Proceedings Series of Educational Studies

The 4th International Conference on Educational Management and Technology (ICEMT) 2025

DEVELOPMENT OF INTERACTIVE WEB-BASED LEARNING ON THE CLASSIFICATION OF LIVING THINGS IN THE SUBJECT OF SCIENCE FOR CLASS VII

Charenza Deva Kurniawatiz[1], Shinta Yuflih[2]*, Agus Wedi[3], Saida Ulfa[4]

State University of Malang, Jl. Semarang No. 5 Malang, East Java, Indonesia

*Author of correspondence, Email: *shinta.yuflih.2301216@students.um.ac.id*

Abstract

This research aims to develop interactive web-based learning media using *Software Genially for* junior high school students in the science subject of class VII at SMPN 4 Kediri. This learning media is designed with consideration for the fact that students often use smartphones. Interactive web-based learning media implemented in learning activities serve as a source of learning materials that enhance student understanding and help solve problems faced. This includes interactive images, videos, audio, and quizzes. The study used the ADDIE development model, which provides for validation by media experts, material experts, and trials. The validation results from media experts showed a feasibility level of 98%. The application trial showed an increase in students' average score of 82, exceeding the Minimum Completion Criteria (KKM). In conclusion, the implementation of web-based learning for Class VII C students showed that it is effective and can provide a greater influence on science subjects.

Keywords: *Learning Media; Genially; Interactive Web*

1. Introduction

The Industrial Revolution 5.0 emerged as a response to the challenges faced during the Industrial Revolution 4.0, which was characterized by high levels of automation and digitalization. Rapidly advancing and developing technology has become a tool in education. Educational science has experienced rapid development. Advances in digital technology have had a significant impact on several sectors, one of which is education (Yahya & Lee, 2023)

Education today must adapt to current developments, as keeping up with the times can increase students' motivation to learn. Along with the emergence of technological developments, especially the internet, which contains information systems, current learning processes have maximized existing information technology, from elementary school to university (Darojat et al., 2022). This aligns with the objectives of the current Merdeka curriculum, which emphasizes adaptability, flexibility, and improved learning quality, allowing teachers to choose teaching tools and methods tailored to student characteristics. With the implementation of this curriculum, educators are required to explore learning strategies, including learning media that utilize information technology. However, many still focus solely on textbooks, resulting in boring learning and student disinterest (Nuraini et al., 2021). This is due to a lack of knowledge and skills in using learning media, leading educators to simply assign assignments from student worksheets (Anggraeni et al., 2021).

Based on the learning problems that have been raised, appropriate solutions are needed to overcome these problems in the learning process. One way is to use engaging, interactive web-based learning multimedia to stimulate student learning motivation. Because media acts as a communication medium, this aligns with the purpose of media, which is to facilitate

communication and learning for students (Mataputun, 2020)Interactive web-based learning multimedia has become an increasingly popular learning tool in modern education. This media can present learning materials comprehensively through a combination of visual, audio, and kinesthetic elements, thus accommodating various student learning styles. With its ability to combine text, images, animation, sound, and video in one interactive platform, interactive multimedia offers a richer and more in-depth learning experience than conventional learning methods (Djatmika & Praherdhiono, 2024). Interactive learning multimedia has great potential to improve the quality of learning (Pradana et al., 2020).

Research (Septianingsih et al., 2023)suggests that the potential of new technologies such as virtual reality, augmented reality, and artificial intelligence in creating more immersive and personalized learning experiences remains largely unexplored. Future research should focus on how these technologies can be effectively integrated into interactive web-based learning multimedia to enhance engagement and learning outcomes. Thus, interactive web-based learning multimedia is here to provide broader innovation, where students can explore technology learning. This can make it easier for students students can learn anywhere and any time, not constrained by space and time. The advantages of web-based interactive learning media include flexible access, enabling self-paced learning, and providing the opportunity to combine diverse interactive elements to enhance student interaction and engagement (Suryaningrat et al., 2023).

Based on observations in the form of interview results conducted with teachers at SMPN 4 Kediri, the science learning process, specifically the Classification of Living Things material so using learning media in the form of textbooks and videos taken from YouTube and shared via WhatsApp groups, students feel bored and don't understand the material. happens because the material is Classification of Living material is extensive and requires visualization. Therefore, learning media that encourages active student participation is needed to help them understand the classification of living things.

