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Development of Edpuzzle-Based Interactive Learning Media on Classification of Living Things Class VII

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Abstract: Learning media used in SMP Negeri 3 Sungai Kakap in science lessons the use of learning media is still limited, the media used are whiteboards, textbooks, and the surrounding environment. This study aims to develop interactive learning media based on Edpuzzle for the classification of living things that is suitable for use, to determine students' responses to the media, and to analyse whether the media is effective in improving learning outcomes or student motivation. This research is a Research and Development (R&D) study using the ADDIE development model which consists of 5 stages, namely: Analysis, Design, Development, Implementation, and Evaluation. Data collection techniques using observation, interviews, questionnaires. Data analysis in this study used a Likert scale. Testing the validity of learning media includes material experts, media experts, and linguists. The research subjects consisted of 35 seventh-grade students from SMP Negeri 3 Sungai Kakap, divided into two groups: 10 students for the small-scale trial and 25 students for the large-scale trial. The grouping was done randomly while considering the students' academic abilities to ensure more representative research results. The results showed the acquisition of material expert validation of 88.63% (very valid), the results of media expert validation of 98.21% (very valid), the results of linguist validation of 93.33% (very valid), on a small-scale trial 10 students gave a response of 99.37% (very strong) and on a large-scale test 25 students gave a response of 96.56% (very strong). Based on these findings, it can be concluded that Edpuzzle-based learning media is declared valid, feasible for use, and effective in improving students' learning outcomes on the classification of living things material at SMP Negeri 3 Sungai Kakap.

Keywords: Edpuzzle; Interactive video; Learning media

Introduction

The rapid development of technology in the current era of globalisation is inevitably affecting the world of education. This condition encourages the world of education to continue to adapt to technological developments in order to improve the quality of education, especially in its application (Malik, 2018). Advances in science and technology are increasingly driving innovation in the utilisation of technology for the learning process (Bernacki et al., 2019). Teachers are now required to be able to utilise the tools provided by the school and ensure that they are in line with the development and needs of the times (Lestari, 2018). In addition, teachers are also expected to have the skills to develop their own learning media if the media needed is not available (Rustandi & Rismayanti, 2021).

Learning media is a tool to convey or deliver messages in learning (Perdana et al., 2021). Media can be interpreted as an intermediary or mediator that functions to create an effective relationship between the two main parties in the learning process, namely teachers and students. Media plays an important role in helping to convey information, clarify material, and

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facilitate optimal interaction to support the achievement of learning objectives more effectively and interestingly (Azrai et al., 2024). Learning media also plays a role in increasing student interest and attention. so that in the learning process students can follow learning with enthusiasm (Suyahman et al., 2024). One of the learning media that can help teachers in teaching and facilitating the learning process is interactive learning media. According to Putri et al. (2022) interactive media is a material delivery tool that has two-way communication between users and media.

Interactive learning media is multimedia that is created with a display that fulfils the function of delivering information interactively to its users (Dita et al., 2021). So, the user has the freedom to control the speed of media presentation or organise the learning process (Deli, 2021). Interactive learning media, one of the applications used is Edpuzzle. According to Tshering et al. (2022) Edpuzzle is a digital application that is easily accessible and functions as a video-based learning media. Videos uploaded on the Edpuzzle platform can be edited by teachers according to learning needs. Such as to add notes, as well as quizzes in the form of questions in between videos. The uniqueness of this application is that the video cannot be skipped if students do not first answer the questions that appear in the video, thus reducing the possibility of students speeding through the video to the end. To be able to answer the quiz or question given, students must watch the video carefully until the end.

Based on the results of interviews conducted by researchers to teachers of science subjects in class VII SMP Negeri 3 Sungai Kakap, information was obtained that the learning process, especially in science lessons, the use of learning media was still limited to the media used by the blackboard, package books, and the surrounding environment, while students only listened to the explanation conveyed by the teacher. The results of observations at SMP Negeri 3 Sungai Kakap school, students tend not to listen to the material conveyed by the teacher. This can be seen from some students who are chatting with their classmates during the learning process.

Lack of media utilisation and variety of learning methods in making students tend to be less enthusiastic in learning. The problem faced by teachers in the learning process is the lack of interest in learning from students so that students' scores are still relatively low. Therefore, it is necessary to develop a learning media that can increase students' understanding in the learning process. One of them is by adding media in the learning process.

