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Development of Animated Video Learning Media to Improve Learning Outcomes in Senior High School Students at Rote Barat Laut 1

Erlyn Marleni Ledoh [1*], Erry Ersani [2], Mikael Samin [3]
[1] Universitas Nusa Cendana, Indonesia
* Author Correspondence

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Abstract
Education is important for every generation, especially the younger generation. The use of learning media that utilizes available digital technology can be employed in education, such as animated media created with Canva. Canva can produce images and sounds as teaching aids, using the senses of sight and hearing in the process of absorbing learning material. The aim of this study is to determine the effect of animated video learning media with flora and fauna content on improving student learning outcomes at Rote Barat Laut 1 Senior High School. The method used in this study is Research and Development, which employs a research model consisting of the steps Analyze, Design, Development, Implementation, and Evaluation. The data collection instrument used is a test. The data analysis technique used is the independent t-test. The analysis results showed that the average pre-test score for the experimental class was 48.32 and the average post-test score was 86.2, while for the control class, the average pre-test score was 50.09 and the post-test score was 72.26. Based on calculations, the effect size (Cohen's d) between the post-test scores of the experimental and control classes was 1.87. Therefore, it can be concluded that the development of animated video learning media with flora and fauna content significantly influenced the cognitive learning outcomes of students.

Contact : Corresponding author e-mail: erry_ersani@staf.undana.ac.id
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Introduction

Education is essential for the future of a country. Good educational progress can improve the knowledge of human resources in a country (Pamungkas & Koeswanti, 2022). Therefore, education must foster students' ability to think critically, communicate effectively, and develop information technology skills in a dynamic environment (Oktavianatun & Nugraheni, 2024; Pakaya et al., 2025; Zhou, 2023). According to Asmiyunda & Sanova (2024) echnology plays a role in enhancing students' learning experiences, such as the internet. However, not all information available on the internet is accurate (Yudha et al., 2023). A study by Dewi et al. (2024) indicates that low learning outcomes among students are due to the ease of accessing materials online without verifying the accuracy of the information obtained.

Geography is often perception as a subject that requires memorization, making it uninteresting and boring with conventional teaching methods (Lasulika & Lukum, 2025). In geography education, there is material on the topography of the Earth's surface. This impacts students who are required to understand the topography of the Earth's surface and various phenomena on the Earth's surface (Kurniawati et al., 2023). Therefore, innovation in geography education is needed, one of which is by utilizing educational media technology to create a more interactive and contextual learning experience (Arisanty et al., 2017; Lu, 2023). The use of educational media can assist teachers in conveying information (Yektyastuti & Ikhsan, 2016). Based on the findings of studies conducted by (Alfiyandri et al., 2023; Anugrah, N. I., & Deden, 2022) the use of animated video media can increase students' interest in learning, as evidenced by the level of task completion, attention during learning, and assessment results that align with learning interest indicators.

Canva is a program that can be used to create educational video media (Yuliana et al., 2023). The Canva app offers many design examples that can be used, including various themes, templates, and fonts. Additionally, Canva provides engaging elements for creating presentation slides, and the Canva application also offers various other graphic designs such as posters, brochures, graphs, banners, invitations, and photo editing (Asnawati, 2021; Linda & Syafriansyah, 2023; Tanjung & Faiza, 2019). Furthermore, according to a study by Pelangi (2020) other advantages of the Canva software include: (1) providing a variety of attractive templates, making information delivery less monotonous; (2) enhancing the creativity of teachers and students in creating learning materials and utilizing the available features; (3) being practical and time-saving in designing learning materials; (4) design creation can be done on various devices such as: computers, laptops, tablets, mobile phones, and other devices.

Research by Uba et al., (2022) explains that developing Geography learning media using the Canva application can be done by first analyzing the material, student characteristics, and learning media. Second, designing or planning the appropriate media to use, preparing the material, and supporting elements for the media to be developed. Third, developing the designed media as attractively as possible. After that, validation is conducted by a validator. Fourth, the media to be developed is tested on students, and fifth, the developed media is evaluated.

