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Development of Local Potential-Based Animal Website Learning Media for Senior High School Students

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ARTICLE INFO

ABSTRACT

Contextual learning, which integrates learning materials with the students' real environment, can make learning more meaningful for the students. This research aims to assess the feasibility of the Animal Website development product as a learning media. The research adopts the Research and Development (R&D) methodology with the 4D development model (Define, Design, Develop, and Disseminate). However, the developed product only reached the Develop stage. The study was conducted at Senior High School with students from the 11th and 12th grade of the Science Program (MIPA) as the research subjects. Data collection techniques involved interviews and questionnaires, while data analysis employed qualitative and quantitative analysis methods. The validation results the Animal Website learning media, which incorporates animal-related materials based on the local potential of Bangka Island, is of very good quality and highly suitable for use in the learning process.

Pengembangan Media Pembelajaran Animal Website Berbasis Potensi Lokal untuk Siswa Sekolah Menegah Atas

ABSTRAK: *Konsep pembelajaran kontekstual yang mengintegrasikan materi pembelajaran dengan lingkungan nyata peserta didik dapat menjadikan pembelajaran peserta didik jadi lebih bermakna. Penelitian ini bertujuan untuk menguji kelayakan produk pengembangan Animal Website sebagai media pembelajaran. Penelitian ini menggunakan metode penelitian Research and Development (R&D) dengan model pengembangan 4D (Define, Design, Develop, and Disseminate. Akan tetapi, produk yang dikembangkan hanya sampai pada tahap Develop. Penelitian dilakukan di MAN (Madrasah aliyah Negeri) dengan subjek penelitian peserta didik kelas XI dan XII MIPA. Teknik pengambilan data berdasarkan wawancara dan angket. Sedangkan, teknik analisis data menggunakan teknik analisis data kualitatif dan kuantitatif. Hasil validasi Animal Website materi animalia berbasis potensi lokal Pulau Bangka memiliki kualitas sangat layak untuk digunakan dalam proses pembelajaran.*

INTRODUCTION

The Republic of Indonesia Law Number 20 of 2003 Article 37 concerning the National Education System also regulates the development of curriculum for each level of education, which must be in

accordance with the local potential of each region (Yuliatin, 2023). Local potential is a potential that has long emerged in a certain area as a result of interaction with the natural environment (Wilujeng et al., 2020);(Haka et al., 2020). Local potential can also be interpreted as one of the treasures of the nation's cultural wealth that deserves to be preserved (Sobiatin et al., 2020);(Eviyanti et al., 2022). Education in biology subjects can be done considering that biology is a subject that is closely related to the surrounding environment (Wulandari & Djukri, 2022);(Pujiastuti et al., 2020);(Darwati et al., 2024). Because of the importance of the role of local potential for the development of the potential possessed by students in the learning process, this must be considered by teachers in preparing their learning plans (Hikmawati et al., 2021);(Hidayati et al., 2020). One of the things that can be done is to prepare teaching materials by highlighting the local potential that exists around the student's learning environment like typical animals in the region. (Ramdiah et al., 2020);(Kristanto et al., 2019).

However, in reality the biology learning of the animalia subject at Senior High School has not been connected with the existing local potential. The biology textbooks, which currently serve as the main reference in the learning process, have not fully integrated the local potentials of the region. It is the same with Fatimah et al. (2021) and Saragih & Tanjung (2023) researchers, that materials that relate to local potential are still rarely applied. The learning materials and activities in the biology textbooks generally do not adequately align with the conditions of the students, teachers, and school environment (Weng et al., 2020);(Harris et al., 2020). As a result, the learning process becomes less meaningful for the students.

The integration of local potential in learning plays an essential role in presenting relevant and suitable learning materials according to the students' environment (Sukma et al., 2020);(Tomasi et al., 2020). Biological learning materials have great potential to benefit from the environment as a source of learning for students (Jumriani et al., 2021);(Funa & Talaue, 2021). One example of utilizing this is by identifying and studying the local potential present in the environment or the region where the students reside. Integrating local potential as content in learning not only aims to preserve local knowledge but also provides benefits for students in understanding biology through real-life situations closely related to their daily lives (Winje & Løndal, 2021);(Zidny et al., 2020). Moreover, incorporating local potential elements in biology materials can strengthen students' connections with the surrounding community and link local knowledge with modern knowledge (Brondízio et al., 2021).