According to Piaget, junior high school students begin to enter the formal thinking phase, which begins at age 11 and above. In this phase, students can think abstractly and logically, as well as develop their thinking. Students at this stage can understand concepts that cannot be seen directly (PIAGET, n.d.).

Although many studies have discussed interactive multimedia, this research has a unique aspect that sets it apart from previous studies. First, this research and development covers various ways in which students learn through interactive multimedia. multimedia Interactive, web-based learning. The material offered is more interactive, complemented by online observations and quizzes that have an attractive, game-like appearance. This way, students with different learning patterns in one class can be well-served. Second, this interactive multimedia is designed for easier access via smartphone, consisting of a combination of applications and the web that can be easily accessed via computer or mobile phone. Third, the Genially platform is utilized as the primary medium for developing interactive web-based learning multimedia. The solution is that it can be integrated with the YouTube platform as a supporting medium so that students can understand the material well.

Referring to the explanation above, the researcher is interested in conducting research and development of a multimedia learning tool in Research and Development (R&D). entitled "Development of Interactive Web-Based Learning on the Classification of Living Things

Material for Science Subjects for Class VII" researchers are interested in conducting research and development because, based on the data obtained in the previous description, it is necessary to develop a web-based learning multimedia. Interactive Genially platform-assisted. This study conducted an eligibility Interactive web-based learning multimedia through media and material validity testing activities. This research is expected to create active learning, where students, as media users, can utilize learning multimedia as a solution to problems.

2. Method

This research uses the method of *Research and Development* (R&D)*.* This research aims to produce valid and practical learning products in the field of education by testing the product's feasibility. Research and development aim to produce or refine products through a needs analysis process to ensure they are appropriately used in learning. Development research produces products in the form of learning media. Use *software* Genially in the subject of Science, Classification of Living Things Class VII.

This research uses the ADDIE development model. This model was chosen based on the consideration that this model was developed systematically, structured, and based on a theoretical foundation. Design learning as a problem-solving effort. Study related to teaching materials that are appropriate to the needs and characteristics of students so that the learning process can run optimally. The ADDIE development model consists of 5 stages, namely analysis (*analyze*), Planning (*design*), development (*development*), implementation (*implementation*), and evaluation*(evaluation*) (Safira et al., 2021)

At this stage, the researcher analyzes to explore information on participant characteristics. education, learning process, learning strategies, and learning media. Data collected from several aspects were collected using interview techniques conducted with one of the seventh-grade teachers at SMPN 4 Kediri and three seventh-grade students at SMPN 4 Kediri. The average age of seventh-grade students is 14-15 years old. This age is at the formal operational stage. At this level means that their thinking ability is no longer dependent on real events, and they can reason logically. Learning media used during science learningspecifically the material Classification of living things, is still focused on textbooks/LKS, occasionally using learning videos from YouTube, which are provided as references in the RPP from the service.

According to the seventh-grade teacher at SMPN 4 Kediri, multimedia learning that integrates technology is an excellent learning tool, considering that we are entering the digital era, which inevitably requires educators to learn and apply information technology to provide effective learning to students. In line with the implementation of the Merdeka curriculum, teachers can tailor learning to students' characteristics.

Design stage, the developer designs the media according to the results of the previous analysis, including stating the learning outcomes obtained from the RPP. The results are level in the form of a model framework that was exported. 1) Determine media platforms that can support student learning; 2) Compile teaching materials for contextual learning activities by paying attention to learning outcomes and learning objectives to sort teaching materials and student assessments; 3) Developers create storyboards that are compiled in sequence forBuilt on the Genially platform, developers determine the types of images/illustrations, interactive elements, navigation, and instructional videos. The following is the Genially platform framework.

The product design plan is realized in real terms. Objects in the form of text, materials, animations, illustrations, images, audio, and others are packaged in such a way as to create interactive web-based learning multimedia products. The development stage consists of 3 stages, namely the pre-production stage, the production stage, and the post-production stage including: 1) Developing learning materials, such as learning videos, interactive elements; 2) Developing learning multimedia using the Genially platform; 3) Conducting pre-testing of learning materials to ensure their effectiveness; 4) Revising and refining interactive materials and elements. The next stage of developing interactive web-based learning multimedia is validation of learning multimedia by media experts and validation of materials with material experts, with a questionnaire to determine the feasibility of the developed MPI. The results of the validation of learning multimedia by experts and experts will be revised and then tested on users who become research subjects

This stage involves the application or implementation of MPI interactive web-based learning multimedia to users, namely, seventh-grade students in the science subject. The implementation stage involves 32 students in class VII C of SMPN 4 Kediri. This evaluation stage was conducted concurrently with the development and implementation stages. Evaluation was conducted at all stages, including evaluation and revision. The evaluation phase consists of two aspects: formative and summative. Formative evaluation is conducted to generate revisions. Summative evaluation is the final evaluation that determines the product's feasibility.

