**Jurnal Mimbar Ilmu**
Volume 28, Number 3, 2023, pp. 469-478
P-ISSN: 1829-877X E-ISSN: 2685-9033
Open Access: https://doi.org/10.23887/mi.v28i3.64491

# Audio Visual Media Based on Problem Based Learning Water Cycle Topics for Class V Elementary School

**I Komang Adi Prayoga[1]*, I Gusti Ayu Tri Agustiana[2]**

[1,2] Jurusan Pendidikan Dasar, Universitas Pendidikan Ganesha, Singaraja, Indonesia

**ARTICLE INFO**

**Article history:**
Received June 25, 2023
Revised June 30, 2023
Accepted October 30, 2023
Available online December 25, 2023

***Kata Kunci:***
*Media Audio Visual, Powtoon, Problem Based Learning, Siklus Air*

**Keywords:**
Audio Visual Media, Powtoon, Problem Based Learning, Water Cycle



***ABSTRAK***

*Media pembelajaran dijadikan alat penyalur pesan oleh pendidik kepada peserta didik. Kurangnya pemanfaatan media yang berbasis teknologi menyebabkan siswa mengalami kesulitas dalam memahami materi IPA yang kompleks. Penelitian ini bertujuan untuk menciptakan media pembelajaran audio visual dengan aplikasi powtoon berbasis problem based learnig pada topik siklus air siswa kelas V sekolah dasar. Penelitian ini menggunakan model ADDIE. Metode dan instrument pengumpulan data yang digunakan dalam penelitian ini, yaitu kueisioner, Rating Scale dan tes. Subjek penelitian ini adalah produk yang berupa media pembelajaran audio visual dengan aplikasi powtoon berbasis problem based learning pada topik siklus air sedangkan untuk objek pengembangannya adalah validitas isi, kepraktisan dan efektivitas produk. Teknik analisis data menggunakan analisis deskriptif kualitatif dan kuantitatif. Hasil penelitian diperoleh bahwa tingkat validitas media masuk kategori sangat baik. Hasil uji efektivitas media audio visual dengan aplikasi Powtoon berbasis Problem Based Learning menunjukkan terdapat perbedaan yang signifikan media pembelajaran audio visual dengan aplikasi powtoon berbasis problem based learning pada topik siklus air siswa kelas V sekolah dasar terhadap hasil belajar. Jadi media pembelajaran yang dikembangkan layak dan efektif digunakan untuk meningkatkan hasil belajar siswa. Implikasi penelitian ini guru dapat memanfaat media video dalam pembelajaran.*

**ABSTRACT**

Learning media is used to convey messages to educators and students. The lack of use of technology-based media causes students to experience difficulties in understanding complex science material. This research aims to create audio-visual learning media with a PowerPoint application based on problem-based problem-based learning on the water cycle topic for fifth-grade elementary school students. This research uses the ADDIE model. The data collection methods and instruments used in this research are questionnaires, rating scales, and tests. The subject of this research is a product in the form of audio-visual learning media with a Powtoon application based on problem-based learning on the water cycle. At the same time, the object of development is content validity, practicality, and product effectiveness. The data analysis technique uses qualitative and quantitative descriptive analysis. The research results showed that the level of media validity was in the very good category. The results of the effectiveness test of audio-visual media with the Powtoon application based on Problem-Based Learning show that there is a significant difference between audio-visual learning media and the Powtoon application based on problem-based learning on the topic of the water cycle for the fifth-grade elementary school students on learning outcomes. So, the learning media developed is feasible and effective to improve student learning outcomes. This research implies that teachers can use video media in learning.

## 1. INTRODUCTION

Education is an effort to improve the quality of Human Resources (HR) (Kristiana, 2020; S. Lestari, 2018). The development of technology in the current digital era is very rapid, including in the field of education, advances that occur in the field of technology have a very positive impact on the world of education, teachers in this case are not the only source of learning, teachers are also facilitators where teachers direct students when learning takes place (Wulandari et al., 2019). So a lot of educational technology has been developed to attract students to be interested in learning (Ariani & Ujiti, 2021;

Corresponding author
*E-mail addresses: ayoga483@gmail.com (I Komang Adi Prayoga)

Darmayanti & Surya Abadi, 2021; Siti Anggreni & Suniasih, 2021).One use of educational technology that can help attract students' interest in learning is technology-based learning media.Learning media is a learning resource that can help teachers in enriching students' insight, with various types of learning media by teachers it can be used as material in providing knowledge to students (Nurrita, 2018; Salsabila et al., 2020). As a teacher, you must be able to choose learning media that is appropriate and suitable for use so that the learning objectives set by the school are achieved (Arjulayana, 2018; Fauziah & Ninawati, 2022; Hanif, 2020). The benefits that students get from using learning media are increasing curiosity, interest and motivating students to learn, helping students understand abstract or complicated concepts, attracting students' attention, making learning time and place more flexible, and accommodating various students' learning methods and styles (Arjulayana, 2018; Hanif, 2020; Salsabila et al., 2020).

