

Development of Powtoon-based Learning Video Media to Improve 7th Grade Students' Learning Outcomes on Environmental Pollution

Nur Aini Elfiyah^{1*}, Yudha Irhasyuarna¹, Yasmine Khairunnisa¹

¹Department of Natural Science Education, Universitas Lambung Mangkurat, Banjarmasin, Indonesia

DOI: [10.36348/jaep.2023.v07i06.002](https://doi.org/10.36348/jaep.2023.v07i06.002)

| Received: 14.05.2023 | Accepted: 20.06.2023 | Published: 23.06.2023

*Corresponding author: Nur Aini Elfiyah

Department of Natural Science Education, Universitas Lambung Mangkurat, Banjarmasin, Indonesia

Abstract

Media applications that can overcome learning difficulties, one of which is by using powtoon-based learning videos. This study aims to: determine the validity of video media, the practicality of video media and the effectiveness of student learning outcomes after using Powtoon-based learning video media on Environmental Pollution material at SMPN 1 Daha Selatan. This study used the Research and Development method which was carried out at SMPN 1 Daha Selatan in class VII A with the ADDIE model which consisted of five steps namely Analysis, Design, Development, Implementation, and Evaluation (evaluation). Data collection techniques using questionnaires, pretest results, and posttest results. The research results obtained were: (1) The results of the expert validity of the animation learning media material obtained were 81.57% and the media expert validity was 85.14% or valid or usable but needed minor revisions as supporting media for science learning. (2) The results of the validator's response questionnaire were 75.83% and the students' response questionnaires were 94.22% or practical so that the media was very interesting to use as a supporting medium for learning science. (3) The results of the pretest and posttest percentages based on the normalized gain (N-gain) value of 0.92 are included in the high criteria so that the powtoon video learning media seen from the student learning outcomes test is effectively used and influences student learning outcomes at SMPN 1 Daha Selatan.

Keywords: Learning Media, powtoon and Environmental Pollution.

Copyright © 2023 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

The development of the times continues to change and is increasingly advanced which results in technology and information increasing, thus affecting aspects of the world of education and others. In an effort to improve the quality of education, one that can be taken is to utilize the sophistication of existing technology, especially in the learning process and material delivery. Researchers from around the world have been exploring learning programs powered by new technologies to enhance learners' ability in productive and collaborative knowledge (Nurdiansyah, 2018).

In the implementation of the learning process, it is not spared in relation to improving the learning outcomes of students. Learning outcomes are a side effect. obtained from cycle repetition and percentage. a learning process can be said to be successful or not, this depends on the assessment of each teacher who has their own views that are in line with their philosophy

(Bungsu *et al.*, 2018; Wali *et al.*, 2020). The determining factor for learning success can come from the teacher who acts as an educator of the students themselves.

From the observations of researchers, it is known that when the learning process takes place, especially science lessons, most teachers still use conventional-based media such as: textbooks, LKPD, and modules. In addition to the limited media used to stimulate students in learning, this is also considered less active during the learning process and makes students become bored and sleepy, so this also affects the learning outcomes of students during learning. Therefore, the solution to solve this problem can be by providing a variety of material presentation in the form of interactive media carried out to carry out learning activities in accordance with the media to be developed and in accordance with the needs of students (Yunita, D. 2017).

Based on the difficulties faced by teachers and students from observations, it is necessary to develop new alternative media that produce efficient and effective products throughout the learning method. Muvawala also stated that student learning outcomes can be improved by utilizing existing technology such as using software in the learning process. One application media that can overcome this problem is to use powtoon-based learning videos. This video aims to help communicate the messages conveyed so as to provide more efficient understanding to students. Powtoon-based learning videos are audio-visual application programs. The way this app is made is similar to making animated learning films, but this product is more vibrant and fun because it uses flash. Media is very influential in learning activities (Arnold, 2018).

Powtoon media is one of the interesting learning media because there are more animations. In addition to many, the animation is also easily customizable according to user preferences, making it suitable for providing images related to the subject to be given. Powtoon-based applications have characters that can provide a way for students to understand a material. In this application, students can receive visual and audio information that can be combined into a form of animated video that is very interesting.

The design of the powtoon application that has clear, colorful background graphics, animated images and even music that can be added to videos that make learning interesting. The more you use the five senses when learning, the easier it will be for students to understand the learning material (Hidayati *et al.*, 2019). But Powtoon-based video media has not been widely used by people (Ponza *et al.*, 2018). Even though Powtoon-based video media has high potential in attracting the attention of students (Lestari *et al.*, 2018). From the problems described above, researchers are interested in building educational media with the title "Development of Powtoon-Based Learning Video Media to Improve Learning Outcomes of Class VII Students on Environmental Pollution Material".