Data collection techniques include media expert validation questionnaires, material expert validation questionnaires, and respondent questionnaires. The questionnaires will be distributed to expert validators and students to determine the suitability of the learning resources. The research instruments used are validation sheets and student response questionnaires. The data obtained will be analyzed descriptively and quantitatively.

Table 1. Product Eligibility Criteria

Eligibility Criteria (%)	Criteria Validation
81%-100 %	Very Worthy
61%-80 %	Worth it
41%-60 %	Ineligible
21%- 40%	Not feasible

3. Results and Discussion

3.1 Result

This development research produces a product is an interactive web-based learning multimedia for the Classification of Living Things material for the Science subject for grade VII. Interactive multimedia developed using the Genially platform.

Analysis

a) Pre-production stage

In the pre-production phase, developers prepare the Genially platform used as the primary medium and use the Canva platform to process the design and image or illustration displays. Meanwhile, software is used to develop learning videos. Powtoon. In addition, part of the material in interactive web-based learning multimedia utilizes the platform YouTube to clarify material using videos. This supplementary media content is collected and packaged with material on the Genially platform.

b) Production

The production phase of development involves developing interactive web-based learning multimedia by packaging the classification of living things using the Genially platform. The results of this phase are as follows:

a. Home Page

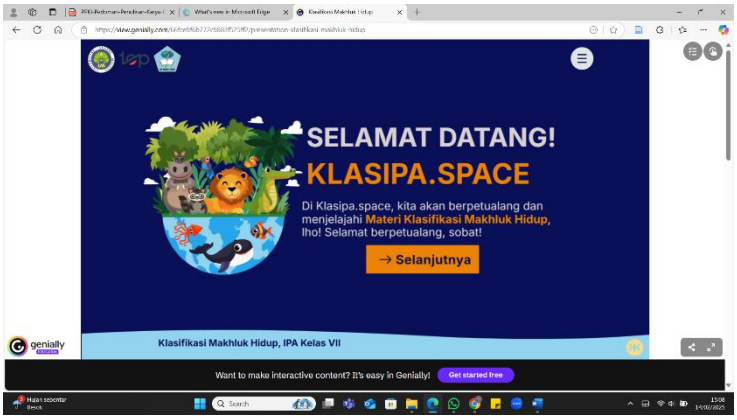


Figure 1. Home Page

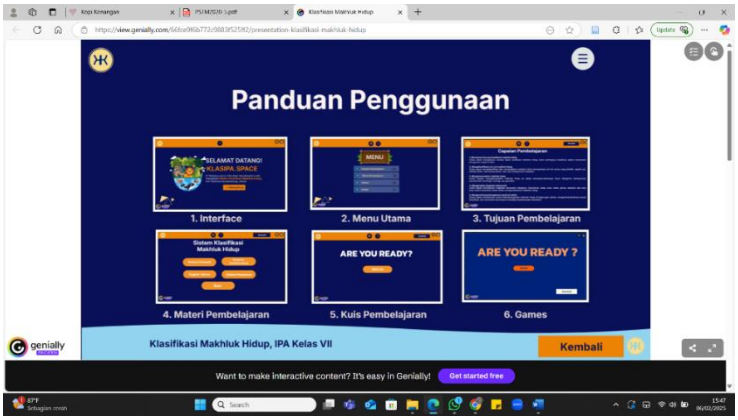


Figure 2. User guide page

Figure 3. Learning material page

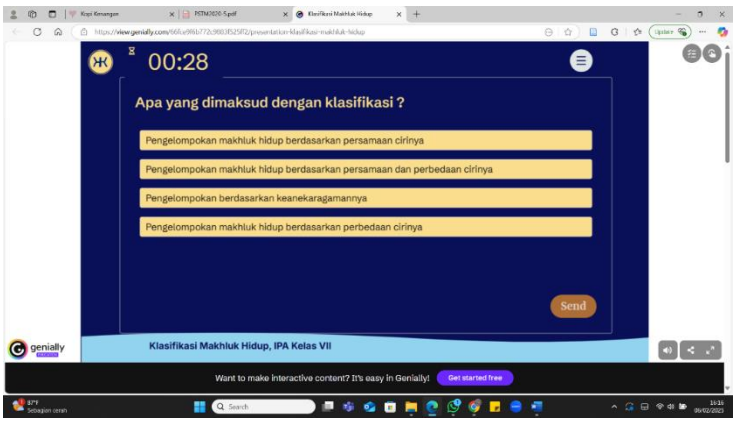
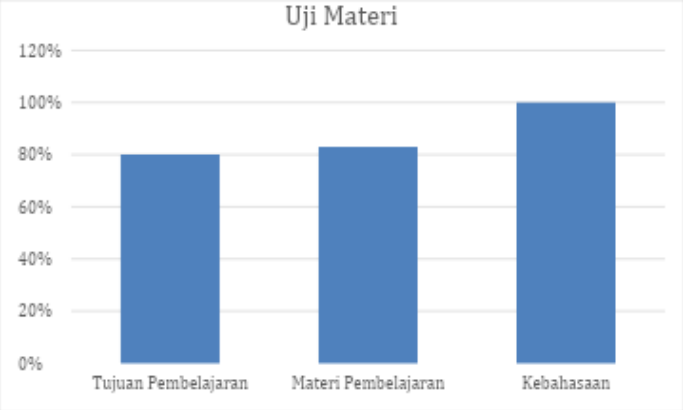


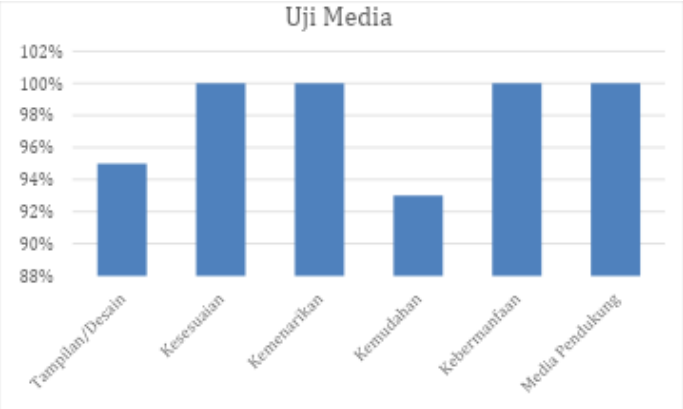
