



# Problem-Based Learning-Oriented Learning Video Media Uses the Filmora Application for Science Content

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## ABSTRAK

Model Ketersediaan variasi media pembelajaran yang menunjang kegiatan pembelajaran IPA masih sangat terbatas. Tujuan penelitian ini yaitu untuk mengembangkan media video pembelajaran berorientasi PBL dengan menggunakan aplikasi filmora pada materi ciri-ciri hewan dan habitatnya. Jenis penelitian ini yaitu penelitian pengembangan dengan menggunakan model ADDIE. Subjek penelitian ini yaitu ahli desain, 2 ahli isi pembelajaran, dan 2 ahli media pembelajaran. Subjek uji coba penelitian ini meliputi 2 orang guru untuk uji praktisi, 3 orang untuk uji coba perorangan, dan 9 siswa untuk uji coba kelompok kecil. Populasi dari penelitian ini sebanyak 20 orang. Teknik pengambilan sampel menggunakan sampling Jenuh. Metode pengumpulan data yaitu wawancara, observasi, kuesioner, dan tes. Instrumen mengumpulkan data yaitu rating scale. Teknik analisis data yang digunakan pada penelitian ini yaitu teknik analisis deskriptif kualitatif, teknik analisis deskriptif kuantitatif, dan analisis statistik inferensial. Hasil penelitian yaitu hasil penilaian yang diberikan oleh ahli isi mata pelajaran yaitu 94,5% (sangat baik), ahli media pembelajaran yaitu 91,81% sangat baik), dan ahli desain pembelajaran 92% (sangat baik). Hasil uji coba kepraktisan menurut guru yaitu 91,81% (sangat baik), uji coba perorangan 97,3% (sangat baik), dan uji coba kelompok kecil 97,1 (sangat baik). Hasil uji-t didapatkan bahwa terdapat perbedaan signifikan sebelum dan sesudah menggunakan media video pembelajaran berorientasi PBL menggunakan aplikasi Filmora. Disimpulkan bahwa media video pembelajaran tersebut efektif digunakan pada materi ciri-ciri hewan dan habitatnya.

## ABSTRACT

The availability of various learning media that support science learning activities still needs to be improved. This study aims to develop PBL-oriented instructional video media using the Filmora application on animal characteristics and their habitat material. This type of research is development research using the ADDIE model. The subjects of this study were design experts, two learning content experts, and two learning media experts. The test subjects for this study included two teachers for the practitioner test, three people for the individual trial, and nine students for the small group trial. The population of this study was 20 people. The sampling technique uses Saturated sampling. Data collection methods are interviews, observations, questionnaires, and tests. The instrument collects data, the rating scale. The data analysis techniques used in this study are descriptive qualitative analysis techniques, quantitative descriptive analysis techniques, and inferential statistical analysis. The results of the research are the results of the assessment given by subject content experts, 94.5% (very good), learning media experts, 91.81% very good), and learning design experts, 92% (very good). The results of practicality trials, according to the teacher, were 91.81% (very good), 97.3% individual trials (very good), and small group trials 97.1 (very good). The results of the t-test found that there were significant differences before and after using PBL-oriented instructional video media using the Filmora application. It was concluded that the instructional video media was effectively used in the material on the characteristics of animals and their habitat.

## 1. INTRODUCTION

21st-century learning requires schools to use a student-centered learning approach to improve students' thinking ability. Learning in the 21st century requires students to have high-level learning and

thinking skills (Junedi et al., 2020; Redhana, 2019; Rosnaeni, 2021). The skills required are called the 4Cs, which include critical thinking and problem-solving, creativity and innovation, cooperation, and communication (Bedir, 2019; Hidayatullah et al., 2021; Kembara et al., 2018). In this 21st-century learning, students are expected to develop their abilities in finding out or formulating problems and collaborating with friends to solve problems in the surrounding environment (Maulana et al., 2022; Widodo & Wardani, 2020). It is why education in the 21st century aims to ensure that all students have a deep understanding and knowledge that is useful for keeping up with the rapid developments of the times. In creating meaningful learning activities in the era of globalization in the 21st century, teachers are required to have innovative abilities so they can keep up with current developments. It causes learning activities designed by teachers to provide meaningful and enjoyable learning experiences for students to achieve learning objectives optimally (Handayani & Amirullah, 2019; Meilani et al., 2020; Viani & Kamaludin, 2020). In the process of realizing good learning, teachers must be able to master the technology that supports learning activities.