The introduction of local potential through learning can be done by incorporating it into biology materials, including the animalia subject. However, Peters & D'Penna (2020) presented the fact that the utilization of elements of local potential found in the students' environment is not yet optimal. Many biology teachers have not been actively engaged, especially in the field of educational technology, to develop biology learning media based on local potential. Nurwidodo et al. (2020) dan Valtonen et al. (2021) also explained that many students do not understand the animalia subject due to its extensive content and the use of Latin names for animals that are unfamiliar and rarely encountered by the students. Another challenge faced is the limited study hours, which do not allow for the completion of the learning material in one or two sessions. Additionally, the learning process for the animalia subject still relies primarily on textbooks as the main source and animalia realia as tangible examples, which are only limited to insecta (Gata et al., 2023).

In the learning process, especially for biology lessons, particularly the animalia subject, teachers still rely on learning media

such as textbooks, whiteboards, PowerPoint, and projectors. During the learning process, students are only focused on the information taught by the teacher (Puspita et al., 2023). Therefore, to provide convenience for both teachers and students in the learning process, especially for biology lessons, particularly the animalia subject, there is a need for a learning media that can integrate all the information into one container (Nopia et al., 2022);(Handoko et al., 2024).

The utilization of educational technology in education includes web-based learning media (Ismawan et al., 2020);(Enrica, 2024). The use of web-based learning media is expected to make the learning process more dynamic, enabling flexible knowledge delivery (Chiemeke & Mike, 2020);(Abass et al., 2020). In this research, the web-based learning media employed for online/distance learning is Google Sites (Bueno et al., 2022).

Google Sites is an online application developed by Google to facilitate users in creating websites, especially for educational purposes like classes or schools (Abass et al., 2020). This application allows users to integrate various information into one platform, such as presentations, texts, attachments, videos, and Google Forms as a means to receive feedback from students (Hakim & Pertiwi, 2023). Moreover, the organized information can easily be shared according to the users' needs. Google Sites is accessible for free and available to all users with a Google account (Susanti et al., 2023).

According to Mukhoyyaroh et al. (2022), the use of Google Sites in education benefits both teachers and students as it makes the learning process more engaging. Students can easily and quickly access information, and learning materials become more accessible and less prone to being lost. Teachers can upload, store, and attach syllabi, materials, assignments, and announcements to students, making the learning process more effective (Pakudu, 2024).

Based on the above, the author will develop an Animal Website using Google Sites as a learning media. The Animal Website to be developed will contain animalia subject materials that have been integrated with the local potential present on Bangka Island, particularly local potential related to animals will be linked to the materials to make the learning meaningful. The Animal Website will also include many supporting images and videos to facilitate students' understanding of the materials. Through contextual biology learning with the integration of local potential, students will not only easily comprehend the materials but also be able to implement them into their daily lives.

METHOD

The method used in this research is Research and Development (R&D). The research design follows the 4-D (Four-D Model) development model developed by (Sugiyono, 2015). This model involves four stages of development: Define, Design, Develop, and Disseminate. However, the developed product only reached the Develop stage.

This research was conducted at Senior High School. The sampling process was carried out using purposive sampling technique, considering students who had previously taken the animalia subject. However, before conducting the trial with the students, the Animal Website was first validated by three experts, namely media expert, content expert, and learning methodology expert. The trial of the Animal Website product was conducted on a small scale online through WhatsApp messages. The trial subjects involved 10 students from Senior High School, with four students from the 11th grade Science Program (MIPA) and six students from the 12th grade Science Program (MIPA).

Interviews and questionnaires were the data collection techniques and instruments used in this research. The interviews were conducted online with

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biology teachers and 10th-grade students from Senior High School. On the other hand, questionnaires were used to validate the Animal Website by media experts, content experts, learning methodology experts, and field practitioners (Biology teacher from Senior High School), as well as to assess the feasibility of the Animal Website by the students.