The results of previous research regarding the analysis of the use of learning media in science content in elementary schools showed that the percentage of use of learning media in the teaching and learning process was 67.95%. This means that the use of learning media is not 100%, meaning there are still some lessons that do not use supporting media (Winangsih & Harahap, 2023). Then, other research results regarding teachers' difficulties in using learning media, especially those based on technology, include teachers having difficulty in designing IT-based media because teachers' abilities in using technology are still low. Not all teachers are also able to operate technology-based learning media. Supporting facilities and infrastructure are also inadequate, such as not all students have cellphones or other supporting devices that will be used in media applications. And finally, teacher creativity in creating learning media is still low. For example, when making learning videos, teachers often take ready-made videos using YouTube rather than making them themselves (Winda & Dafit, 2021). Based on the results of interviews conducted on Thursday, October 6 2022 at SD Negeri 7 Melaya with the class V homeroom teacher, a problem was found, namely that in the learning process teachers used the lecture method more often than using learning media. Lack of diversity of media used to support the learning process. Teachers have never used learning media with the Powtoon application based on problem based learning in science subjects, especially on the topic of the water cycle. Students have difficulty understanding the learning material presented only by presenting the text. Some of the problems above of course affect student learning outcomes in particularin low science subjects. There were 72.7% of the 11 students who had scores below the KKM during the mid-semester assessment.

One solution that can be done is by developing learning media, namely audio-visual media with the Powtoon application based on Problem Based Learning on the topic of the water cycle for class V elementary school science. Audio visual media has advantages, namelyOral and written messages can be presented clearly, overcoming limitations of space, time and sensory power, can be used for tutorial learning (Ayuningsih, 2020; Nagge et al., 2018). Audio-visual media in learning can also provide a lot of stimulus to students, because of its audio-visual/sound-image nature (Fitriyani, 2019; Rahmatullah et al., 2020). Media creation is done with the powtoon application. Using the Powtoon application can help teachers in delivering learning material, especially the Powtoon features which support the creation of interesting media such as hand animation, cartoon animation, and more lively transition effects as well as easier timeline settings (Dupri et al., 2020; Nagge et al., 2018). The powtoon application is also easy for teachers to use in creating learning media because at the beginning of using the powtoon application they will be given a short tutorial on how to use the application, so that teachers can easily understand how to use the powtoon application (Arifin et al., 2018; Asih et al., 2021).The media that will be developed is combined with the Problem Based Learning model(PBL). The problem based learning model has learning steps that invite students to identify problems, then organize students to learn by collecting facts and formulating temporary assumptions, then continue with individual or group investigations guided by the teacher, so that students are able to obtain solutions to the problem and can present the results and then analyze and evaluate the problem solving process together (Bosica et al., 2021; Kodariyati & Astuti, 2016; Nagge et al., 2018).

Previous research findings state that problem-based learning science videos are feasible and valid to use (Andriyani & Suniasih, 2021; Styowati & Utami, 2022). Videos based on problem based learning material on animal life cycles in Class IV elementary school science content are suitable and valid to use (Siti Anggreni & Suniasih, 2021). Powtoon-based mathematics learning media on social arithmetic material is suitable for use (Kusumawati & Setyadi, 2022; Sukmanasa et al., 2020). The aim of this research is to determine the design, validity, practicality and effectiveness of audio visual media with the Powtoon application based on Problem Based Learning on the topic of the water cycle for class V elementary school. It is hoped that later this media can increase students' motivation and interest in learning and help teachers in the process of conveying knowledge to students.

## 2. METHOD

This type of research is ADDIE model development research. This model uses 5 development stages, namely analysis, design, development, implementation, and evaluation. This development procedure is carried out in several stages. The first stage is an analysis carried out to analyze the needs, curriculum and character of students. The second stage is the design carried out to design learning videos which are developed based on the results of previous analysis. The third stage is development which is the product realization stage. The fourth stage is implementation which is carried out to determine the validity, practicality and effectiveness of the media. And the fifth stage, namely evaluation, is used to evaluate the product being developed by revising the results and suggestions at the product implementation stage. Product trials are carried out by reviewing the media that has been developed. The test subjects at this stage were powtoon-based learning video media on the topic of the water cycle for fifth grade elementary school students. The objects of testing in this research are the validity of the media carried out by experts/lecturers, the practicality of the media carried out by practitioners/teachers and students, and the effectiveness of the media tested on students. The data collection methods used are test and non-test methods. The data collection instrument uses a questionnaire to determine the validity and practicality of the media, and tests are used to determine the effectiveness of the media on student learning outcomes. The grid of the research instrument is presented in Table 1, Table 2, Table 3, Table 4, and Table 5.