However, the current problem is that in Indonesia's education, most learning activities only use books as teaching materials (Hidayah & Priscylio, 2019; Muga et al., 2017; Qondias et al., 2019). Teachers need to be more innovative and serious in designing student learning activities. This problem is reinforced by previous research findings, which reveal that there are still many teachers in Indonesia who are not yet able to use technology appropriately, so they only use media or learning resources available in their environment (Kimianti & Prasetyo, 2019; Pathoni et al., 2017; F. Wulandari et al., 2021). Apart from that, other findings also revealed that in learning activities, the teacher explained the material in the book so that sometimes the learning activities were slower, and there was a lack of time (Asrial et al., 2019; Laili et al., 2019). Learning activities that use book learning resources are considered less than optimal in providing good student learning outcomes. The lack of variety in learning media used in the learning process certainly makes learning activities passive, and students need more understanding in understanding the learning material (Utami et al., 2018; Widiantari & Suparta, 2022).

The observations and interviews with sixth-grade teachers at SD Negeri 4 Pendem showed the same problem. The problem is that the availability of various learning media that support science learning activities still needs to be improved. The limited use of learning media results in students needing more interest in learning, resulting in low learning outcomes. Teachers only use supporting books in learning activities, so students need help understanding the material. The interview results also show that teachers cannot develop appropriate technology-based learning media to facilitate students' learning. Teachers should make various efforts in learning activities, such as using interesting learning media that can increase students' understanding and motivation in learning so that it has an impact on student learning outcomes (Herawati & Muhtadi, 2018; Imansari & Sunaryantiningsih, 2017; Lumbantobing et al., 2019).

The solution to overcome the problem is to package innovative technology-based learning media that can attract students' attention to learning. One learning media can be used is Problem Based Learning oriented learning videos. PBL-based learning videos will help students develop their thinking abilities and problem-solving skills, especially in science learning. Learning videos present audio-visual information, making it easier for students to understand the learning material (Hanif, 2020; Khairani et al., 2019; Pratiwi et al., 2021). Video is a medium that contains images, text, sound, and animation to convey learning material (Andriyani & Suniasih, 2021; Dewi & Suniasih, 2020). The choice of video media will attract students' attention and be appropriate to the child's development level. It has also been confirmed by previous research findings, which revealed that learning videos effectively increased students' understanding (Sumarni et al., 2020; Yukselir & Komur, 2017). Apart from that, other research also reveals that Problem-Based Learning is a learning model that can stimulate students' thinking abilities so that students will more easily understand the learning material (Defiyanti & Sumarni, 2019; Febriana et al., 2020; Soyadi & Birgili, 2015). Learning becomes more effective and efficient when teachers use learning media that can attract students and stimulate their minds. The learning process theory states that teachers must provide good stimulus to students so that learning activities become more optimal (Abdurrozak & Jayadinata, 2016; Lubis et al., 2022).

Previous research findings also reveal that learning media is very important in learning activities because not only will students be helped, but teachers will also find it easier to explain learning material to students (Gowasa et al., 2019; Melinda et al., 2018; Rai & Lesmana, 2018; Y. Wulandari et al., 2020). Other research findings also reveal that learning videos have a very effective function in teaching students in a directed and independent manner so that they can improve students' understanding (Mayar et al., 2022; Wijaya et al., 2021; Yunita & Wijayanti, 2017). The advantage of using PBL-oriented learning video media is that learning videos are packaged systematically and problem-based to improve students' thinking skills in solving problems in everyday life. Learning media that can stimulate students' minds certainly has a positive impact on student learning outcomes and creates a learning atmosphere that is fun

and not monotonous (Hanifah et al., 2019; Pagarra & Idrus, 2018). There has yet to be a study regarding PBL-oriented video learning media using the Filmora application for science content, especially material on the characteristics of animals and their habitats for the fourth grade of elementary school. This learning video can help students learn science content. Based on these problems, this research aims to develop PBL-oriented learning video media using the Filmora application on material about animal characteristics and their habitats.