Based on the problems in science subjects in class VII SMP Negeri 3 Sungai Kakap, it is necessary to innovate learning by making fun interactive videos. This is in accordance with the development of learning in the digital era, which can be done face-to-face and outside of school hours. That is, students can access the subject matter anywhere and anytime. One of the learning innovations in the digital era is the use of edpuzzle interactive videos. Through edpuzzle interactive video, teachers can turn any video into a teacher's own flip. Teachers can also embed questions throughout the video. The video will stop automatically and move forward once someone responds. In addition, teachers can provide feedback responses to be displayed after the response is sent so that the sender can get immediate feedback. Comments can also be added to the sent response.

Based on the problems found, namely the learning process, especially in science lessons, the use of learning media is still limited, so researchers are expected to overcome existing problems so that the goals and learning objectives to be achieved are achieved.

Method

This research was conducted in the academic year 2023/2024 even semester, the location of this research was conducted at SMP Negeri 3 Sungai Kakap. Jalan Pelita 3, Punggur kecil, Sungai Kakap District. This research is included in the category of research and development or commonly known as Research and Development (RnD). This research was conducted with the main purpose of developing and evaluating learning products that can improve the effectiveness of the teaching and learning process. In its implementation, this research uses the ADDIE development model which is considered as one of the most suitable approaches to develop learning products. This model is an acronym of five main stages, namely Analysis, Design, Development, Implementation, and Evaluation as explained by the authors (Lestari et al., 2024).

Figure 1. ADDIE model development research procedure

This research uses the ADDIE model because the selection of the ADDIE model is not only based on its popularity in the development of learning media, but also because of its flexibility that allows adjustments

according to research needs The main focus of the research is to determine the level of validity of the product that has been developed. To measure the level of validity of learning products, the instrument used is a questionnaire containing a number of structured questions regarding the feasibility aspects of the designed learning media. The assessment of the results of this questionnaire refers to a Likert scale with a score range of 1 to 5 which includes the criteria of very bad (1), less (2), enough (3), good (4), and very good (5), as stated by (Aini et al., 2024).

The research subjects consisted of several groups who acted as validators and product users. The validators are media expert validators, material expert validators, and language validators. Then the product users were teachers who acted as professional users and one class of junior high school students consisting of 25 people as representatives of end users. The research data were collected using various methods, including observation, interviews, and questionnaires as the main instruments. The data obtained from the questionnaire was then systematically analysed based on the responses of each respondent using predetermined data analysis techniques. The results of this data analysis were used to assess the level of validity of the Edpuzzle-based learning media products that had been developed, by referring to the percentage description and categorisation of the results adjusted to the reference given by the researchers (Dewi & Tyas, 2024).

$$\text{Value validity} = \frac{Score\ Total}{Score\ Max} \text{ x } 100\% \quad (1)$$

The percentage of the assessment results is then compared with the criteria determined in the table of percentage criteria for the validation sheet, which includes.

Table 1. Product Validity Criteria (Sofianti et al., 2024)

Range	Category
81%-100%	Incredibly Valid
61%-80%	Valid
41%-60%	Sufficienty valid
21%-40%	Less reliable
0%-20%	Not valid

The next stage is to assess student responses to the learning media developed by calculating the percentage of each aspect of student responses. This percentage is used to determine the validity of Edpuzzle-based interactive learning media on the material Classification of Living Things class VII at SMP Negeri 3 Sungai Kakap, using the following formula (Febrianti & Sunandar, 2024).

$$\%\text{NRS} \frac{\sum \text{NRS}}{\text{Maximal NRS}} = 100\% \quad (2)$$

Description:

%NRS = Percentage of Student response score

$\sum$ NRS = Total student response score (NRS SS+NRS S+ NRS TS+ NRS STS)

Maximal NRS = $\sum$ R x Best choice score

= $\sum$ R x 4

Table 2. Learner Interpretation Criteria (Prawati et al., 2024)

Scale Value (%)	Criteria	Information
80 ≤NRS <100	Very strong	Not Revised
60 ≤ NRS < 80	Strong	Not Revised
40 ≤ NRS < 60	Enough	Revised
20 ≤NRS < 40	Weak	Revised
0 ≤NRS <20	Very weak	Revised

Result and Discussion

Result

According to Alam et al. (2023) the suggestions given from experts are used to improve the materials and learning designs that have been prepared. The expert validators used were 9 experts from 3 aspects, namely on the material aspect (2 lecturers of IKIP PGRI and 1 teacher of SMP 3 Sungai Kakap), media aspect (1 lecturer of Universitas Muhammadiyah Pontianak, 1 lecturer of IKIP PGRI and teacher of SMP Negeri 3 Sungai Kakap), and linguists (1 lecturer of Universitas Muhammadiyah Pontianak, 1 lecturer of IKIP PGRI, 1 teacher of SMP Negeri 3 Sungai Kakap). In the development model carried out in this study using the ADDIE model, where in this model there are five stages of development, namely Analysis, Design, Development, Implementation and Evaluation.