**Table 1.** The Media Expert Validation Instrument Grid

| No | Aspect | Indicator | Number of Items | Indicator Number |
|---|---|---|---|---|
| 1 | Accuracy | The media presents information about learning competencies.<br>The videos presented are in accordance with student characteristics.<br>The videos presented are in accordance with the characteristics of the material. | 3 | 1,2,3 |
| 2 | Clarity of Method | The language used is easy for students to understand.<br>The material in the video is explained effectively.<br>The material presented in the video is packaged coherently.<br>Media provides evaluations to measure students' understanding of lesson material.<br>The material in the media is based on students' real life situations.<br>The learning process in media can provide meaningful experiences.<br>The learning process on video media begins with asking questions.<br>The learning process using video media provides reflection for students. | 8 | 4,5,6,7,8,9 ,10,11 |
| 3 | Interest/ Attention | Videos can motivate and increase students' attention to learning.<br>Make it easier for students to understand the material. | 2 | 12,13 |
| 4 | Message Design | The color of the image is comfortable to look at.<br>Illustrations with the material explained are correct. | 2 | 14,15 |
| | | **Amount** | **15** | |

**Table 2.** The Material Expert Validation Instrument Grid

| No | Aspect | Indicator | Number of Items | Item Number |
|---|---|---|---|---|
| 1 | Clarity in language use | The language used in the Powtoon-based learning video media uses standard language.<br>The language used in powtoon-based learning videos is easy to understand.<br>Accuracy of writing and language selection in Powtoon-based learning video media. | 3 | 1,2,3 |

| No | Aspect | Indicator | Number of Items | Item Number |
|---|---|---|---|---|
| 2 | The quality of the use of words and sentences | The sentences used in powtoon-based learning videos are easy to understand.<br>Clarity of words and terms used in Powtoon-based video media.<br>The arrangement of words and sentences is in accordance with good and correct Indonesian language rules. | 3 | 4, 5, 6 |
| 3 | Suitability of the material with the basic competencies to be achieved | The completeness of the material presented is in accordance with the basic competencies to be achieved.<br>The depth of the material presented is in accordance with the basic competencies to be achieved. | 2 | 7, 8 |
| 4 | Compliance of the material with the indicators achieved | The completeness of the material presented is in accordance with the indicators to be achieved.<br>The material presented is in accordance with the indicators to be achieved. | 2 | 9, 10 |
| 5 | Suitability of the material to the learning objectives to be achieved | The completeness of the material presented is in accordance with the learning objectives to be achieved.<br>The material presented is in accordance with the learning objectives. | 2 | 11, 12 |
| 6 | Providing Training | Suitability of material to practice questions.<br>The practice questions presented can train students' thinking skills.<br>Practice questions in Powtoon-based video media can train students to solve problems in everyday life. | 3 | 13, 14, 15 |
| | | **Number of Items** | **15** | |

**Table 3.** Expert Instrument Grid Learning Design

| No | Aspect | Indicator | Amount Item | No Item |
|---|---|---|---|---|
| 1 | Accuracy | The media presents information about learning competencies.<br>The videos presented are in accordance with student characteristics.<br>The videos presented are in accordance with the characteristics of the material. | 3 | 1,2,3 |
| 2 | Clarity of Method | The language used is easy for students to understand<br>The material in the video is explained effectively.<br>The material presented in the video is packaged coherently.<br>Media provides evaluations to measure students' understanding of lesson material.<br>The material in the media is based on students' real life situations.<br>The learning process in media can provide meaningful experiences.<br>The learning process using video media provides reflection for students. | 7 | 4,5,6,7 ,8,9,10 |
| 3 | Interest/attention | Videos can motivate and increase students' attention to learning.<br>Make it easier for students to understand the material. | 2 | 11,12 |
| 4 | Video Design | The color of the image is comfortable to look at.<br>Illustrations with the material explained are correct. | 2 | 13,14 |
| | | **Amount** | **14** | |