RESEARCH METHODS

The type of research used is the type of research and development or Research and Development (R&D). The product produced in this research and development is Powtoon-based learning video media. The development model used in this study is the ADDIE model which consists of five steps, namely Analysis, Design, Development, Implementation, and Evaluation. The main purpose of research and development methods is used to produce certain products and find out the validity test of products that have been developed (Sugiyono, 2021).

This research was carried out in the even semester of the 2022/2023 academic year in May at

SMPN 1 Daha Selatan with the intended subject being class VII B students totaling 26 people. The data collection instruments used in this study include (1) media validation sheets, (2) student response questionnaires, and (3) student learning outcomes test sheets.

Here is the data analysis formula for material expert validation questionnaires, media experts and response questionnaires:

$$V_{ahli} = \frac{T_{Se}}{T_{Sh}} \times 100\%$$

Table 1: Validity Interpretation Table

No	Nilai	Kriteria
1	85%-100%	Sangat Valid
2	70%-85%	Valid
3	50%-70%	Kurang Valid
4	0,01%-50%	Tidak Valid

(Rahmat & Irfan (2019).

Table 2: Table of Student Response Percentage Criteria

No	Value	Criterion
1	81,00% - 100%	Very Pratical
2	61,00% - 80%	Practical
3	41,00% - 60,00%	Enough
4	21% - 40,00%	Less practical
5	0,00% - 20,00%	Impractical

Learning media can be said to be "Practical" if the percentage of student responses obtained is more than 60%.

The following is the formula to determine the improvement of student learning outcomes before and after the use of learning media during the learning process:

$$< g > = \frac{\text{score posttest} - \text{score pretes}}{\text{score maksimum} - \text{score pretes}}$$

Table 1: N-gain Level Criteria Table

No	Result	Criterion
1	(g) ≤ 0,30	Low
2	0,30 < (g) ≤ 0,70	Medium
3	0,70 ≤ (g)	High

Learning media is said to be effective if it is in the medium to high criterion.

RESULTS AND DISCUSSION

The results of this research and development are in the form of Powtoon-based learning media as a learning resource on Environmental Pollution material for SMP/MTs VII students. The products that have been produced can increase knowledge and help the learning process of students. This research is a type of Research and Development (R&D) research using the ADDIE model which consists of five steps, namely Analysis, Design, Development, Implementation, and Evaluation.

The optimal learning objectives achieved are the responsibility of a teacher. A teacher should have sufficient knowledge about media, should not stutter technology, teachers in order to meet national education standards set in the curriculum Teachers must be willing to learn and always upgrade (update) knowledge and recognize new trends in learning and learning media so as to improve the quality and professional development of teachers (Syabrina & Sulistyowati, 2020).

The first stage in this research and development is the needs analysis stage by making observations at SMPN 1 Daha Selatan. The results of this analysis will become a reference in the development of powtoon-based learning video media. The results of observations made by researchers in class VII at SMPN 1 Daha Selatan are as follows:

a. Problem analysis: During the problem analysis stage, researchers seek information about problems that occur when learning science. During the implementation of the research at SMPN 1 Daha

Selatan, field observations were carried out. Researchers conducted field observations and interviews with science teachers at SMPN 1 Daha Selatan to collect information. The collection of information aims to serve as a basis for making animation teaching materials

b. Student analysis: The student analysis stage is the learning stage where the characteristics, abilities, and academic experience of students are examined. This will be a guide for choosing the right model, strategy or method. After observing and interviewing, it can be concluded that students are easily bored in doing learning if there is a lack of interesting activities.

c. Analysis of learning objectives: The analysis phase of learning objectives has the expected goal that after learning using powtoon-based learning media it can achieve the competencies specified in the table. The learning material used in the development of animation learning media is Environmental Pollution material.

Table 4: Basic Competency Analysis and learning objectives

Basic competencies	Indicators
3.8 Analyze the occurrence of environmental pollution and its impact on the ecosystem	3.8.1 Explain the definition of Environmental Pollution. 3.8.2 Explaining the Types of Environmental Pollution. 3.8.3 Explain the definition of water pollution. 3.8.4 Investigating the effects of water pollution 3.8.5 Explain the factors causing water pollution 3.8.6 Explain the definition of air pollution. 3.8.7 Mention the factors causing air pollution. 3.8.8 Describe the impact of air pollution 3.8.9 Explain the definition of soil pollution 3.8.10 Explaining the impact of soil pollution.
Learning Objectives	
<ul style="list-style-type: none"> • Students can explain the meaning of environmental pollution. • Students can explain the kinds of environmental pollution. • Students can explain the meaning of water pollution • Learners can investigate the effects of water pollution • Learners can explain the factors causing water pollution • Students can explain the meaning of air pollution • Learners can name the factors causing air pollution • Learners can explain the impact of air pollution • Students can explain the meaning of soil pollution • Learners can explain the impact of soil pollution 	

d. Analysis of School Facilities: This analysis stage is to find out the existing facilities at SMPN 1 Daha Selatan. The facilities in question are expected to be able to support the animation learning media that will be developed.

