasible"**, so it can be concluded that it is feasible to be field tested.

Development Stage

In the development stage, it starts from the creation *of Smart Apps Creator* Learning *Game Media on the* Smart Apps Creator *application* that has been absorbed.

Stages of Making Learning Game Media

a. Open the *Smart Apps Creator* app on your mobile device, and wait for the page to open.

Figure 2.Initial view of the SAC application

b. After the application opens, it will appear on the display screen as shown below, then select one of the desired panels.

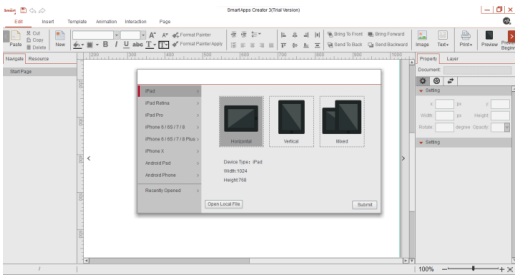


Figure 3 Layout Options Display in Smart Apps Creator Application

c. Select android phone and click on the mixed menu so that the game media can later be used vertically or horizontally.

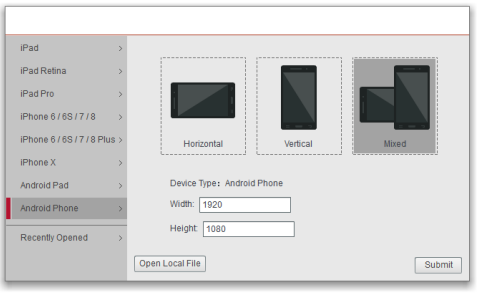
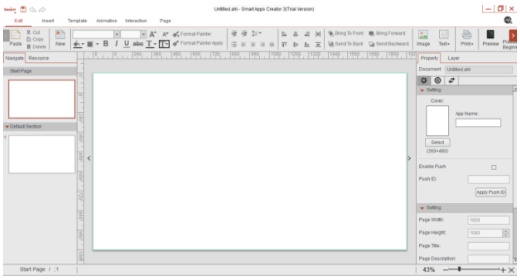


Figure 4 Display Type Layout in Smart Apps Creator Application

d. Enter the wallpaper to be used in the Smart Apps Creator application, starting from the start page to the profile page.



e. After the media is compiled and finished, then the media is exported into apk format, then add the application icon and then submit it to the computer or laptop so that it can be installed on android. Furthermore, products are in the form of .apk that are ready to be shared via WhatsApp, Telegram and others. The installation process does not take long.

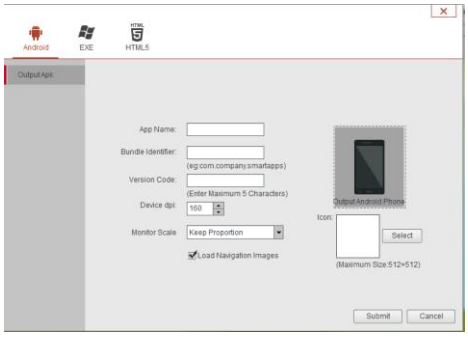


Figure 5 APK Output on *Smart Apps Creator Application*

In the first phase of validation, the media is assessed by media experts, metering experts and suggestions for validation experts are the basis for media improvement. *The Smart Apps Creator* Learning Game Media was validated by Mr. **Ismail, S.Pd., M.Pd** as a media expert. The following are the results of the validation of the media that has been created:

Table 2.2 Media Expert Research Results

No.	Indicator	Assessment Score	Average
1.	Visual aspect of the display	51	4,64
2.	Aspects of visaul communication	68	4,86
Overall Average			4,75

In the results of the assessment of media experts, an average score of 4.75 was obtained. Then the average result is convected in a formula with a result of 4.75 > 4.20 categorized as "Very Feasible" so that it can be concluded "Feasible to be tested with revision in accordance with the suggestion"

Validasi Ahli Materi

The Smart Apps Creator Learning Game Media was validated by Mrs. Dian Firdiani, S.Pd., M.Pd as a material expert. The following are the results of validation of the media that have been created

Table 2.3 Results of Material Expert Research

No.	Indicator	Assessment Score	Average
1.	Material aspects	27	3,4
2.	Social aspects	17	3,4
3.	Language aspects	7	3,5
4.	Implementation aspects	13	4,3
Overall Average		64	3,65

Table 2.3 shows that the results of the assessment of material experts get an average score of 3.65. Then the average result is converted in a formula with results of 3.40 < 3.65 < 4.20 categorized as "Feasible", so that it can be concluded that "feasible to be tested with revision according to the suggestion".