**Table 4.** The Practitioner Instrument Grid

| No | Aspect | Indicator | Amount Item | Number Item |
|---|---|---|---|---|
| 1 | Attract students' interest in learning | Display interesting learning videos.<br>The images displayed are interesting.<br>The colors displayed in the video media are attractive. | 3 | 1,2,3 |
| 2 | Presentation of Material | The material presented in the learning video is easy to understand.<br>The examples given in the material are easy to understand.<br>The language used is easy to understand.<br>Letters can be read clearly.<br>The material in the media is based on real life situations. | 5 | 4,5,6,7,8 |
| 3 | Attention and motivation | Learning videos can increase attention.<br>Learning videos can motivate learning. | 2 | 9,10 |
| | | **Amount** | **10** | |

**Table 5.** The Grid Table of Student Response Instruments

| NO | Aspect | Indicator | Number of Question Items | Item Number |
|---|---|---|---|---|
| 1 | Media | The effectiveness of learning video media.<br>Sound quality<br>Ease of using media<br>The beauty of color images and animation<br>Conformity in image variations<br>Suitability of using learning video media | 6 | 1,2,3,4,5,6 |
| 2 | Material | The material presented is easy to learn<br>Benefits of the material presented | 2 | 7.8 |
| 3 | Learning | Increase student attraction<br>Increase interest in learning<br>Conformity provides an example | 3 | 9,10,11 |
| | | **Amount** | **11** | |

The data analysis methods and techniques used in this development research are qualitative descriptive statistical data analysis techniques and quantitative descriptive statistics. The qualitative analysis method is used to process data in the form of suggestions and input from experts and practitioners regarding the media being developed. And quantitative analysis methods are used to analyze data in the form of numbers and use statistical techniques. This analysis is used to calculate the validity and practicality of the media.

## 3. RESULT AND DISCUSSION

### Result

The product resulting from this development research is a video with a duration of 10 minutes 26 seconds which contains the topic of the water cycle to help students learn. The material presented in the learning video explains the definition of the water cycle, the stages and types of the water cycle, the impact of the water cycle on events on earth, determining water saving measures, and concluding the impact of the water cycle on events on earth. The learning video presentation is packaged in detail and is interesting plus the help of the problem based learning (PBL) model so that apart from the complete learning material, students will not easily feel bored when studying in class. Learning videos are packaged with images that support the topic of the water cycle so that the material can be presented well and efficiently. The resulting learning video consists of several parts, namely cover, introduction of characters, presentation of KD, GPA and learning objectives, introductory questions, delivery of material about the water cycle, conclusion, evaluation and closing greetings. Next, the resulting learning video is tested for validity, practicality and effectiveness. Based on the results of the media validity test, it was found that the validity of learning media experts received an average score of 3.73 with a good predicate. validity from material experts got an

average score of 3.73 with a good predicate. validity from learning design experts got an average score of 3.57 with a good predicate. From these results, it can be concluded that the media is declared valid for use in the learning process.

After carrying out the media validity test, the media practicality test is then carried out by the teacher and students. For the practicality test carried out by the teacher, the percentage was 100% in the very practical category. And the practicality test by students got a percentage of 95% in the very practical category. This means that the developed media is practically used in the learning process. After conducting an effectiveness test, we continued by conducting an effectiveness test to determine the effect of audio-visual learning media with the Powtoon application based on Problem Based Learning on the topic of the water cycle on student learning outcomes. PengThe media effectiveness test was carried out using a pretest-posttest pattern. The pretest-posttest results will be compared using the Paired Sample T-Test because it only uses a single sample in class V elementary school, so a prerequisite test is carried out, namely the normality test. The normality test was carried out using One-Sample Kolmogorov-Smirnov assisted by SPSS. The results of the One-Sample Kolmogorov-Smirnov normality prerequisite test can be seen in Table 6.

**Table 6.** Kolmogorov-Smirnov Test Results

| One-Sample Kolmogorov-Smirnov Test | | |
|---|---|---|
| | | **Unstandardized Residuals** |
| N | | 11 |
| Normal Parameters, b | Mean | 0.0000000 |
| | Std. Deviation | 7.11463123 |
| Most Extreme Differences | Absolute | 0.155 |
| | Positive | 0.155 |
| | Negative | -0.118 |
| Statistical Tests | | 0.155 |
| Asymp. Sig. (2-tailed) | | 0.200 |

Based on this table, the significant value (2-tailed) obtained is 0.200 > 0.05. Thus, the data is said to be normally distributed. Next, a Paired Sample t-test is carried out and conclusions are drawn as a result of hypothesis testing. The results of the Paired Sample t-test can be seen at Table 7.