The assessment of the questionnaire instrument for validity testing by experts and field practitioners (teachers) is conducted using the Likert Scale. According to Riduwan (2015) the opinions, perceptions, and attitudes of an individual or group towards social events or phenomena can be measured using the Likert Scale. Below is the Likert Scale table with the scoring:

Table 1. Scoring by Experts and Field Practitioners (Teachers)

No.	Response	Score
1.	Very Good (SB)	5
2.	Good (B)	4
3.	Adequate (C)	3
4.	Fair (K)	2
5.	Very Poor (SK)	1

The questionnaire assessment for feasibility testing by students also uses the Likert Scale with the following score explanations.

Table 2. Scoring of Student Responses

No.	Response	Score
1.	Strongly Agree (SS)	5
2.	Agree (S)	4
3.	Neutral (N)	3
4.	Disagree (TS)	2
5.	Strongly Disagree (STS)	1

This research utilizes two data analysis techniques: 1) qualitative data analysis. Qualitative data is obtained from interview and validation questionnaire results. The obtained data is analyzed descriptively; and 2) quantitative data analysis. Quantitative data is obtained from the validation questionnaire by validators and the feasibility test questionnaire based on student responses. The data from the validation and feasibility tests are then analyzed descriptively using the following formulas.

$$Percentage\ (\%) = \frac{Total\ obtained\ score}{Maximum\ score} \times 100\%$$

Table 3. Feasibility Percentage Scale for Animal Website

No.	Percentage Assessment (%)	Categori	Description
1.	81-100	Very Feasible	Slight Revision Needed
2.	61-80	Feasible	Revisions Required
3.	41-60	Fairy Feasible	Needs Moderate Revisions
4.	21-40	Not Feasible	Requires Significant Revisions
5.	0-20	Very Not Feasible	Needs Complete Product Redevelopment

RESULTS AND DISCUSSION

The result of product development in this research is an Animal Website that can be accessed through the link sites.google.com/view/animalwebsite-/.The Animal Website, based on the local potential of Bangka Island, can be used as a supporting learning media for teachers and students. The development of this Animal Website has emphasized the needs of students and teachers during the learning process. The presence of the Animal Website aims to provide students with quick, clear, and concise information.

The developed Animal Website enables students to engage in self-learning from home or study together in the classroom. The Animal Website provides organized information based on the Competence Standards and Basic Competence for the Kingdom Animalia subject in the 10th-grade curriculum. Moreover, the materials on the Animal Website are based on the local potential of Bangka Island, using examples of animals found on the island, which is expected to make the learning more meaningful.

The developed Animal Website has undergone a validation process by experts to assess the quality and feasibility of the Animal Website. Below is the recapitulation of the validation results by expert validators, field practitioners (Biology teachers from Senior High School), and students from the 11th and 12th grades of Senior High School.

Table 4. Recapitulation of Expert Content Validation Results

No.	Aspects Assessed	Assessment Indicators	Score	%
1.	Material Suitability	• Alignment with Competence Standards and Basic Competence • Accuracy and Currency of Materials • Stimulating Curiosity	48	
2.	Presentation Suitability	• Presentation Techniques • Supporting Material Presentation • Learning Presentation • Coherence and Flow of Thought • Concise • Communicative • Dialogic and Interactive	51	87
3.	Language Suitability	• Suitability for Students' Development • Adherence to Language Norms	36	

The validation results from content experts (Table 1) obtained a percentage score of 87% with the category "Very Feasible" with minor revisions, meaning that the materials presented in the Animal Website are highly suitable and appropriate for use in biology learning, specifically for the Kingdom Animalia subject. The materials

in the developed Animal Website only require minor revisions. The content expert's revisions include double sentences, typos, and images that are not accurately targeted.

Table 5. Recapitulation of Expert Media Validation Results

No.	Aspects Assessed	Score	%
1.	Utility	37	
2.	Functionality	9	
3.	Text Quality	13	
4.	Image and Video Quality	13	85
5.	Color Quality	11	
6.	Design Quality	5	
7.	Compatibility	4	
8.	Use of Words and Language	18	

The validation results from media experts (Table 2) obtained a percentage score of 85% with the category "Very Feasible" with minor revisions, indicating that the developed Animal Website learning media is highly suitable and can be used in the biology learning process, specifically for the Kingdom Animalia subject. The developed Animal Website only requires minor revisions. The media expert's revisions are related to the clarification or further details needed for student identities in the tasks on Google Form.