Figure 4. Quiz or assessment page

Furthermore, the learning media that was developed has gone through a validation process by material experts, media experts, and student response questionnaires, pre-tests, and post-tests, which are presented in the following graph:



Graph 1. Data from Validation Results of Material Experts

Based on the data, 3 questions met the very appropriate criteria, and 7 questions met the appropriate criteria. shows that overall the average assessment achieved feasibility, namely, the learning objectives aspect was 80%, the learning materials aspect was 83%, and the language aspect was 100%. With an average feasibility value of 86% for all aspects, this value is included in the Very Feasible category. This means that interactive web-based learning multimedia is good for use by students in science learning activities.



Graph 2. Media Expert Validation Results Data

Based on the data, 18 questions met the very appropriate criteria, and 2 questions met the appropriate criteria. The calculation results above display that after being converted into a 5-scale table. Then the average validation score was 98%, which

means this media is effective and valid. Therefore, Interactive Multimedia is categorized as very suitable.

Table 2. Individual Trials

No.	Assessment Aspects	Respondent Score		Maximum Score
		1	2	
1.	Technical Usage	9	9	10
2.	Appearance/Design	26	28	30
3.	Material/Content	24	22	25
4.	Supporting Media	32	38	40
Total Shoes		95	97	105
Total Percentage (%)		90.48%	92,38%	100%
Rate-Rata		93,6%		
Category		**Very Worthy**		

Based on product eligibility criteria, the percentage results showed that Interactive Multimedia received a score of 93.6%, which means it falls into the valid/suitable category for use. Therefore, Interactive Multimedia for Science for Grade VII is worthy of being tested in the learning process as a learning medium. learning student