## 2. METHOD

This type of research is development research using the ADDIE model. This model has clear steps: analysis, design, development, implementation, and evaluation (Tegeh & Kirna, 2010). The subjects of this research were design experts, two learning content experts, and two learning media experts. The trial subjects for this research included two teachers for the practitioner trial, three people for the individual trial, and nine students for the small group trial. The population of this study was all sixth-grade students at SD Negeri 4 Pendem, with a total of 20 students. The sampling technique in this research is Saturated Sampling. The data collection methods used in this research are interviews, observation, questionnaires, and tests. Interview and observation methods are used to find existing problems. The questionnaire method was used to collect respondent data regarding the media being developed. The test method tests the effectiveness of PBL-based Learning Video products on students' science learning outcomes. The instrument used to collect data is the rating scale. The instrument grid is presented in Table 1, Table 2, and Table 3.

**Table 1. Instruments for Subject Content Experts**

| No | Aspect  | Indicator   |
|----|---|---|
| 1  | Curriculum  | <ol style="list-style-type: none"> <li>Suitability of the material with basic competencies.</li> <li>Suitability of material to indicators.</li> <li>Suitability of material to learning objectives.</li> </ol>   |
| 2  | Material  | <ol style="list-style-type: none"> <li>The truth of the material presented.</li> <li>Accuracy of the concepts conveyed.</li> <li>The novelty of the material presented</li> <li>Accuracy in presenting material based on existing facts.</li> </ol>   |
| 3  | Language  | <ol style="list-style-type: none"> <li>Accuracy of spelling in the material.</li> <li>Accuracy of grammar used.</li> <li>Accuracy in writing terms in the material.</li> <li>Accurate use of punctuation marks in the material.</li> <li>Accurate use of grammar according to student characteristics.</li> </ol> |
| 4  | The difficulty level of the material is adjusted to the user's characteristics. | <ol style="list-style-type: none"> <li>The level of flexibility of the material is to student characteristics.</li> <li>Initial material can relate to students' initial knowledge.</li> <li>Examples of learning media can clarify the material presented.</li> </ol>  |

(Suartama, 2016)

**Table 2. Instruments for Learning Video Media Experts**

| No | Aspect  | Indicator   |
|----|---|---|
| 1  | Capturing Camera Viewpoints with Image Composition            | <ol style="list-style-type: none"> <li>Determine the point of view of the video.</li> </ol>   |
| 2  | Visual Quality  | <ol style="list-style-type: none"> <li>The attractiveness of the graphics displayed.</li> <li>The attractiveness of the animation displayed.</li> </ol>   |
| 3  | Suitability of Video Presentation                             | <ol style="list-style-type: none"> <li>The videos presented are based on student characteristics.</li> <li>The effectiveness of the narrative in the video.</li> <li>Suitability of dubbing and visuals.</li> </ol> |
| 4  | Voice Clarity<br>a. Narration<br>b. Sound Effects<br>c. Music | <ol style="list-style-type: none"> <li>Clarity of the narrator's voice.</li> <li>Compatibility with sound effects.</li> <li>Regularity with background music.</li> </ol>  |
| 5  | Creative in expressing ideas and creativity                   | <ol style="list-style-type: none"> <li>The attractiveness of creativity in conveying messages.</li> <li>Flexibility in providing time and place for students and teaching materials.</li> </ol>                     |

(Suartama, 2016)

**Table 3. Instruments for Learning Video Design Experts**

| No | Aspect                | Indicator  |
|----|-----------------------|--|
| 1  | Clarity               | 1. Presentation of varied material (text, audio, and images).<br>2. Trigger interest and involvement in learning targets by applying teaching materials.   |
| 2  | Accuracy              | 3. Able to concretize abstract ideas or material.<br>1. Suitability of the video to student characteristics.<br>2. Suitability of material to learning objectives.<br>3. The material in the learning video is packaged coherently.<br>4. Accurate video duration to attract students' interest in learning. |
| 3  | Interest or Attention | 1. Increase students' attention to learning.<br>2. Videos motivate interest in learning.   |
| 4  | Impact on students    | 1. Make it easier for students to understand the material.   |