Table 6. Recapitulation of Learning Methodology Expert Validation Results

No.	Aspects Assessed	Score	%
1.	Nature of Contextual	9	90
2.	Components of Contextual	45	

The validation results from the learning methodology experts (Table 3) obtained a percentage score of 90% with the category "Very Feasible" with minor revisions, meaning that the contextual learning methodology presented in the materials is highly suitable and can be used for biology learning, specifically for the Kingdom Animalia subject. The developed Animal Website only requires minor revisions. The learning methodology expert's revisions include adding points of

student opinions (conclusions) in the task section.

Table 7. Recapitulation of Field Practitioner Validation Results

No.	Aspects Assessed	Score	%
1.	Materials	65	
2.	Learning Methodology	49	99
3.	*Animal Website*	70	

The validation results from field practitioners (Biology teachers from Senior High School) (Table 4) obtained a percentage score of 99% with the category "Very Feasible" without any revisions, indicating that the materials, learning methodology, and learning media of the Animal Website are highly suitable and can be used in the biology learning process, specifically for the Kingdom Animalia subject.

Table 8. Recapitulation of Small-Scale Feasibility Test Results for Students

No.	Name	Class	Score	%
1.	Anggun Nuriska	XI	61	87
2.	Lala Syakinah	XI	58	83
3.	Viona Monica Putri	XI	70	100
4.	Sherly Virunnisa	XI	54	77
5.	Angellita Marzikha	XII	57	81
6.	Aisa Rahma Utami	XII	55	79
7.	Meidina Salsabila	XII	61	87
8.	Muhammad Ganiyun Al-Wujrat	XII	58	83
9.	Syahid Al-Akhras	XII	60	86
10.	Edo Rahmat	XII	58	83
Mean score				85

The results of the small-scale feasibility test conducted on 10 students from Senior High School (Table 5) showed that the developed Animal Website product is highly suitable and can be used as a supporting learning media for students in the Kingdom Animalia subject. This is evidenced by the average score of 85% with the category "Very Feasible" obtained from the feasibility test of Animal Website conducted on the 10 students.

The Animal Website is a learning media that contains materials related to Kingdom Animalia integrated with the local potential of Bangka Island. Local potential content is presented through examples of

animals in the phylum classification. Presentation, learning materials, images, videos, exercises, and tasks are all interconnected within the pages of the Animal Website.

Moreover, the developed Animal Website is linked to additional information related to the Kingdom Animalia subject. This information is embedded in certain words or sentences that are hyperlinked. Users can access this information by clicking on the linked words or sentences. Below are the explanations of the characteristics of the developed Animal Website learning media.

The home page (Figure 1) contains the website name and the title of the subject. Additionally, there are eight icons that directly link to their respective pages (Figure 2), namely: a) online attendance icon; b) competence icon; c) material icon; d) exercise icon; e) task icon; f) reference icon; g) glossary icon; and h) Animal Website feedback form icon.
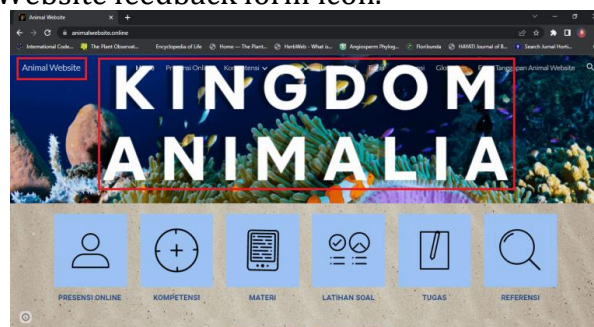

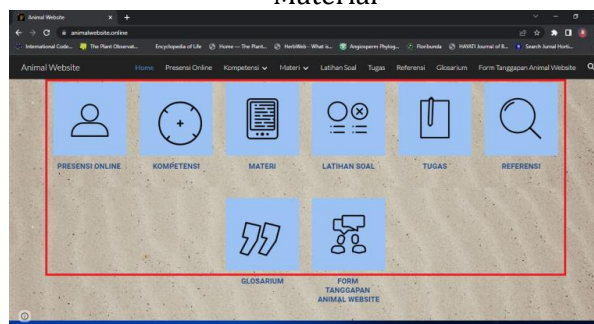**Figure 1.** Wesbite Name and Title of Material

Figure 2. Eight Connected Icons

The online attendance page (Figure 3) contains a Google Form that must be filled out by students during the learning process. The Animal's Keyword in the Google Form serves as an indicator that the students are actively participating in the learning session.