**Table 7.** T-test Results

| Paired Samples Test | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Paired Differences | | | | | t | df | Sig. (2-tailed) |
| | | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | | |
| | | | | | Lower | Upper | | | |
| Pair 1 | Pretest - Posttest | -31.818 | 8.739 | 2.635 | -37.689 | -25.947 | -12.076 | 10 | 0.000 |

Based on this table, a significance value is obtained (2-tailed) is 0.000 so it is known that the Sig value (2-tailed) is 0.000 < 0.05, so it is concluded that there is a significant influence media audio visual learning with the powtoon application based on problem based learning on the topic of the water cycle for fifth grade elementary school students. Thus, $H_0$ is rejected, $H_1$ is accepted.

**Discussion**

The results of this development research are: audio visual learning media with a powtoon application based on problem based learning on the topic of the water cycle which is valid, practical and effective to improve students' ability to understand the learning material. There are several things that make audio visual learning media with the Powtoon application based on problem based learning on the topic of the water cycle valid, practical and effective. The first, media developmentaudio visual learning with the Powtoon application based on problem based learning on the topic of the water cycle for fifth grade elementary school studentsexplains the theory of the water cycle with various concrete examples of the water cycle.The development of audio visual media has very complete material coverage and real examples that students can experience in everyday life. This learning video also provides knowledge and experience for students to get to know the water cycle process that they enjoy in their daily lives so that students can

better appreciate the resource in the form of water itself so that later they can anticipate the occurrence of a clean water crisis. Understanding the concept of the water cycle is very important for student development, not only students but also the wider community must also be able to know how the water cycle occurs on earth. The water cycle really needs to be socialized to students so that later students will be able to preserve water in their surrounding environment (Krisna Bayu & Citra Wibawa, 2021; Purnami & Suarni, 2021). The development of media like this really helps students understand the water cycle in everyday life, as well as the impact if the water cycle does not run well, which will affect human life itself (Ardani et al., 2020).

The second, media audio visual learning with the Powtoon application based on problem based learning on the topic of the water cycle for fifth grade elementary school students this is adjusted to the learning needs felt in the field. In supporting a teaching and learning process in educational institutions, learning media is very important for the process, so that in the learning process it is necessary to maximize the learning media used. There are many things that underlie the need for learning to be carried out with the help of learning media, one of which is because the characteristics of students are of course different, so the choice of media must also be given great attention. This is supported by the opinion which states that the function of learning media is as a tool to assist teachers in carrying out the learning process so that the material explained by the teacher can be conveyed clearly and the teacher's explanations are more directed towards learning outcomes (Fauziah & Ninawati, 2022; Novianto et al., 2018; Wardani & Syofyan, 2018). Learning video media with the topic of the water cycle is one of the learning tools/media that can provide solutions to the needs of the learning process in schools so that learning does not only use the lecture method. The era of digitalization will also really help the development of video media like this, because there are lots of applications that can help to make it, one of which is the powtoon application (Arif* & Muthoharoh, 2021; KA Lestari et al., 2022; Pratiwi et al., 2021).

The third, media development audio visual learning using the powtoon application based on problem based learning on the topic of the water cycle for fifth grade elementary school studentsis an interesting video medium with lots of supporting animations as well as original images that can support the presentation of the material in it. The presentation of the material in it is also short, concise and clear, which is in accordance with the testing carried out by each expert as well as practical testing by practicing teachers and students. Today's students can be categorized as a generation of digital natives who have been familiar with technology since childhood, therefore the right learning media for today's children is digital-based learning media (Listiawati & Qomariah, 2020; Munawar & Suryadi, 2019). In fact, students have been introduced to technology in the form of devices or gadgets owned by their parents, so it is not strange for students to learn using learning media technology. With a learning design like this, students can learn to know the water cycle while seeing the actual phenomenon shown in the video, and students don't need to guess again or fantasize about the teacher's explanation or it could be said that students don't float when learning. Using appropriate and creative learning media can make learning less monotonous and boring. Therefore, students will be more easily interested and understand the lesson (Rahayu et al., 2021; Rahmawati & Ramadan, 2021).