Based on interviews with Geography teachers at Rote Barat Laut 1 Senior High School, it was found that during Geography lessons, students often open their mobile phones and access websites unrelated to the learning material. Student learning outcomes show a varied

distribution of grades between Class XI A and Class XIB. Additionally, the majority of students have low average grades (Table 1). This is evidenced by the daily Geography assessment scores in Class XI, where none of the students achieved a score above 75. Indirectly, this reflects a challenge that needs to be addressed in the learning process.

Table 1. Results of Students' Daily Assessment Scores

Range	Frequency	
	Class A	Class B
0-35	1	2
36-45	3	5
46-55	4	10
56-65	13	9
66-75	13	10
76-100	0	0

Education is not limited to conventional teaching methods that rely solely on textbooks and lectures from teachers in front of the class. With the advancement of technology, education has undergone a shift in the use of learning media. Additionally, the development of animated media can enhance student engagement, creativity, and personalized learning (Abdullah et al., 2023; Melati et al., 2023). The implementation of animated videos in learning has emerged as an extremely effective learning medium for the modern digital generation, as it combines visual and auditory elements simultaneously, influencing how students construct knowledge and develop critical thinking skills (Braga et al., 2024). Therefore, the aim of this study is to determine the effect of developing Canva-assisted animated video learning media on the cognitive learning outcomes of students with Flora and Fauna material in grade XI at Rote Barat Laut 1 Senior High School.

Method

The research method used is research and development (R&D). The R&D modeling approach employed is the ADDIE model (analyze, design, develop, implement, and evaluate). The data collection instrument used is a test questionnaire. The test questionnaire consists of two parts: a pre-test and a post-test. The data analysis technique employed is the independent t-test.

Results and Discussion

Results

The development of animation-based learning media is an effective innovation for improving the quality of learning, especially in the cognitive aspects of students. In teaching flora and fauna, the use of animated videos can present information visually, attractively, and easily understood. This can help students understand complex concepts. Through interactive presentation, this media can encourage deeper understanding.

The research results show a significant difference in the frequency distribution of scores between the experimental class and the control class (Table 2). In the pre-test stage, both classes showed a relatively balanced distribution of scores, with the majority of students in the middle

range (51–60), and no students reaching the high range (above 80). After the intervention, the experimental class showed a significant shift in the score range. Most students were in the 81–90 range (17 students) and 91–100 range (8 students), while no students scored below 71.

Tabel 2. Comparison of Frequency Counts for Experimental Class and Control Class

Frequency of scores	Experimental Classes		Control Class	
	Pre test	Post test	Pre test	Post test
30-40	9	-	9	-
41-50	9	-	9	-
51-60	13	-	9	4
61-70	3	-	7	11
71-80	-	9	-	17
81-90	-	17	-	2
91-100	-	8	-	-

Meanwhile, the control class only experienced limited improvement. Most students remained in the 61–80 range, and only two students reached the 81–90 range, with none reaching the highest score. These findings indicate that the treatment given to the experimental class had a significant positive impact on improving student learning outcomes. Table 3 shows the results of the independent t-test, which yielded a significance value (Sig. 2-tailed) of 0.000, far below the significance threshold of 0.05. This indicates that there is a statistically significant difference in the average learning outcomes between the experimental class and the control class after the treatment was administered. The mean difference between the two groups is 14.441 points, with a 95% confidence interval range between 10.708 and 18.174.

Tabel 3. Independent t-test

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
hasil belajar	Equal variances assumed	1.076	.303	7.724	66	.000	14.441	1.870	10.708	18.174
	Equal variances not assumed			7.724	64.608	.000	14.441	1.870	10.707	18.175

These results indicate that the treatment given to the experimental class had a significant impact on improving student learning outcomes compared to the control class. In addition, the development of animated video learning media using Canva had a significant effect on the cognitive learning outcomes of students.

Tabel 4. N-Gain

Statistics	Experimental class (%)	Control class (%)
Mean	73,78	42.76
Median	43	8
maximum	100	80

Based on the output table above, it is known that the N-Gain score in the experimental class was 73.78%, which is classified as quite effective. Meanwhile, the N-Gain in the control class showed a result of 42.76%. The learning of flora and fauna topics in the experimental class used animated video learning media assisted by Canva, while the control class used books.