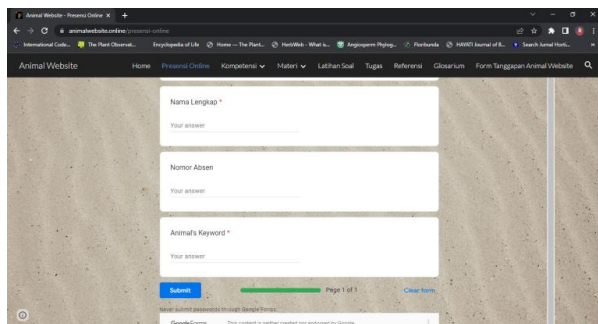The Animal's Keyword will be provided by the teacher before the start of the lesson.

Figure 3. Online Attendance Page

The competence page (Figure 4) contains the pages for Competence Standards (KI and KD); Learning Indicators and Objectives; and the Concept Map of Kingdom Animalia material. This page aims to provide students with information about Competence Standards (KI and KD); Learning Indicators and Objectives; and the Concept Map of Kingdom Animalia material.
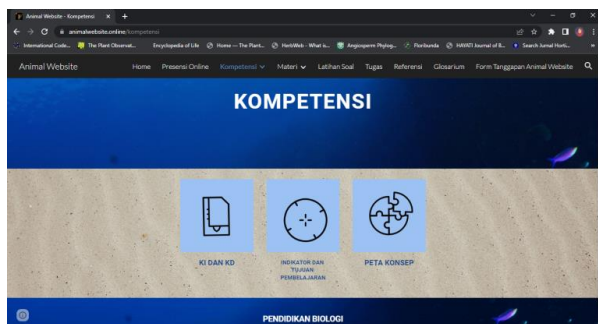

Figure 4. Competence Page

The material page (Figure 5) contains a complete summary of the material about Kingdom Animalia, Invertebrates, and Vertebrates. Each page of the material includes the connection of the content with the local potential of Bangka Island, provided in the form of pictures, videos, and texts. The local potential content is related to examples of animals in the phylum classification.

The exercise page (Figure 6) contains a link to Quizizz, which contains questions about Kingdom Animalia based on the local potential of Bangka Island that can be directly answered by the students. Additionally, by completing the exercises through Quizizz, students will receive

feedback on their learning outcomes. Quizizz can be designed to automatically correct and score the students' learning outcomes
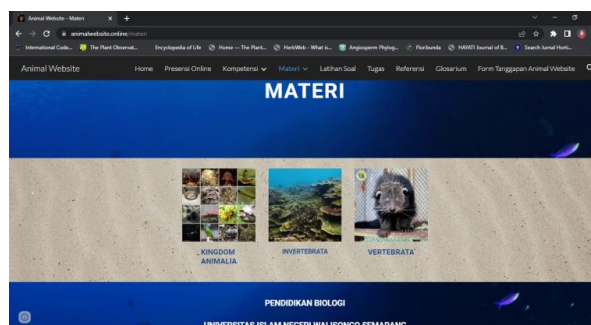

Figure 5. Material Page

Figure 6. Exercise Page

The assignment page (Figure 7) contains a Google Form that must be completed by the students in groups.
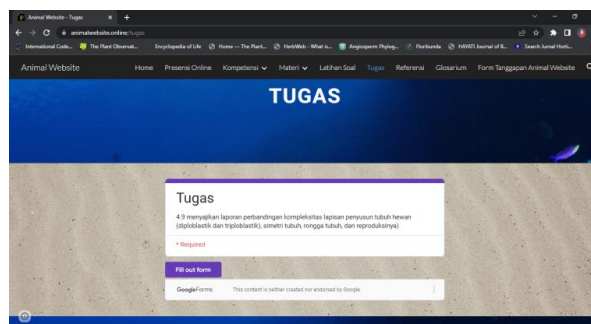

Figure 7. Assignment Page

The references page (Figure 8) contains a list of books used by the creator in compiling the Kingdom Animalia materials.