The Learning Game Media assisted *by Smart Apps Creator* was validated by Mrs. **Yulianti S.Pd** as an expert learning practitioner. The following are the results of validation of the media that have been created:

Table 2.4 Expert Practitioner Research Results

No.	Indicator	Assessment Score	Average
1.	Aspects of software engineering	49	4,9
2.	Visual communication aspects	25	5.0
3.	Visual aspects	25	5,0
Average			4,98

In table 2.4, the results of the expert research of learning practitioners obtained an average score of 4.98. Furthermore, the average results are convected into qualitative data in a formula with results of 4.20 < 4.98 Categorized as "Very feasible". So it can be concluded that "Worth testing".

The implementation stage was carried out by testing its usefulness in the field to 20 students of class V of MI Muhammadiyah Kalosi. The implementation stage is carried out in Field Trials/Large Groups:

Field Test/Large Group

At the field trial stage, learning game media was given to 20 students and was also given a questionnaire. The results are as follows:

Questionnaires are given to students to find out the feasibility as a learning game medium. The results of the field trial questionnaire are in the following table :

Table 2.5 Results of the Field Trial Questionnaire

No.	Indicator	Average	Category
1.	Aspects of attracting students	12,35	Highly Worth It
2.	Aspects of material presentation	13,5	Highly Worth It
3.	Aspects of increasing students' attention	4,5	Highly Worth It
4.	Motivational aspects	9,05	Highly Worth It
Overall Average		8,7	Highly Worth It

Table 2.5 shows that the results of the field trial questionnaire are 8.7 if converted in a formula with a result of 4.20 < 8.7 is categorized as very feasible, so it is feasible to be field tested.

Table 2.6 Results of the Environmental Care Attitude Questionnaire

Variabel	Indicator	Statement (+)	Statement (-)
	Cleaning the toilet	217	143
	Cleaning the bin	69	72
	Cleaning the school	135	137
	Beautify classrooms and schools with plants	143	141
	Participate in maintaining plants in the school yard	68	138
	Participate in activities to maintain environmental cleanliness	200	67
Sum		832	698

Evaluation Stage

At this stage, the researcher conducts an evaluation to measure the success of the goal of describing the needs for the development of smart apps creator-assisted learning game media products to improve student learning outcomes to determine the feasibility results of the final product. The researcher used the pretest posttest design calculation method. Pretest questions are given before the implementation of smart apps creator-assisted learning game media. Then the scores obtained from the pretest results are compared to *the posttest* scores that have been given to students after the application of learning game media. The results of the comparison will later be obtained as a result of the effectiveness of learning game media assisted *by smart apps creators* in improving student learning outcomes

Learning Game Media assisted *by smart apps creator* meets the valid criteria/.

The feasibility assessment (validation) of learning game media assisted *by smart apps creator* was validated by media experts, namely **Mr. (Ismail, S.Pd., M.Pd),** material experts, namely Mrs**. (Dian Firdiani, S.Pd., M.Pd)** and practitioner experts, namely homeroom teacher of class V MI Muhammadiyah Kalosi, namely Mrs**. (Yulianti, S.Pd).** The following are the results of the recapitulation of media experts, material experts and learning practitioners.

Table 2.7 Recapitulation of Research Results by Experts

No.	Members	Total score	Average	Category
1.	Media members	119	4,75	Highly Worth It
2.	Material Expert	64	3,65	Proper
3.	Expert practitioner	99	4,98	Highly Worth It
Overall Average		282	4,46	**Highly Worth It**

The results obtained by each expert were then recapitulated and obtained a result of 4.46 included in the **"Very Feasible"** category so that it was suitable for field trials.

Smart apps creator-assisted learning game media meets practical criteria

Learning game media assisted *by smart apps creator* that has been developed to meet the criteria of practitioners, students provide assessments of the media through the questionnaire given. The assessment was carried out at the implementation stage, namely the large group trial stage consisting of 20 students who obtained an average score of 8.7 categorized as Very Feasible. Based on this assessment, it can be concluded that learning game media assisted *by smart apps creators* can meet the needs of students in the learning process so that they are suitable for use in learning.

Learning Game Media *assisted by smart apps creator* meets the effective criteria

The test of the effectiveness of learning game media assisted *by smart apps* creators was first pretested for students. The pretest is carried out at the beginning of the learning by being given questions related to the material. After *the pretest, a posttest was carried out using learning game media assisted by smart apps creators* to find out the mastery of the material. The average score of the *pretest* is 73 while the posttest is 85. This shows that there is an increase in the average score of student learning outcomes after the use of game based learning media assisted *by smart apps creators*.

