

---

## Jurnal Penelitian Pendidikan

<https://journal.unnes.ac.id/nju/index.php/JPP>

---

# Development of PBL (Problem Based Learning) Model-Based Learning Video on Problem Solving Ability and Motivation in Students.

Harawi Mahfuddin Nanang<sup>1</sup>, Parmin<sup>2</sup>

Universitas Negeri Semarang

---

### Abstract

This study aims to develop learning videos with discovery learning models on environmental pollution material to train problem solving skills and students' learning motivation. Data collection was taken at SMP Negeri 1 Bawen. Data analysis used was post-test result data, learning motivation questionnaire sheet, expert validation sheet, and student response questionnaires to the media. The method used to achieve the goal is to use development research which is directed to develop instructional video designs with problem based learning models. The results of this study indicate that the design of learning videos with problem based learning models is feasible to be used in research with an average score of 89.24% from material experts and from media experts with an average of 95.8% which is included in the very category. worthy. In addition, the problem solving skills and learning motivation of students are considered very good because they have reached the KKM and got a percentage score of indicators above 86.6%. Based on the results of the study, it can be concluded that learning videos with problem based learning models are feasible and effective to be used as a means of training problem solving skills and students' learning motivation. This learning video also received a good response from students with an average of over 93.5%.

**Keywords:** Based Learning, Problem Solving Skills, Motivation to Learn

---

### INTRODUCTION

In the life of the 21st century, the role of education is very important in preparing the next generation who have the skills to learn, innovate, use technology and information media as well as skills to survive (Mayasari et al., 2016). In addition to these skills, in the 21st century there are several abilities that must be mastered according to Zubaidah (2016) including: (1) critical thinking and problem solving skills, (2) collaboration and leadership, (3) dexterity and adaptability, (4) initiative and entrepreneurial spirit, (5) able to communicate effectively both orally and in writing, (6) able to access and analyze information, and (7) have curiosity and imagination.

One of them is problem solving skills which is a disciplined process that is intellectually active and skilled at conceptualizing, applying, analyzing, synthesizing and or evaluating information gathered from or generated by observation, experience, reflection, reasoning, or communication, as a guide for belief and action (Tawil & Liliyasi, 2013). This problem-solving skill is very appropriate if applied in a lesson because students will have the ability and strategy to solve a problem correctly (Saheri et al., 2017). Regulation of the Minister of Education and Culture (Permendikbud) No. 22 (2016) also emphasized that the learning process in educational units can be held interactively, inspiring, fun, challenging, motivating students to be active and able to solve problems. In addition, the 2013 curriculum recommends applying aspects of problem-solving skills in learning so that students are not only centered on mastering the material but other understandings such as problem solving (Saheri et al., 2017).

Science learning is not just memorizing theories and concepts, but also needs to be applied with the scientific method. This is in accordance with the statement of Zubaidah et al., (2016) that science learning is not only learning about a collection of knowledge in the form of facts, concepts, or principles but also a discovery process in the form of the media used or the model used.

Natural science learning resources in schools generally come from handbooks and teachers as

facilitators. The lack of concrete examples that relate directly to life makes the learning process less attractive to student motivation. The reality of education in the field, many educators still use a one-way learning system that is less varied, so that the learning atmosphere is boring and cannot develop students' problem solving abilities.

Teacher-dominated learning makes students less optimal in science learning outcomes. Plus, the Covid-19 virus that is hitting Indonesia has made schools closed by the government and all learning must be done online.

The results of interviews that have been conducted with one of the science teachers at SMPN 1 Bawen at the time of implementing PPL showed that students still had difficulties in understanding the material and the ability to solve a problem. This can be seen from the student's response when given a question based on the surrounding problems, it can be seen from the students' answers that are less logical to the problem, so that there is a need for follow-up so that students can understand and solve the problem. Another problem is the low motivation of students to learn, this can be seen when learning takes place, students are late during attendance and when doing student assignments do not match the time limit determined by the teacher. And the media used in online learning is less attractive, so it requires appropriate and interesting learning media.

The use of problem based learning models in interesting and unique learning videos can achieve competency standards for environmental pollution material because it makes students not only memorize but active in learning (student center) so that it can increase learning motivation and problem solving abilities because it improves problem solving skills. learning is needed that makes students active (student center) (Muliana, 2019).

## METODE

The research subjects were students of SMP Negeri 1 Bawen VII . Class VII G as a small test class. The type of research used is RnD research. Using the ADDIE model. The data collection methods in this study are as follows: (1) The interview method used to determine the learning process in the classroom, (2) The questionnaire method to support the test method, (3) The test method Data analysis in this study is: (1) Question validity, (2) critical thinking ability, (3) learning motivation.