The glossary page (Figure 9) contains explanations of several foreign words found in the material. Additionally, there are also linked texts that function to search for further information about topics or Kingdom Animalia materials.
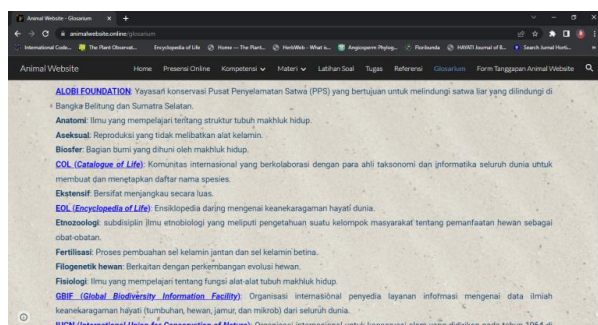
Figure 8. References Page

Figure 9. Glossary Page

The feedback form page of Animal Website (Figure 10) contains a Google Form that must be filled out by students to assess the feasibility of the created Animal Website.
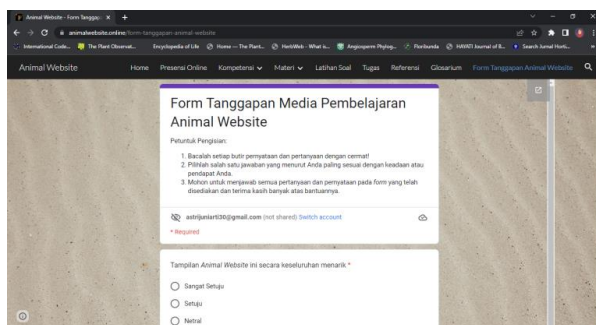

Figure 10. Animal Website Feedback Form Page

Based on the results of the validation and feasibility testing, the Animal Website product is highly suitable for use as a learning media. The advantages of Animal Website lie in its ease of access for students, as it can be accessed through various devices. The appearance of Animal Website can automatically adapt to the device used without the need for specific settings. As Hakim & Pertiwi (2023) and Hidayat et al. (2023) suggested, Google Sites as a learning media supports effectiveness in distance learning. In this study, the ease of accessing

Animal Website makes it practical and effective for both in-class and out-of-class learning.

Using Animal Website as a learning media provides opportunities for students to learn independently at their own pace and according to their abilities in understanding the material. The advantage of Animal Website is that it prevents students from wasting time searching for information about Kingdom Animalia material through the internet, as the material presented in Animal Website includes concise, clear, and complete sources of information. Students can explore and access information on their own through links, images, videos, and texts provided, thus providing a more meaningful learning experience, especially in online learning using digital learning media (Mukhoyyaroh et al., 2022);(Pakudu, 2024).

Learning biology, especially in the Kingdom Animalia topic, is one of the learning processes with great potential for utilizing the environment as a source of learning, such as exploring and studying the local potential in the students' area (David & Venuste, 2021);(Kundariati et al., 2020). In the Animal Website, the presented material has been integrated with the local potential of Bangka Island, which helps students recognize the potential of their local area without having to visit directly. As a result, the learning process becomes more meaningful, easily accepted, and understood by the students. Alamri et al. (2020) and Kim (2020) stated that learning materials will have a deeper meaning when students learn through the context of their personal lives. In this context, having a deeper meaning means that students' minds naturally seek to understand the material based on their real-life experiences. The process of seeking knowledge occurs through logical and beneficial relationships, resulting in a deep understanding for the students. Therefore, the students will have the ability to comprehend problems well and solve them effectively.

The integration of material with the local potential of Bangka Island also allows students to have a clear and relevant connection between the learning material and their environment. According to Ghafar (2020) and Ewim (2023) another advantage of integrating material with the local potential is that it provides a foundation for specific competencies in students, such as life skills, fostering creativity, nurturing professional entrepreneurship, and promoting collaboration with the community. Furthermore, Zidny & Eilks (2020) and Imaduddin et al. (2020)also stated that integrating elements of local potential into biology material can strengthen the bond between students and the surrounding community and bridge local knowledge with modern knowledge.

CONCLUSIONS AND SUGGESTIONS

Based on the conducted research, Animal Website based on the local potential of Bangka Island has a very suitable quality to be used as a learning media for X grade high school students, especially on Bangka Island. However, the effectiveness of the Animal Website needs to be further investigated in future research. Additionally, the shortcomings of the developed Animal Website, such as the long loading time for large-sized images, can be improved in subsequent studies.

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