Second, the design stage is the stage of determining the format of learning media to be developed. As for making the design of learning media, there are several steps, namely: Preparation of learning

material, selection of media, initial design and instrument design. As for the design of instructional media, there are several steps, including:

a. Preparation of learning materials: Preparation of learning materials based on analysis of KI, KD, and formulation of objectives learning in accordance with the 2013 curriculum. The material used in the development of powtoon-based learning media is Class VII Environmental Pollution which discusses Environmental Pollution in it.

- b. **Media selection:** The media developed by the researcher is the development of animated video learning media powtoons based. In the process of selecting this media based on preliminary analysis and needs and learning objectives.
- c. **Preliminary draft:** The initial activity to be carried out is to design Powtoon-based animated

video learning media prior to the trial, namely by preparing the selection design and learning media formats as well as the instruments to be used. The initial design was carried out to find out the product design concept that the researcher would develop. The initial product format design can be seen in the following:



Figure 1

- d. **Instrument Design:** The design of the instrument is a guide in making validation instruments for material experts and learning media design experts as well as student response questionnaires. Instruments that are made based on assessment standards Learning media are adapted to the product development that is made.

- b. **Product Eligibility Validation:** After the learning media has been made, a product feasibility validation is carried out. The validation of this learning media is carried out by an expert validator and asks for theoretical considerations and practical. Expert validators consist of media expert validators and material experts.

Third, at this development stage, the researcher made improvements to the powtoon-based animated video learning media. This process is done by revising the media Powtoon-based animated video learning, therefore, before revising the learning media, a team of media experts, material experts, and user experts will first assess it so that the resulting product is better. In this development stage, there are several things to do, including:

Fourth, the implementation stage is the stage of all media designs that have been implemented developed and then implemented. Learning media uses Powtoon software that has been developed, implemented in real situations, namely in class. This implementation consisted of 1 subject teacher and 26 students from SMP Negeri 1 Daha Selatan. Before carrying out this implementation, students were given instructions regarding the Powtoon learning media and directions in carrying out the posttest and pretest.

- a. **Making Learning:** Carried out, including: a. Making Learning Media The media that was designed by the researcher and produced prototype I was then made and developed. This media was developed using the powtoon application. The content of this learning media consists of materials obtained from several science books for class VII in the 2013 curriculum.

Fifth, the evaluation stage is the last stage of the ADDIE development model. The evaluation referred to here is the evaluation of implementation activities. The evaluation results were obtained and the suggestions of several expert validators, teachers and students during the trial were carried out, so that from this evaluation stage a final revision was carried out.

Table 5: Suggestions and Revisions Based on Feedback from Material Experts

Input and suggestions	Revision
Add basic competencies and learning objectives at the beginning of the video	Addition of basic competencies and learning objective
In how to overcome soil pollution, give an explanation of turbid water as in the picture	Explanation of soil pollution becomes cloudy
No learning objectives included	Addition of learning objectives

Table 6: Suggestions and Revisions Based on Input from Media Experts

Input and suggestions	Revision
Some parts are too loud the backsound	Stabilizes overall Backsound
Fix invisible text	Fix unseen text
Some narratives need explanatory images	Adding images to clarify the narrative

The following are the results of the validity of the results of learning media development:

Table 7: Material Expert Assessment Results

No	Name	Total Score	V expert (%)	Category
1	V1	104	90,43	Very Valid
2	V2	89	77,39	Valid
3	V3	85	73,91	Valid
4	V4	108	93,91	Very Valid
5	V5	83	72,17	Valid
Rating average			81,57	Valid

Based on the results of the material expert assessment, an average score of 81.57% was obtained from the individual score of each validator has been calculated using the validity percentage formula in data analysis techniques. The results of the validity of the

content of the animation learning media material obtained are 81.57% which are included in the valid category or can be used but need minor revisions as supporting media for science learning..

Table 8: Media Expert Assessment Results

No	Name	Sum	V expert (%)	Category
1	V1	98	93,33	Very Valid
2	V2	93	88,57	Very Valid
3	V3	88	83,81	Valid
4	V4	86	81,90	Valid
5	V5	82	78,10	Valid
Rating average			85,14	Very Valid

Based on the results of the assessment of media experts, an average score of 85.14% was obtained from the individual scores of each validator has been calculated using the validity percentage formula in data analysis techniques. The results of the

validity of the content of the animation learning media material obtained are 85.14% which are included in the valid category or can be used but need minor revisions supporting media for science learning

Table 9: Validator Response Questionnaire Assessment Results

No	Name	Sum	V expert (%)	Category
1	V1	practical	80,00	Practical
2	V2	practical	75,00	Practical
3	V3	practical	72,50	Practical
Rating average			75,83	Practical

Based on the results of the validator response questionnaire assessment, an average score of 75.83% was obtained from the individual score of each validator has been calculated using the percentage formula in the data analysis technique. The results of the response

questionnaire assessment obtained were 75.83% which included the practical category or very interesting media to be used as supporting media for science learning.