Analysis Stage

The analysis stage aims to determine the needs and requirements in the learning process, including problem identification, curriculum analysis, material analysis, and formulation of learning objectives (Irdawati et al., 2023). Based on the results of the problem analysis at SMP Negeri 3 Sungai Kakap, it is found that the learning media used is still limited to the blackboard, package books, and the surrounding environment. The dominant lecture method causes students to be easily bored and sleepy, while students show higher interest in interactive media-based learning such as videos that involve hands-on activities.

Analysis of the curriculum and materials shows that SMP Negeri 3 Sungai Kakap uses the Merdeka Curriculum with the material on the classification of living things in the sub chapter of diverse living things

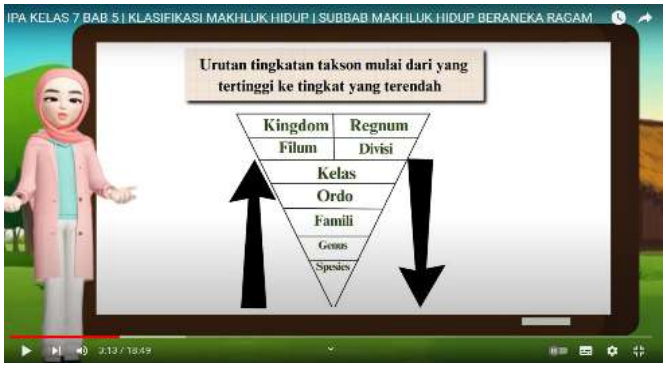
for class VII even semester. The material was chosen because it is relevant to the learning outcomes set, namely students' ability to classify living things based on observed characteristics and explain the role of living things in human life. The material is arranged systematically to support the use of Edpuzzle-based interactive learning media.

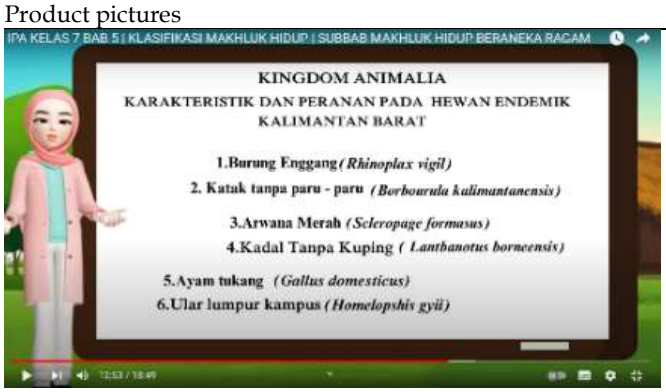
The formulation of learning objectives is carried out by adjusting the results of curriculum and material analysis. The resulting learning objectives guide learning activities to help students understand the concept of classification of living things in depth. These objectives include students' ability to analyse the distinctive characteristics of each kingdom of living things and explain the role of living things in human life. With this approach, the learning process is expected to be more interesting and effective in achieving learning outcomes.

Design Stage

The design stage is a systematic process used to produce creative and effective solutions in solving a problem or fulfilling a specific need (Noh & Karim, 2021). Interactive video learning media developed by researchers with edpuzzle digital learning applications include elements of material and questions in one container. Edpuzzle development is carried out by researchers using videos that have been made before. The development of interactive video learning media contains science competencies on the characteristics and classification of living things in class VII. The three videos made are divided based on the division of material subchapters, namely the first on the Taxon Order of Living Things, the Classification of Living Things in Five Kingdoms, and Kingdom Animalia on Endemic Animals of West Kalimantan.

Table 3. Interactive Video Design Picture

Product pictures	Description
	The number of elements of the first learning video question is 12 questions and the duration of the video is 18.50 minutes.
	There is a section of questions that can be done while students are watching the first video learning video.
	Display of material about the Taxon Order of Living Things

Product pictures	Description
	Display material about kingdom animalia on endemic animals of west kalimantan.
	Part of the video spread through code.

The video content component developed by researchers includes a summary of the material and questions with a first video duration of 18.50 minutes. The presentation of the question component added by researchers to the video totalled 12 questions. The question component is adjusted to the learning objectives that have been prepared. The placement of questions is designed randomly to determine the initial and final knowledge of students in the sub-chapter. The interactive video developed has pictures and audio narration to read the contents of the material so that in addition to reading students can also listen to it. At the end of the video, a reference source is included as a reference for the video content..