Table 3. Small Group Trial

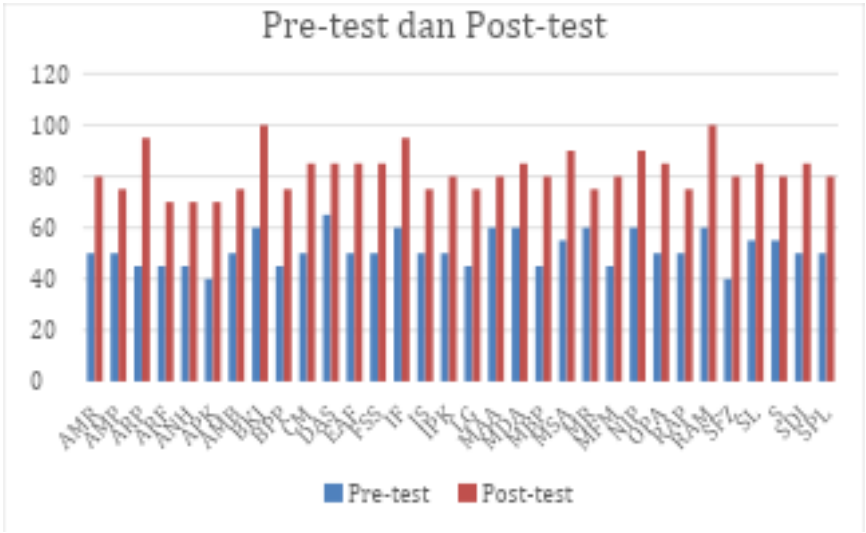
No.	Assessment Aspects	Respondent Score			Maximum Score
		1	2	3	
1.	Technical Usage	10	9	9	10
2.	Appearance/Design	29	22	26	30
3.	Material/Content	22	23	22	25
4.	Supporting Media	34	36	32	40
Total Shoes		95	90	89	105
Total Percentage (%)		90.5%	85.7%	84.8%	100%
Rate-Rata		86.9%			
Category		**Very Worthy**			

Based on the product feasibility criteria, the percentage shows that Interactive Multimedia obtained 86.9%, which means it meets the valid/suitable category for use. Therefore, Interactive Web-based Learning Multimedia for Science Subjects for Class VII of Junior High School is worthy of being tested in the learning process as a learning medium.

Table 4. Large Group Trial

No.	Assessment Aspects	xi	x	Percentage (%)
1.	Technical Usage	377	400	94,25%
2.	Appearance/design	569	600	94,83%
3.	Material/Content	189	200	94,50%
4.	Supporting Media	380	400	95,50%
	Total Shoes	1515	1600	94,65%
	Rate-Rata		**94,65%**	
	Category		**Very Worthy**	

Based on the table, the response of the large group to the E-Module for History Subjects for Class XI SMA has obtained from the results of a questionnaire of 20 students an average of 94.65%. Of the 20 students tested, 222 received a score of 5 (very good), 72 received a score of 4 (good), 5 received a score of 3 (sufficient), and 1 received a score of 2 (less good). Based on the product eligibility criteria, the percentage shows that the E-Module got 94.65%, which means it is in the valid/suitable for use category.



Graph 3. Pre-test and Post-test Result Data

Based on the table, it can be concluded that the average student score in the pre-test was 51.9%, but the average post-test score reached 82%. The results of the pre-test

and post-test, which were conducted by providing multiple-choice questions, aimed to measure the effectiveness of interactive web-based learning multimedia before learning began without using the media, and after using web-based learning multimedia. interact during learning activities. This test was conducted on 32 students of class VII C of SMPN 4 Kediri in the Science subject with the material Classification of Living Things. The average student pre-test score was 51.4, while the average student post-test score was 82. Based on information from the science subject teacher for Class VII C, the Minimum Completion Criteria (KKM) is 80. Therefore, it can be concluded that the use of interactive web-based learning multimedia has a role as a learning medium that has a much greater influence on science subjects and has proven to be effective as a learning tool.

3.2 Discussion

Part of this research and development resulted in an interactive web-based multimedia learning product for the Classification of Living Things subject in Grade VII Science, named Klasipa.Space. This product is a digital learning medium that integrates technology by utilizing the Genially platform as the primary development medium and integrating YouTube as a supporting medium published on the web. The learning multimedia contains several media elements: text, images/illustrations, audio, and video (Safira et al., 2021).