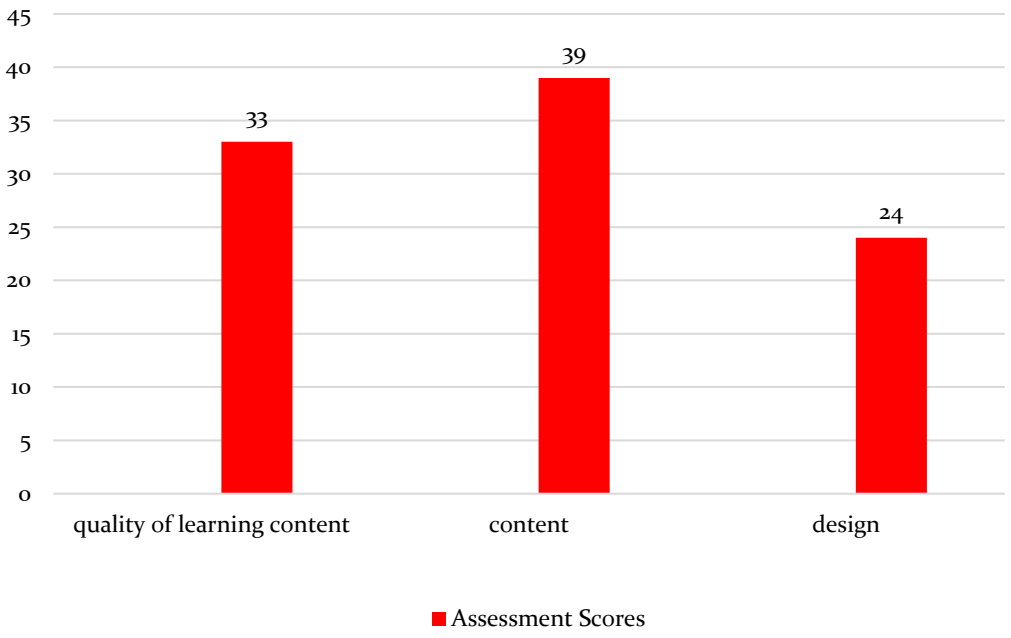

Figure 1. Summary of Expert Assessment

Based on the material assessment diagram, it can be determined that the red color represents the material suitability category. The diagram describes the aspects of learning material quality, content, and appearance as suitable because they have the following scores: a score of 33 for learning material quality, a score of 39 for content, and a score of 24 for appearance.

Suitability Percentage (%) :.

$$= \frac{score\ obtained}{maximum\ score}\ x\ 100$$

$$x = \frac{96}{120}\ x\ 100$$

= 75% (Suitable)

Based on expert validation of the material, the score obtained from the expert validator is 96. The data analysis obtained from the expert validator of the material is 75% with the answer "Suitable." Therefore, the development of animated video learning media using Canva on the topic of flora and fauna is "Suitable" for testing.