(Suartama, 2016)

The instrument developed is then tested for validity and reliability to be validly used to assess Problem-Based Learning Oriented Learning Video Media Using the Filmora Application for Science Content. The validity test was carried out using the Gregory formula. Test the validity of the test items using the product moment correlation technique. The test reliability test uses the Kuder Richardson 20 (KR-20) formula. The data analysis techniques used in this research are qualitative descriptive analysis techniques, quantitative descriptive analysis techniques, and inferential statistical analysis. Qualitative descriptive analysis was used to process and examine data resulting from expert reviews of problem-oriented learning video media using the developed Filmora application—quantitative descriptive data analysis to process and review scores given by experts. Inferential descriptive analysis is used to analyze the effectiveness of problem-oriented learning video media on student learning outcomes. This research design uses a One Group Pre-test and Post-test Design.

### 3. RESULT AND DISCUSSION

#### Result

Developing problem-oriented learning videos was researched at SD Negeri 4 Pendem using the ADDIE model. First, analyze. The analysis results show that the availability of various learning media that support science learning activities still needs improvement. The limited use of learning media results in students needing more interest in learning, resulting in low learning outcomes. Teachers only use supporting books in learning activities, so students cannot understand the material well. The interview results also show that teachers cannot develop appropriate technology-based learning media to facilitate students' learning. The results of the curriculum analysis are presented in Table 4.

**Table 4. Basic Competencies and Indicators of Learning Competency Achievement**

| Basic competencies                                      | Indicators of Competence Achievement  |
|---|---|
| 3.3 Analyze how living things adapt to the environment. | 3.3.1 Determines how living things adapt to the environment<br>3.3.2 Analyze the characteristics of animals based on their habitat. |

Second, design. At this stage, problem-based learning-oriented learning videos are designed using the Filmora application on the results of the analysis that has been carried out. The design stage begins with creating a storyboard design. It aims to make it easier to develop learning video media. After the storyboard is developed, the media is consulted for an appropriate media design. The results of designing problem-based learning-oriented video media using the Filmora application are presented in Figure 1.

Third, development. At this stage, problem-based learning-oriented learning videos were developed using the Filmora application according to the storyboard. The development of problem-based learning-oriented learning videos was developed using the Filmora application. The learning video developed consists of three parts: opening, main, and closing. The opening section consists of an intro, saying hello and greeting students, and conveying the theme, Basic Competencies, indicators, and learning objectives. The intro to this learning video media is to display identity in animated text. The main part of the learning video explains the material on the characteristics of animals and their habitats contained in



theme 2, unity in diversity, and subtheme 2, working together to achieve goals. In the closing section, the learning video displays the conclusions of the learning material and closes the learning by saying thank you and closing greetings. The development results are presented in Figure 2.