This research and development was conducted based on a needs analysis conducted by developers at SMPN 4 Kediri. The data collection stage for the needs analysis used interview techniques. Results. This need is known to be because the learning media used by teachers are textbooks and YouTube videos. Furthermore, the material on the classification of living things is broad, abstract, and requires visualization, making it difficult for students to understand. Developers also found that information technology-based media have not been widely developed in the field of education. The learning process is often still focused on one-way learning from textbooks or teachers. The development and utilization of interactive web-based learning multimedia is expected to be a learning solution. This is in line with the opinion of (Saleh & Syahruddin, 2023)that the main function of learning media is to create conditions for students to capture knowledge accurately and deeply, as well as develop cognitive capacity.

Interactive web-based learning multimedia for the classification of living things for Grade VII Science is tailored to the learning outcomes of the currently implemented Merdeka curriculum. The characteristics of interactive web-based learning multimedia are that it involves students as users, thereby increasing their interest. Study(Pratama & Hasanah, 2024).

The development of interactive web-based learning multimedia has been tested for its feasibility with media experts, content experts, and students as users. The results of the validation test conducted with media experts obtained a score percentage average of 98% falls within the very feasible criteria. Although it met the very feasible criteria, there were comments/suggestions given by the media validator, namely, a footer containing the subject title. Validation by material experts was conducted on January 21, 2025, and obtained a score of 86%, meaning that interactive multimedia met the Very Suitable criteria. Although interactive multimedia met the very feasible criteria, interactive multimedia received

comments and suggestions from the material validator, namely renewing learning outcomes by the Independent Curriculum. Based on the responses of media expert validators and media experts, interactive web-based learning multimedia is valid/suitable for implementation to users or learners.

After conducting media and material validation tests, and obtained a very feasible category. Furthermore, interactive web-based learning multimedia can be implemented in the learning process. The implementation of interactive multimedia aims to measure student responses to the appeal and effectiveness of interactive multimedia in Class VII of SMPN 4 Kediri. During the implementation, 3 tests were carried out on students, including: individual trials conducted on 2 students, small group trials conducted on 3 students, and large group trials conducted on 20 students.

Individual trials conducted on 2 students obtained an average score of 93.6% which is in the valid/feasible category. Then, a small group trial was conducted on 3 students who obtained a score. The average score of 86.9% is in the valid/adequate category. In a large group test conducted on 20 students, the score obtained was 92.79% included in the category feasible. Based on the feasibility of the media that has been implemented, students have received a positive response, this is proven by the value included in the eligible category.

To test the effectiveness of interactive web-based multimedia learning, a pre-test and post-test were conducted. The pre-test results showed an average score of 51.4, while the post-test results showed an average score of 82. show that there is an increase when using interactive web-based learning multimedia. Overall, the responses from grade VII students at SMPN 4 Kediri regarding the interactive web-based learning multimedia material. This classification of living things is a very interesting media, making it easy for students to learn the content of the material and fostering motivation for students to want to explore the content of the material on the classification of living things. Increasing learning stimuli is the goal of this interactive web-based learning multimedia research, because the desire to explore knowledge for students is the cause of the influence on student learning outcomes in learning achievements.

The learning process through interactive web-based multimedia learning has been proven to significantly support educators in delivering learning materials. According to (Anggraeni et al., 2021)professional teachers must be able to investigate what can capture their students' attention. However, each basic skill may have varying levels of difficulty. In learning activities, teachers must be able to create innovations, one example of which is developing media that... is designed to be unique and engaging in its use. Improved student learning outcomes are expected because students enjoy and are motivated to understand the material on technological advancements. This is due to the unique and engaging presentation of the material through interactive web-based smartphones for learning activities. One option to improve the quality of student learning is through the use of multimedia learning.

The research and development results above demonstrate that interactive web-based multimedia learning in learning procedures can improve student learning interest, according to media experts, content experts, and seventh-grade science teachers. Interactive web-based multimedia learning enables students to learn independently. Technological advancements in learning can have a positive impact. The use of multimedia learning in the learning process can enhance teaching and learning activities.