The Fourth,media audio visual learning with the Powtoon application based on problem based learning on the topic of the water cycle for fifth grade elementary school students is easily accessible to students and the media content is also easy to understand. This learning media is a medium in the form of an innovative learning video which contains water cycle material. This video has a duration of 10.26 minutes so it can be shared via any platform such as Google Drive, Whatsapp Group and YouTube. This makes it easier for teachers and students to access it via the devices they have, whether in the form of laptops or smartphones. This finding is strengthened by previous research findings stating that learning media in the form of PBL model-oriented POWTOON videos have high validity and practical value, so the media is very suitable for use (Ningsih & Fitria, 2021). Powtoon learning media based on Problem Based Learning was declared suitable for use based on testing the validity of the media and can improve student learning outcomes (Mertasari & Ganing, 2021). Research regarding the development of audio-visual media products based on Powtoon has obtained results that the media developed can improve representational abilities because Powtoon media can create attraction and change motivation in learning (Arif & Muthoharoh, 2021). The research that has been carried out has basically provided quite significant information aboutaudio-visual mediawith a powtoon application based on problem based learning which is reviewed based on its design, validity, practicality and effectiveness. However, there are still limitations, thus opening up opportunities for other researchers to conduct similar research to improve education. These limitations include the minimal use or involvement of experts in media testing, this research uses the Powtoon application with animation creation which has not yet been developed so that the audio visual media produced is static in terms of character, and the audio visual media is only intended for the fifth grade

elementary school group. because the preparation of this media is based on water cycle material for class V elementary schools.

## 4. CONCLUSION

Based on the results of the research that has been carried out, it can be concluded that audio visual media with the Powtoon application based on Problem Based Learning on the topic of the water cycle for class V elementary school is declared valid in terms of media, materials and learning design, practical for use in the learning process and effective for improving learning outcomes. student.

## 5. REFERENCES

Andriyani, N. L., & Suniasih, N. W. (2021). Development of Learning Videos Based on Problem-Solving Characteristics of Animals and Their Habitats Contain in Ipa Subjects on 6th-Grade. *Journal of Education Technology*, *5*(1), 37. https://doi.org/10.23887/jet.v5i1.32314.

Ardani, N. K., Dantes, I. N., & Marhaeni, A. A. I. N. (2020). Pengembangan Instrumen Literasi Humanistik dan Hasil Dasar Menganalisis Siklus Air dan Dampaknya pada Peristiwa di Bumi dan Kelangsungan Makhluk Hidup untuk Siswa Kelas V SD. *PENDASI: Juranal Pendidikan Dasara Indonesia*, *4*(2), 112–121. https://doi.org/10.23887/jpdi.v4i2.3457.

Ariani, N. K., & Ujianti, P. R. (2021). Media Video Animasi untuk Meningkatkan Listening Skill Anak Usia Dini. *Jurnal Pendidikan Anak Usia Dini Undiksha*, *9*(1), 43. https://doi.org/10.23887/paud.v9i1.35690.

Arif*, S., & Muthoharoh, A. (2021). Pengembangan Media Pembelajaran Berbasis Powtoon dalam Meningkatkan Kemampuan Representasi IPA di Tengah Pandemi Covid 19. *Jurnal IPA & Pembelajaran IPA*, *5*(1), 112–124. https://doi.org/10.24815/jipi.v5i1.19779.

Arifin, R. W., Septanto, H., & Wignyowiyoto, I. (2018). Development of Animated Video-Based Learning Media with ADDIE Model in Blended Learning Activities. *Information Management For Educators And Professionals (Juni 2018)*, *2*(2), 179–188. https://doi.org/10.2991/assehr.k.210407.273.

Arjulayana. (2018). The Use Of Video In Teaching Writing On Procedure. *Globish: An English-Indonesian Journal for English, Education, and Culture*, *7*(1), 148–157. https://doi.org/10.31000/globish.v6i2.660.

Asih, A. T. S., Yudiana, K., & Ujianti, P. R. (2021). Inovasi Video Pembelajaran Berbantuan Aplikasi Powtoon pada Materi Keliling dan Luas Bangun Datar. *MIMBAR PGSD Undiksha*, *9*(3), 375–384. https://doi.org/10.23887/jjpgsd.v9i2.36665.

Ayuningsih, N. P. M. (2020). Validitas Isi Media Pembelajaran Interaktif Berorientasi Model Problem Based Learning dan Pendidikan Karakter. *Jurnal Mathematics Paedagogic*, *V*(1). https://doi.org/10.36294/jmp/vxix.xxx.

Bosica, J., S.Pyper, J., & Stephen MacGregor. (2021). Incorporating problem-based learning in a secondary school mathematics preservice teacher education course. *Teaching and Teacher Education*, *102*, 103335. https://doi.org/10.1016/j.tate.2021.103335.

Darmayanti, N. K., & Surya Abadi, I. B. (2021). Pengembangan Media Pembelajaran Daring Komik Virtual dalam Muatan Materi Gagasan Pokok dan Gagasan Pendukung Bahasa Indonesia. *MIMBAR PGSD Undiksha*, *9*(1), 170. https://doi.org/10.23887/jjpgsd.v9i1.32481.