How to distribute interactive learning videos by teachers is quite easy to do through code as a connecting medium integrated with edpuzzle. This feature can be used by pressing the assign button then, the assign to class command will appear, to send the video can tick the related class. Learners can access the video through the link shared on the code with the edpuzzle application that can be downloaded on the appstrore. The answer chosen can only be one, if you choose more than one answer it will be classified as wrong by the system. The following is the initial product display of interactive video learning media with edpuzzle through a laptop device.

Development Stages

Aims to produce interactive learning media based on Edpuzzle SMP Negeri 3 Sungai Kakap. as a feasible learning media based on expert input (validators). Aspects of research validity based on experts.

The validity of Edpuzzle-based Interactive Learning Media on the classification of living things in Class VII at SMP Negeri 3 Sungai Kakap. The validity of edpuzzle media is obtained through expert assessment. There are nine experts from 3 aspects, namely in the aspect of material (2 lecturers and 1 teacher), media aspects (2 lecturers and 1 teacher) and language aspects (2 lecturers and 1 teacher). The results of the expert assessment can be seen in the following table.

Table 4. Validator Assessment Result

Expert validator	Percentage of Validity (%)	Criteria
Media expert	94.64	Very valid
Material expert	88.63	Very valid
Language expert	93.33	Very valid

Implementation Stage

In class VII, the researcher conducted a series of small and large-scale experiments to improve the effectiveness of the learning media as a means of distributing the student response survey. These experiments involved 35 students from two X classes who actively participated in the research. The results of

the small-scale experiment showed a success rate of 99.3%, while the large-scale experiment resulted in a success rate of 96.5%. The data obtained showed that the average results from both experiments provided a very positive response to the use of the developed learning media. The researcher noted that this finding illustrates the students' overwhelming acceptance of the media, thus concluding that this learning media has great potential to be applied more widely in educational contexts.

Table 5. Student Response Data

Trial	Percentage of Validity (%)	Criteria
Small Scale	99.3	Very Strong
Large Scale	96.5	Very Strong

Evaluation Stages

Evaluation is carried out at each stage of the development of interactive learning media based on edpuzzle calcification material of living things SMP Negeri 3 Sungai Kakap with the aim of improving the product by making revisions based on suggestions for improvement or input from experts. Evaluation is carried out to identify the success of the product so that it can be said to be valid and feasibl.

Researchers chose to use Edpuzzle because it can be used as the latest innovation to make learning videos interactive, as suggested by Ernawati et al. (2023) One innovation in education is the use of learning media in the form of Edpuzzle applications. Edpuzzle is an interactive video-based learning media that allows teachers or educators to customise learning videos for students. Reported from Egilistiani et al. (2021) the Edpuzzle platform has advantages and disadvantages. The first advantage is that Edpuzzle can enhance students' distance learning experience. The second is that students can view and repeat important information from the videos that have been learnt. This makes it easier for students to understand the material. Finally, teachers can easily measure student learning outcomes.

The use of interactive learning video media affects student learning outcomes because the media used is not only in the form of learning videos, but there are also questions inserted in the video; As a result, there is reciprocity from students as video users so that learning becomes more fun (Farhan et al., 2024). Learning by using audio-visual media such as Edpuzzle videos can help provide real and clear concepts, so as to increase student interest and learning outcomes. The use of Edpuzzle during the learning process has excellent potential to improve students' self-learning ability and support the learning process of mathematics. In addition, learning by using Edpuzzle videos can motivate low-achieving participants and foster student confidence through questions embedded in Edpuzzle.

Conclusion

Based on the results of the validity of research with experimental data on the development of Edpuzzle-based interactive learning media on the classification of living things in science subjects, the results showed that the acquisition of material expert validation was 88.63% (very valid), the results of media expert validation were 98.21% (very valid), the results of linguist validation were 93.33% (very valid), In the small-scale trial 10 students gave a response of 99.37% (very strong) and in the large-scale test 25 students gave a response of 96.56% (very strong). It is concluded that Edpuzzle-based learning media is declared valid for use in the classification of living things. Edpuzzle-based interactive learning media on the classification of living things has been tested for validity after being tested by validator I, validator II and validator III, so it is known that Edpuzzle-based interactive learning media is feasible to use in science learning, Edpuzzle-based interactive learning media gets a positive response (very strong) conducted on 35 students through filling out a questionnaire which obtained a positive assessment (very strong) on each individual assessor.

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Author Contributions

M.M.: methodology, data analysis, manuscript writing, review, reference search. A.S.: Manuscript writing, review, reference search and editing, H.M.R.: Article writing, review, and editing.

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Conflicts of Interest

There is no conflicts of interest in this article.

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