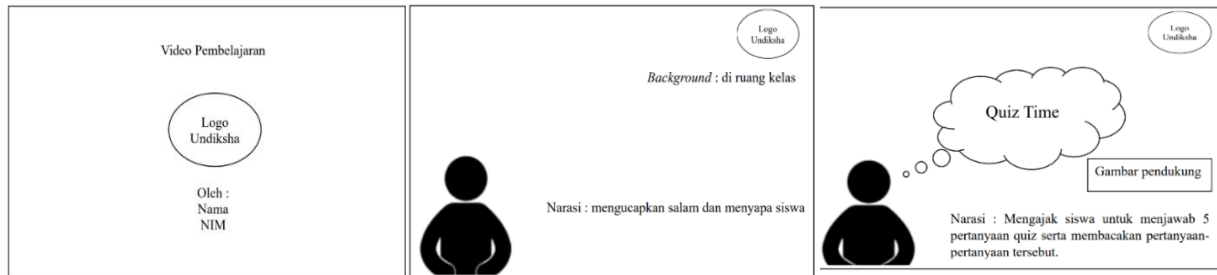


Figure 1. Problem-Based Learning-Oriented Learning Video Design

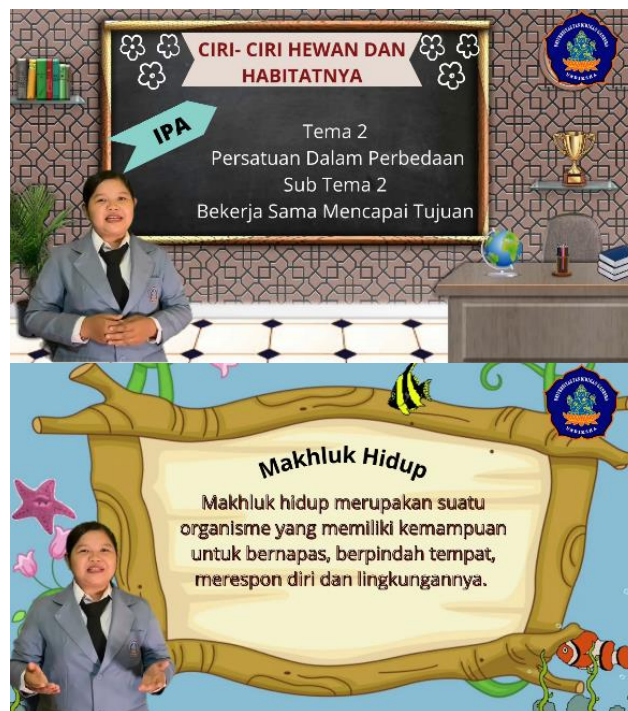


Figure 2. Results of Developing Problem-Based Learning-Oriented Learning Videos

Fourth is implementation. Problem-based learning-oriented learning videos use the Filmora application, developed and tested for validity by experts. Based on the assessment results given by the subject content expert, a score of 94.5% was obtained, resulting in a very good qualification. The assessment given by two learning media experts received a score of 91.81%, resulting in very good qualifications. The assessment results from learning design experts received a score of 92%, resulting in very good qualifications. According to the teacher, the results of the practicality test were a score of 91.81%, resulting in a very good qualification. The results of the individual trial assessment received a score of 97.3%, resulting in a very good qualification. The results of the small group trial got a score of 97.1, thus getting a very good qualification. Based on these results, problem-based learning-oriented learning videos are suitable for use in learning. Fifth is evaluation. Problem-based learning-oriented learning videos using the Filmora application suitable for use in learning were then tested for effectiveness. The results of the data normality test used the Shapiro-Wilk formula. Based on the results of the Shapiro Wilks table normality test, it is found that  $T3 = 0.848$  for  $n = 20$  is at  $p = 0.1$  and  $p = 0.5$ . It means the p-score is  $> 0.05$ , so it can be concluded that the pre-test results are normally distributed. Based on the results of the Shapiro Wilks table normality test, it is found that  $T3 = 0.886$  for  $n = 20$  is at  $p = 0.1$  and  $p = 0.5$ . It means the p-score is  $> 0.05$ , so it can be concluded that the post-test results are normally distributed. The results of the homogeneity test showed that  $F_{count} (1.132) < F_{table} (2.228)$ , so  $H_0$  was accepted, which means the sample is homogeneous. A hypothesis test is carried out after the data is normal and homogeneous. The t-test results obtained  $t_{count} = 17.22$  for  $db = 38$  and a significance level of

5% = 2.23. It means  $t_{count} > t_{table}$ , so  $H_0$  is rejected.  $H_1$  is accepted, which means there is a significant difference (5%) before and after using PBL-oriented learning video media using the Filmora application. It was concluded that the learning video media was effectively used in material regarding animal characteristics and their habitats.