Dupri, D., Candra, O., Candra, A., & Suryani, D. A. (2020). The Implementation of Problem Based Learning Model in Improving Cooperation and Learning Outcomes in Physical Education. *Jurnal Pendidikan Jasmani Dan Olahraga*, *5*(1). https://doi.org/10.17509/jpjo.v5i1.22531.

Fauziah, M. P., & Ninawati, M. (2022). Pengembangan Media Audio Visual (Video) Animasi Berbasis Doratoon Materi Hak dan Kewajiban Penggunaan Sumber Energi Mata Pelajaran PPKn di Sekolah Dasar. *Jurnal Basicedu*, *6*(4), 6505–6513. https://doi.org/10.31004/basicedu.v6i4.3257.

Fitriyani, N. (2019). Pengembangan Media Pembelajaran Audio-Visual Powtoon Tentang Konsep Diri Dalam Bimbingan Kelompok Untuk Peserta Didik Sekolah Dasar. *Jurnal Tunas Bangsa*, *6*(1), 104–114. https://ejournal.bbg.ac.id/tunasbangsa/article/view/950.

Hanif, M. (2020). The development and effectiveness of motion graphic animation videos to improve primary school students' sciences learning outcomes. *International Journal of Instruction*, *13*(4), 247–266. https://doi.org/10.29333/iji.2020.13416a.

Kodariyati, L., & Astuti, B. (2016). Pengaruh Model Pbl Terhadap Kemampuan Komunikasi Dan Pemecahan Masalah Matematika Siswa Kelas V Sd. *Jurnal Prima Edukasia*, *4*(1), 93. https://doi.org/10.21831/jpe.v4i1.7713.

Krisna Bayu, I. M., & Citra Wibawa, I. M. (2021). Belajar Siklus Air Melalui Video Demonstrasi dengan Media Konret. *MIMBAR PGSD Undiksha*, *9*(2), 248. https://doi.org/10.23887/jjpgsd.v9i2.34990.

Kristiana, A. A. I. D. (2020). Meningkatkan Keterampilan Berbicara Siswa Melalui Model Pembelajaran Role Playing Berbantuan Media Audio Visual. *Jurnal Mimbar Ilmu*, *25*(3), 449–459. https://doi.org/10.23887/mi.v25i3.26388.

Kusumawati, F., & Setyadi, D. (2022). Pengembangan Media Pembelajaran Matematika Berbasis Powtoon pada Materi Aritmatika Sosial. *Jurnal Cendekia : Jurnal Pendidikan Matematika*, *6*(2), 1486–1498. https://doi.org/10.31004/cendekia.v6i2.1267.

Lestari, K. A., Suranata, K., & Bayu, G. W. (2022). Animated Video-Based Learning Media Assisted with Powtoon on Living Things Characteristics Topic. *International Journal of Elementary Education*, *6*(3), 511–517. https://doi.org/10.23887/ijee.v6i3.53418.

Lestari, S. (2018). Dampak teknologi terhadap pendidikan. Jurnal Pendidikan dan Kebudayaan Missio. *Jurnal Pendidikan Dan Kebudayaan Missio*, *10(1)*(1), 48–52. http://jurnal.unikastpaulus.ac.id/index.php/jpkm/article/view/54.

Listiawati, E., & Qomariah, N. (2020). Pengembangan Media Pembelajaran Video Bus Math (Business Mathematic) Pada Materi Barisan dan Deret. *Indonesian Journal of Mathematics and Natural Science Education*, *1*(2), 136–149. https://doi.org/10.35719/mass.v1i2.30.

Munawar, A., & Suryadi, A. (2019). Pengembangan Media Pembelajaran Sejarah Indonesia Berbasis Videoscribe Materi Kerajaan Islam Di Jawa Kelas X Tahun Ajaran 2018 / 2019 Di SMA Negeri 3 Salatiga Pendidikan merupakan komponen pent- kepribadian yang lebih baik . Menurut Tri- dengan perubahan. *Indonesian Journal of History Education*, *7*(2), 174–184. https://doi.org/10.15294/ijhe.v7i2.36436.

Nagge, J. J., Killeen, R., & Jennings, B. (2018). Using a course pilot in the development of an online problem-based learning (PBL) therapeutics course in a post-professional PharmD program. *Currents in Pharmacy Teaching and Learning*, *10*(2), 231–234. https://doi.org/10.1016/j.cptl.2017.10.005.