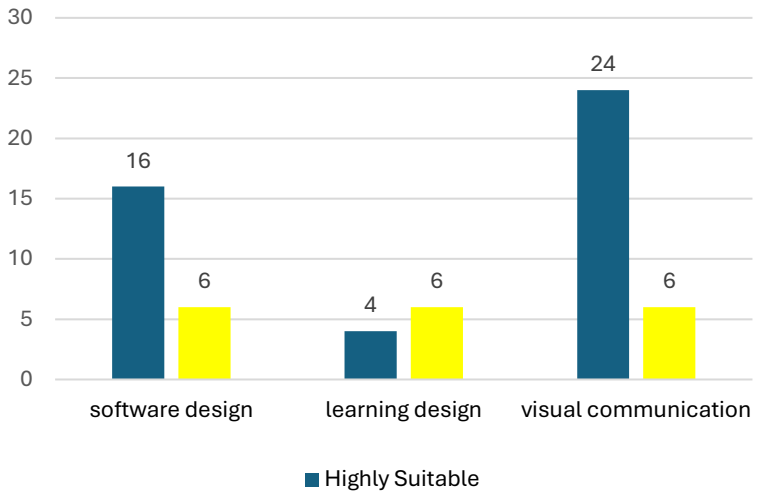

Figure 2. Recapitulation of Assessments from Media Experts

Based on the media expert assessment diagram, it can be seen that the yellow and blue colors in the software engineering, learning design, and visual communication diagrams represent the material feasibility categories. Blue represents the highly feasible category, and yellow represents the feasible category. The diagram shows that in terms of software engineering, instructional design, and visual communication, the categories are suitable and highly suitable, as evidenced by the following scores, with two categories: suitable and highly suitable, based on the three aspects: software engineering (highly suitable category) with a score of 16 and (suitable category) with a score of 6, learning design (highly suitable category) with a score of 4 and (suitable category) with a score of 6, and visual communication (highly suitable category) with a score of 24 and (suitable category) with a score of 6. The percentage of suitability of animated video learning media assisted by Canva at Rote Barat Laut 1 Senior High School is:

Percentage of Suitability (%)

$$(\%) = \frac{score\ obtained}{expected\ score}\ x\ 100$$

$$x = \frac{62}{68}\ x\ 100$$

x = 91,17% (Highly Suitable)

Based on the validation by media experts, the score obtained from the validator was 62. Based on the analysis of data obtained from the media expert validator, the average score obtained from the media expert validator was 91.17% with the answer “very feasible.” Therefore, the development of Canva-assisted animated video learning media on flora and fauna material is declared very feasible to be tested.

Discussion

Based on the results of the study, the application of interactive multimedia has an effect on student learning outcomes on the impact of geosphere phenomena on life. This study uses a

one-group design or one class with tests before learning starts and after learning begins. Class X5 with a total of 36 students was tested before learning started and then given an interactive multimedia treatment after which it was given a test after learning was completed.

The results of the hypothesis test were obtained with a Sig. value of 0.000 < 0.05 and a determination coefficient test of 0.462 or 46%, so it was concluded that there was an influence of interactive multimedia on the learning outcomes of students in class X5 of SMA Negeri 2 Range of 46% and influenced by other variables by 54%.

Interactive learning media is effective cognitively and pedagogically because it is able to present information visually and auditory at the same time, making it easier for the brain to process and remember the material. Cognitively, these media stimulate attention, improve understanding of abstract concepts, and support meaningful learning through engaging simulations and animations. From the pedagogical side, interactive media encourages active student engagement, provides direct feedback, and allows students to learn according to their pace and learning style. This combination makes interactive media a tool that can improve learning outcomes more effectively and fun.

The results of this study are in line with the research of Sugiani (2023), the results of the study show that the hypothesis test uses the anova test with a significance number of 0.000, it is concluded that the sig value of <0.05 is declared influential and Ha is accepted. The results of this study are consistent with Astriyani's (2022) research which obtained a maximum pre-test average score of 84 and a minimum score of 65. Meanwhile, the average score of the post-test score is a maximum of 92 and a minimum of 73. This shows an increase in the average score obtained before and after using interactive multimedia media. Similar research was also conducted by Nasution & Rohani (2022) and Sari, et al. (2023), with a one-group research design. The learning outcomes obtained through the research are well judged through the use of interactive multimedia media through Canva. The results of statistical analysis in both studies showed a significance value of <0.05, with the conclusion that Ho was rejected and Ha was accepted.

Based on this description, the interactive multimedia media applied has an influence in improving student learning outcomes and is effectively applied to the material on the impact of geosphere phenomena on life. Learning that uses interactive multimedia is considered more engaging because it involves learning videos, quizzes and online discussions in the classroom. This media is also easy to use and apply by teachers and students in geography subjects. The one-group pretest-posttest design has limitations because it only involves one group without a comparison group, making it difficult to accurately isolate the effects of treatment. In this design, changes in learning outcomes that occur after treatment can be influenced by various external factors, such as learning activities outside the classroom, parental support and the environment.