Based on the data above, it can be concluded that smart apps creator-assisted learning game media is effectively used as a learning medium. This is seen from the results of sig.2-tailed smaller than 0.05, which is 0.000 < 0.05. Meanwhile, the results of the one sample test formula, the pretest obtained a calculated t-value of 37,763. From the results of the t-table value and the t-table value, it can be concluded that Ho is rejected and Ha is accepted because the t-value is calculated 37,763 > t table 2,086. Meanwhile, the posttest obtained a calculated t value of 38.013 > t table 2.086. Thus, it can be concluded that the learning game media assisted *by smart apps creator* used by class V students of MI Muhammadiyah Kalosi is effectively used as a learning medium.

Conclusion

Based on the explanation of this study, the researcher drew several points from the research results, including:

1. An overview of the needs for the development of learning game media, consisting of the needs of students, teachers and curriculum. In terms of student needs, it is necessary to have a media that is able to integrate the material in it so that students are easier to understand the material conveyed, besides that there is also a learning game media that has been developed as a solution so that learning is more varied because students tend to like to play. Furthermore, the needs of teachers, which is one of the reasons for the development of learning game media. In the aspect of teacher needs during the learning process, teachers tend to use lecture methods that make students bored during the learning process. A teacher sometimes already has the ability to use technology but does not have electronic media. With the development of learning game media, teachers can not only be the main informant but also make the learning atmosphere fun. In the aspect of curriculum needs, the focus is on the subject of social studies of harmonious ecosystem materials. The learning game media developed is very suitable for this material because it contains real material.
2. Learning Game Media assisted *by Smart Apps Creator* is categorized as valid and suitable dipakai sebagai alternative pada pelaksanaan pembelajaran, hal ini dibuktikan dengan telah dilakukannya validasi oleh beberapa ahli dalam bidang pengembangan dengan hasil akhir rata rata 4,46 dengan kategori sangat layak.
3. Learning Game Media assisted by *Smart Apps Creator is* practically used as a supporting tool for the delivery of harmonious ecosystem materials as seen from the questionnaire of student responses in the large lombok test of

One-Sample Test

Test Value = 0

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Pretest	37.763	19	.000	73.000	68.95	77.05
Postest	38.013	19	.000	85.000	80.32	89.68

20 people obtained a score of 8.7 with a very feasible category.

4. In Smart Apps *Creator-assisted learning game media* is effective for use in teaching and learning activities in the classroom, the results of *the Pretest* and *Posttest* evaluations carried out by 20 students with scores obtained are 73 before the use of learning *game* media and for *posttests* With a total score of 85 after the use of learning game media assisted *by Smart Apps Creator*. Based on the results of the T-Test, the sig.2-tailed result is less than 0.05, which is 0.000 < 0.05. Meanwhile, the results of the one sample test formula, the pretest obtained a calculated t-value of 37,763. From the results of the t-table value and the t-table value, it can be concluded that Ho is rejected and Ha is accepted because the t-value is calculated 37,763 > t table 2,086. Meanwhile, the posttest obtained a calculated t value of 38.013 > t table 2.086. Thus, it is concluded that the learning game media assisted by *smart apps creators* used by class V students of MI Muhammadiyah Kalosi is effective to be used as a learning medium.

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Curriculum Vitae

Muflihah Salahuddin. Born on Saturday, January 1, 2002 in Kalosi, Alla District, Enrekang Regency, South Sulawesi Province which is the last of nine children of Salahuddin Djangi and Nismawati. The author started his education at the State Elementary School (SDN) 54 Kalosi and graduated in 2013. Then continued his education at Madrasah Tsnawiyah Muhammadiyah (MTs Muh) Kalosi and graduated in 2017. Then she was registered as a student of Madrasah Aliyah Muhammadiyah (MA Muh) Kalosi and graduated in 2020. In 2020, the author continued his education at the University of Muhammadiyah Enrekang, Faculty of Teacher Training and Education, Elementary School Teacher Education Study Program (PGSD). The writer also had time to participate in the Student Exchange at the University of Muhammadiyah Jakarta in 2022-2023 for one semester, an achievement achieved while being a student and being the best writer at the national level organized by Friends of Writing Creation. In 2024, the author wrote a thesis with the research title ***"Development of Game Based Learning in Social Science Subjects to Improve the Character of Environmental Care and Learning Outcomes of Class V Students of MI Muhammadiyah Kalosi".***