Novianto, L. A., Degeng, I. N. S., & Wedi, A. (2018). Pengembangan Multimedia Interaktif Mata Pelajaran IPA Pokok Bahasan Sistem Peredaran Darah Manusia Untuk Kelas VIII SMP Wahid Hasyim Malang. *Jurnal Kurikulum Teknologi Pendidikan (JKTP) Universitas Negeri Malang*, *1*(3), 257–263. http://journal2.um.ac.id/index.php/jktp/article/view/5770.

Nurrita, T. (2018). Pengembangan Media Pembelajaran untuk Meningkatkan Hasil Belajar Siswa. *Misykat: Jurnal Ilmu-Ilmu Al-Quran, Hadist, Syari'ah Dan Tarbiyah*, *3*(1), 171–187. https://doi.org/10.33511/misykat.v3n1.171.

Pratiwi, M. S., Zulherman, & Amirullah, G. (2021). The Use of the Powtoon Application in Learning Videos for Elementary School Students. *Journal of Physics: Conference Series*, *1783*(1). https://doi.org/10.1088/1742-6596/1783/1/012115.

Purnami, K. D., & Suarni, N. K. (2021). Media Pembelajaran Audio Visual Berbasis Konservasi Lingkungan pada Topik Siklus Air Kelas V SD. *Mimbar Ilmu*, *26*(3), 390. https://doi.org/10.23887/mi.v26i3.37829.

Rahayu, N. D., Zulherman, Z., & Yatri, I. (2021). Animated Video Media Based on Adobe After Effects ( AEF ) Application : An Empirical Study for Elementary School Students. *Journal of Physics: Conference Series*, *1783*(1), 012116. https://doi.org/10.1088/1742-6596/1783/1/012116.

Rahmawati, F., & Ramadan, Z. H. (2021). Improving High-Level Thinking Skills in Students Through Powtoon-Based Animation Video Media. *Journal of Education Technology*, *5*(4), 654–662. https://doi.org/10.23887/jet.v5i4.41037.

Salsabila, U. H., Sofia, M. N., Seviarica, H. P., & Hikmah, M. N. (2020). Urgensi Penggunaan Media Audiovisual Dalam Meningkatkan Motivasi Pembelajaran Daring Di Sekolah Dasar. *INSANIA : Jurnal Pemikiran Alternatif Kependidikan*, *25*(2), 284–304. https://doi.org/10.24090/insania.v25i2.4221.

Siti Anggreni, N. K., & Suniasih, N. W. (2021). Pengembangan Video Berbasis Problem Based Learning Materi Siklus Hidup Hewan pada Muatan IPA Kelas IV SD. *Jurnal Ilmiah Pendidikan Profesi Guru*, *4*(2), 319–328. https://doi.org/10.23887/jippg.v4i2.33212.

Styowati, E., & Utami, F. (2022). Pengembangan Video Pembelajaran Sains Berbasis Problem Based Learning. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, *6*(4), 2472–2482. https://doi.org/10.31004/obsesi.v6i4.1970.

Sukmanasa, E., Novita, L., & Maesya, A. (2020). Pendampingan pembuatan media pembelajaran Powtoon bagi guru Sekolah Dasar Gugus 1 Kota Bogor. *Transformasi: Jurnal Pengabdian Masyarakat*, *16*(1), 95–105. https://doi.org/10.20414/transformasi.v16i1.2140.

Wardani, R. K., & Syofyan, H. (2018). Pengembangan Video Interaktif pada Pembelajaran IPA Tematik Integratif Materi Peredaran Darah Manusia. *Jurnal Ilmiah Sekolah Dasar*, *2*(4), 371. https://doi.org/10.23887/jisd.v2i4.16154.

Winangsih, E., & Harahap, R. D. (2023). Analisis Penggunaan Media Pembelajaran pada Muatan IPA di Sekolah Dasar. *Jurnal Basic Education*, *7*(1). https://doi.org/10.31004/basicedu.v7i1.4433.

Winda, R., & Dafit, F. (2021). Analisis Kesulitan Guru dalam Penggunaan Media Pembelajaran Online di Sekolah Dasar. *Jurnal Pedagogi Dan Pembelajaran*, *4*(2), 211. https://doi.org/10.23887/jp2.v4i2.38941.

Wulandari, T. J., Siagian, S., & Sibuea, A. M. (2019). Pengembangan Media Pembelajaran Dengan Aplikasi Macromedia Flash Pada Mata Pelajaran Matematika. *Jurnal Teknologi Informasi & Komunikasi Dalam Pendidikan*, *5*(2). https://doi.org/10.24114/jtikp.v5i2.12598.