## Discussion

The results of data analysis show that problem-based learning-oriented learning videos are suitable for use in learning. The t-test results also show that the learning video media is effectively used in material regarding animal characteristics and their habitats. It is caused by several factors, as follows. First, learning video media is effective in using learning videos because it makes it easier for students to learn. Learning videos are a medium that can stimulate students' minds and willingness to participate in learning activities to increase understanding (Biassari et al., 2021; Wulandari et al., 2020). It was also revealed by previous research findings which revealed that learning videos can present information audio-visually, making it easier for students to understand the learning material (Bekagama et al., 2016; Gowasa et al., 2019; Permatasari et al., 2019). Moreover, the learning videos developed contain images, text, sound, and animation, which are useful for students to understand the material quickly (Mayar et al., 2022; Wulandari et al., 2020). The learning video that has been developed is one of the appropriate media for explaining learning material about the characteristics of animals and their habitats in natural sciences. In deepening students' knowledge, the Problem-Based Learning approach can require students to develop critical thinking skills so they can solve problems (Abdurrozak & Jayadinata, 2016; Febriana et al., 2020). This is what causes PBL-oriented learning videos to be one of the media that can be a solution to improve students' thinking abilities and improve student learning outcomes.

Second, learning videos are effective because they increase students' motivation. Learning videos present a variety of interesting images and animations, increasing student motivation in learning. The learning videos that have been developed align sound with images, making students understand and more motivated to listen to the material explained in the video. It is what causes the use of learning videos as a medium to increase student motivation in learning (Biassari et al., 2021; Octavyanti & Wulandari, 2021; Wijaya et al., 2021). Apart from that, teachers are also helped in explaining science material clearly to students (Ahmad, 2021; Candra Dewi & Negara, 2021). Presenting PBL-based learning videos also requires students to overcome all problems that occur so that students become more active and motivated. This PBL model is one approach that uses real and open context as a context for students to develop skills to solve problems and develop new knowledge (Fitria et al., 2020; Nagge et al., 2018; Serevina et al., 2018). It causes students to become more enthusiastic when participating in learning integrated with their daily lives.

Third, learning videos are effective because they create a fun learning atmosphere. The opening part of the video consists of an intro, saying hello and greeting students, and conveying the theme, basic skills, indicators, and learning objectives. The intro to this learning video media is to display identity in animated text. The activity of saying hello and greeting students is carried out to start learning so that students become more enthusiastic. In its application, the learning videos presented an attractive appearance that created a more lively learning atmosphere (Ayu et al., 2020; Biassari et al., 2021; Rai & Lesmana, 2018). Moreover, when editing this video, use the Filmora application with adequate features to make the resulting video more interesting and faster. The main part of the video also invites students to answer the quiz questions displayed to determine students' understanding after listening to the explanation through the learning video. Video media is very important in science learning because it can create an easier learning atmosphere and impact students' desire to learn more (Gowasa et al., 2019; Harling, 2021; Wulandari et al., 2020). Science learning is knowledge based on facts, concepts, and principles, so understanding it requires real media that can concretize abstract things (Mustamiroh & Ramadhayanti, 2021; Panggabean et al., 2021).

Previous research findings reveal that interesting learning videos can significantly improve student learning outcomes (Nanda et al., 2017; Pramana et al., 2016). Other research also reveals that videos developed by adapting student characteristics and material make it easier for students to understand the material quickly (Lukman et al., 2019; Mutia et al., 2018; Pramana & Suarjana, 2019). Apart from that, other findings also reveal that the PBL learning model is a model that can improve students' thinking skills and make the learning atmosphere more lively and enjoyable (Misla & Mawardi, 2020; Nurtanto et al., 2019). Based on this, using PBL-oriented learning videos is one of the right solutions to overcoming student learning problems, especially in science subjects, because it can attract students' attention and interest in learning. This research implies that using PBL-oriented learning video media using the Filmora application can help students learn and create meaningful learning activities to improve learning outcomes. Students can also use this video media independently anywhere so that it becomes

more efficient. It is recommended that every teacher use learning media so that learning can run optimally.

#### 4. CONCLUSION

The results of data analysis show that problem-based learning videos are valid and practical by experts, students, and teachers, so they are suitable for use in learning. The t-test results also show a significant difference before and after using PBL-oriented learning video media using the Filmora application. It was concluded that the learning video media was effectively used in material regarding animal characteristics and their habitats.

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