4. Conclusion

Interactive web-based learning multimedia has been developed following the steps of the ADDIE Model, which consists of five stages: analysis, design, development, implementation, and evaluation. The validation process of this interactive multimedia was carried out by two validators, namely an expert in media testing and an expert in material testing. The results of the media expert assessment showed a percentage of 98% which fell into the very feasible category, while the assessment from the material expert reached 86%, also in the very feasible category. Based on the evaluation of the validators, this interactive multimedia was declared suitable for use in learning. Furthermore, this interactive multimedia was tested three times with different approaches, including individual tests, tests for small groups, and tests for large groups. The average result for the individual test was 93.6%, and for the small group test was 86.9%, included in the valid/feasible category. In addition, the effectiveness obtained shows a score above the Minimum Completion Criteria (KKM) with an average value of 82 applied to 32 students of class VII C, indicating that most students can understand the material delivered through interactive web-based learning multimedia well and achieve the expected competencies in Science subjects. The implementation of interactive web-based learning multimedia on the Classification of Living Things in Science subjects for class VII has a very positive effect in improving students' understanding of the material, interestingly, and motivating them to learn.

References

Anggraeni, S. W., Alpian, Y., Prihamdani, D., & Winarsih, E. (2021). Pengembangan multimedia pembelajaran interaktif berbasis video untuk meningkatkan minat belajar siswa sekolah dasar. *Jurnal Basicedu*, *5*(6), 5313–5327.

Darojat, M. A., Ulfa, S., & Wedi, A. (2022). Pengembangan virtual reality sebagai media pembelajaran sistem tata surya. *Jurnal Kajian Teknologi Pendidikan*, *5*(1), 91–99.

Djatmika, E. T., & Praherdhiono, H. (2024). Belajar matematika lebih menyenangkan: Pengembangan multimedia interaktif berbasis gamifikasi untuk operasi bilangan bulat. *Didaktika: Jurnal Kependidikan*, *13*(4 Nopember), 5045–5060.

Mataputun, Y. (2020). Analisis pemenuhan standar nasional pendidikan dan permasalahannya. *Jurnal Konseling Dan Pendidikan*, *8*(3), 224–233.

Nuraini, M. F., Susilaningsih, S., & Wedi, A. (2021). Pengembangan Multimedia Interaktif Materi Perubahan Wujud Benda Bagi Siswa Sekolah Dasar. *Jurnal Kajian Teknologi Pendidikan*, *4*(1), 33–40.

PIAGET, M. J. (n.d.). *PENGEMBANGAN ASPEK KOGNITIF ANAK*. Retrieved July 31, 2025, from https://repository.uinsaizu.ac.id/24421/1/skripsi_Melpi%20Herlinawati%20new.pdf

Pradana, I. B., Setyosari, P., & Sulthoni, S. (2020). Pengembangan multimedia pembelajaran interaktif berbasis android pada mata pelajaran ilmu pengetahuan alam materi cahaya. *Jurnal Inovasi Dan Teknologi Pembelajaran*, *7*(1), 26–32.

Pratama, M. P., & Hasanah, F. N. (2024). Pengaruh media pembelajaran interaktif terhadap minat belajar siswa mata pelajaran IPA SD. *EDUPROXIMA: Jurnal Ilmiah Pendidikan IPA*, *6*(1), 311–319.

Safira, A. D., Sarifah, I., & Sekaringtyas, T. (2021). Pengembangan media pembelajaran interaktif berbasis web articulate storyline pada pembelajaran IPA di kelas V sekolah dasar. *Prima Magistra: Jurnal Ilmiah Kependidikan*, *2*(2), 237–253.

Saleh & Syahruddin, D. (2023). *Media Pembelajaran. 1–77*.

Septianingsih, M., Kurnia, D., & Hikmah, N. (2023). Pengembangan multimedia interaktif berbasis platform genially pada subtema penghematan energi. *Pedagogia: Jurnal Ilmiah Pendidikan*, *15*(1), 34–38.

Suryaningrat, R. R., Basrowi, B., & Rahmadani, K. (2023). Pengembangan media pembelajaran interaktif pada pembelajaran IPA berbasis website di SMPN 6 Cilegon. *JURNAL PTI (PENDIDIKAN DAN TEKNOLOGI INFORMASI) FAKULTAS KEGURUAN ILMU PENDIDIKAN UNIVERSITA PUTRA INDONESIA" YPTK" PADANG*, 62–68.

Yahya, F., & Lee, C.-C. (2023). Disentangling the asymmetric effect of financialization on the green output gap. *Energy Economics*, *125*, 106899. https://doi.org/10.1016/j.eneco.2023.106899