Table 10: Results of the Student Response Questionnaire Assessment

No	Name	Sum	V expert (%)	Category
1	V1	72	96,00	Very Practical
2	V2	72	96,00	Very Practical
3	V3	68	90,67	Very Practical
Rating average			94,22	Very Practical

Based on the results of the assessment of student response questionnaires, an average score of 94.22% obtained from the individual scores of each student has been calculated using the percentage formula in data analysis techniques. The results of the

response questionnaire assessment obtained were 94.22% which included the practical category or very interesting media to be used as supporting media for science learning.

Table 11: Pretest and Posttest Recapitulation

No.	Name	Value Pre-Test	Value Post-Test
1	Student 1	73,33	93,33
2	Student 2	80,00	93,33
3	Student 3	73,33	93,33
4	Student 4	66,67	93,33
5	Student 5	66,67	93,33
6	Student 6	60,00	86,67
7	Student 7	66,67	100,00
8	Student 8	73,33	93,33
9	Student 9	66,67	93,33
10	Student 10	73,33	100,00
11	Student 11	73,33	86,67
12	Student 12	53,33	100,00
13	Student 13	73,33	93,33
14	Student 14	66,67	93,33
15	Student 15	73,33	86,67
16	Student 16	73,33	93,33
17	Student 17	73,33	93,33
18	Student 18	73,33	93,33
19	Student 19	73,33	93,33
20	Student 20	60,00	86,67
21	Student 21	80,00	93,33
22	Student 22	66,67	93,33
23	Student 23	73,33	86,67
24	Student 24	73,33	93,33
25	Student 25	73,33	80,00
26	Student 26	73,33	86,67

Based on the calculations, the normalized gain (N-gain) value of 0.92 is included in the high criteria so that it can be concluded that the powtoon video learning media is seen from the student learning outcomes test which was developed in the form of a pre-test (before using learning media) and post- the test (after the use of learning media) is used effectively and influences student learning outcomes at SMPN 1 Daha Selatan.

CONCLUSION

Based on the results of the research obtained from several validator experts and student responses in the developed Powtoon-based animated video development media, this is included in the very valid category with a validity score of 81.57% from material experts, and 85.14% from media experts. and it was declared effective which was obtained from the results of the pretest and posttest percentages based on the normalized gain (N-gain) value of 0.92. This is also supported by student responses which show that the Powtoon-based animated video is very interesting with a score of 94.22%.

BIBLIOGRAPHY

- Arnold. R. B. (2018). Pengembangan Media Pembelajaran Video Animasi *Powtoon* Pada Mata Pelajaran Pelayanan Penjualan Di Smk Ketintang Surabaya. *Jurnal Pendidikan Tata Niaga (JPTN)*, 6(4), 145-150.
- Bungsu, T. K., Vilardi, M., Akbar, P., & Bernard, M. (2018). Pengaruh Kemandirian Belajar Terhadap Hasil Belajar Matematika di SMKN 1 Cihampelas. *Journal On Education*, 1(2), 382–389.
- Lestari, N. D., Hermawan, R., & Heryanto, D. (2018). Pengembangan media pembelajaran menggunakan *powtoon* untuk pembelajaran tematik sekolah dasar. *Jurnal Pendidikan Guru Sekolah Dasar*, 3(3), 33–43.
- Nurdiansyah, E., Faisal, E. E., & Sulkipani. (2018). Pengembangan media pembelajaran berbasis *Powtoon* pada perkuliahan Pendidikan Kewarganegaraan. *Jurnal Civics Media Kajian Kewarganegaraan*.
- Sugiyono. (2021). Metode Penelitian Kuantitatif. *Alfabeta*, 15(1), 1-8.

- Syabrina, M., & Sulistyowati, S. (2020). Pengembangan Media Pembelajaran Tematik Berbasis Macromedia Flash untuk Meningkatkan Hasil Belajar Siswa Madrasah Ibtidaiyah. *Tarbiyah Wa Ta'lim: Jurnal Penelitian Pendidikan dan Pembelajaran*, 7(1), 25-36.
- Yunita, D., & Wijayanti, A. (2017). Pengaruh Media Video Pembelajaran Terhadap Hasil Belajar IPA Ditinjau dari Keaktifan Siswa. *Jurnal Ilmiah Ilmu Sosial dan Humaniora*, 3(2), 153-160.