The use of animated video media is considered effective at State Senior High School 1 Rote Barat Laut. This is because the developed media is able to present learning materials in a visual and engaging manner, thereby increasing students' interest and attention. The application of animated media using Canva in 3T areas (underdeveloped, border, and remote) such as Rote Ndao Regency still faces significant challenges. One of the main obstacles is limited and unstable internet access, as Canva is an online platform that requires an internet connection

to access design features and save results. Additionally, the availability of adequate technological devices such as smartphones or laptops remains low among students.. As a result, despite the significant potential of animated media to improve learning quality, its implementation in 3T regions still requires ongoing support in terms of infrastructure, training, and policy. The following is the result of developing animated video learning media with flora and fauna content:

Figure 3. Home Screen of the Media

The introductory display of this media is designed to help students understand the causes of the distribution of flora and fauna across various regions in Indonesia and to show a complete map of Indonesia with illustrations of the flora and fauna typical of each region.

Figure 4. Distribution of flora and fauna in Indonesia based on the Wallace and Weber lines

The Wallace and Weber lines above are imaginary boundaries used to determine the distribution of fauna and flora in Indonesia.

Figure 5. factors that influence the distribution of flora and fauna

The figure above shows that the distribution of flora and fauna is determined by various factors such as climate, soil, altitude, and water availability. Each region has different environmental conditions.

According to Munawaroh (2024), attractive and appropriate learning materials can enhance students' motivation and understanding of the content. he findings are consistent with Murtianto (2020) perspective, who explains that innovative and interactive visual media not only enhance cognitive aspects but also affective aspects of students in the learning process. he research findings also indicate that the success of media development is dependent on the revision process based on feedback from experts and users, as recommended by Atmoko and Rudarti (2021) media evaluation theory. Revisions focused on aspects such as appearance, color, font, and the addition of reference sources to make the media more informative and attractive. This aligns with Sundari (2024), perspective that revision is a crucial stage in ensuring that the developed media truly aligns with the needs and characteristics of learners..

The research results, which focus on the development of animated video learning media with content on the distribution of flora and fauna, indicate that this media has a significant impact. The t-test results showed a sig. (2-tailed) value of 0.000, which is less than 0.05. These results differ from previous theories according to Indriyani et al., (2022), and (Setiono et al., 2020), which claim that visual and audiovisual media can increase students' motivation and understanding of lesson materials. he implementation of animated media using Canva enables the visualization of complex concepts, such as flora and fauna, in an attractive and interactive approach, as per the findings of (Afridzal et al., 2018) and (Darwis et al., 2024). Additionally, the N-Gain calculation results show that the experimental class using this media achieved an average score of 73.78%, categorized as sufficiently effective, while the control class only reached 42.76%. This finding indicates that technology-based media can significantly improve learning outcomes compared to conventional media (Setiani et al., 2024). Murtianto (2020) states that visual and audiovisual media can facilitate a more enjoyable and effective learning process. Therefore, the development of technology-based media is highly relevant and supports the improvement of learning quality in this digital era (Wijaksono & Prima, 2022).

The use of animation media in teaching about flora and fauna can present information visually in a dynamic way, making it easier for students to understand the processes and relationships between elements in an ecosystem. This aligns with Sundari (2024) perspective that technology-based media and animation can accelerate the understanding of abstract and complex concepts. This finding supports the theory of (Gusrima, 2024) which mentioned that visual literacy and technological mastery support learning success in the digitized era. This finding indicates that Canva-assisted media can be effectively integrated into the curriculum, especially in conceptual and abstract materials (Janah Raudatul & Ernawati, 2024).

Conclusion

The aim of this study was to determine the effect of animated video learning media with flora and fauna material on improving the learning outcomes of students at Rote Barat Laut 1 Senior High School. The results of the hypothesis analysis obtained using an independent sample t-test showed that animated video learning with flora and fauna content had a significant effect on students' cognitive learning outcomes. The N-Gain score in the experimental class was 73.78%, which is considered quite effective, while the control class achieved a score of 42.76%. This is because the experimental class used animated video media for teaching flora and fauna content, whereas the control class only used textbooks. This media has potential and can be widely implemented and further developed for teaching the distribution of flora and fauna in geography education.

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Authors' Note

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

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