## RESULT AND DISCUSSION

This research was conducted at SMP Negeri 1 Bawen in the academic year 2021/2022 grade VII G. There are 3 main aspects that are assessed in this study, namely feasibility, readability, and effectiveness. The instrument used to measure the problem solving ability of students is in the form of 15 description questions. To recapitulate the feasibility of the previous video media, it was validated by 3 material experts and 3 media experts to obtain the following results:

*Table 4.1 Recapitulation of Validation by Material Experts*

<b>Evaluator</b>	<b>Agency</b>	<b>Percentage</b>	<b>Criteria</b>
Expert 1	Teacher of Science at SMP Negeri 1 Bawen	93,75	Very worth it
Expert 2	Integrated Science Lecturer at FMIPA UNNES	100	Very worth it
Expert 3	Teacher of Science at SMP Negeri 1 Bawen	93,75	Very worth it
<b>Average</b>		<b>95,8</b>	<b>Very worth it</b>

Table 4.2 Validation Recapitulation by Media Experts

<b>Evaluator</b>	<b>Agency</b>	<b>Percentage</b>	<b>Criteria</b>
Expert 1	Integrated Science	85,71	Very worth it
	Lecturer at FMIPA UNNES		
Expert 2	Integrated Science	85,7	Very worth it
	Lecturer at FMIPA UNNES		
Expert 3	Teacher of Science at SMP Negeri 1 Bawen	92,85	Very worth it
<b>Average</b>		<b>89,24</b>	<b>Very worth it</b>

From tables 4.1 and 4.2, the learning video media developed in this study obtained an average percentage result of 89.24 by material experts and 95.8% by media experts with very feasible criteria.

Media with feasibility results are very feasible in terms of content in the form of material and containers in the form of good media that can make students understand. This is in accordance with the research of Maharani et al. (2018) where the purpose of carrying out a feasibility test on a media is to reduce students' anxiety about materials that are considered difficult and increase students' interest and motivation to learn to be more confident and enthusiastic in the learning process. For details of readability, using a questionnaire and obtaining the following results:

Table 4.3 Learning Video Readability Assessment Results

<b>No</b>	<b>Rated aspect</b>	<b>(%)</b>	<b>Criteria</b>
1	Attractive media display	90,0	Very Good
2	Images in the media are attractive and clear	92,5	Very Good
3	Easy-to-read font type and size	92,5	Very Good
4	Ideal media size to use	85,0	Very Good
5	Material according to need	80,0	Good
6	The material is presented simply and clearly	92,5	Very Good
7	Pictures clarify the material	92,5	Very Good
8	Media according to material	95,0	Very Good
9	Instructions for use are clear	85,0	Very Good
10	The writing is clearly legible	80,0	Good
11	The language used is simple and easy to understand	97,5	Very Good
12	Easy and practical use of media	92,5	Very Good
13	Guidelines for using media are easy to understand	90,0	Very Good
<b>Average</b>		<b>89,6</b>	<b>Very Good</b>

Regarding the details of the readability assessment of learning video media in table 4.3. The average of the 13 aspects obtained is 89.6% and is included in the very good criteria. The readability of a learning media determines the quality of a media in conveying material to students. This is in accordance with Anggraeni & Kustijono (2013) where with good media readability, students can easily process the information they receive, so that information can be transferred to short-term memory if the information gets special attention. Another benefit of media readability with very good criteria is being able to stimulate students towards a material and make students active because they get an interesting media. The same thing was expressed by Sudjana & Rivai (2011) where the stimulus can be packaged in a media that can support the learning process in improving problem solving abilities. For details of effectiveness can be seen in the table:

*Table 4.4 Analysis Results of Problem Solving Ability Indicators*

No	Indicator	Average Percentage	Criteria
1	Build new science knowledge through problem solving. 1, 3, 7, 10, 11	79,9 %	Good
2	Implement and adapt appropriate strategies to solve problems. 2, 6, 13	83,2 %	Very Good
3	Develop problem solving strategies. 4, 8, 9, 14	91,7 %	Very Good
4	Monitor and reflect on the science problem solving process. 5, 12, 15	91 %	Very Good
<b>Average</b>		<b>86,6 %</b>	<b>Very Good</b>

*Table 4.5 Learning Video Response Results on Small-Scale Trials*

No	Rated Aspect	%	Criteria
1	Interesting learning video media design	97,5	Very Good
2	The color combination of harmonious learning video media	100,0	Very Good
3	The language is easy to understand and does not cause double interpretation	97,5	Very Good
4	The use of video media is not boring	92,5	Very Good
5	Images and video media according to the theme	95,0	Very Good
6	Learning to use videos makes me active in learning	92,5	Very Good
7	Learning to use videos makes me understand the material better	92,5	Very Good
8	Learning videos can't fuel my curiosity	87,5	Very Good
9	Learning video media cannot be used to convey material	90,0	Very Good
10	The use of video makes learning not conducive	90,0	Very Good
<b>Average</b>		<b>93,5</b>	<b>Very Good</b>

Based on the analysis results obtained in table 4.4, 4.5, it can be said that learning videos with problem based learning models are effective for use in training problem solving skills and students' learning motivation on environmental pollution material.

This is according to Indriasih (2015) one of the main advantages of learning video media combined with learning models is that a fun visualization can activate all the senses of students so that the incoming stimulation can be easily digested, students gain understanding and meaning for their lives because the learning media It has a learning by doing pattern and can solve the problems encountered.

The role of the model in the form of learning videos and problem based learning models in increasing problem solving abilities and student learning motivation, this statement is supported by the results of research by Ratnaningsih (2016) who also conducted similar research by developing interactive media to build problem solving abilities. In his research problem solving ability is tested through tests. According to the results of his research, interactive media

applications can present concepts and train students to have problem solving skills and learn students' motivation to learn independently.

In addition, Asmarani et al. (2017) also conducted a similar study where according to the results of his research, unique media combined with the developed learning model can foster students' problem solving abilities seen from the test results that students have achieved the KKM score (value 75). This is supported by Purwandari & Wahyuningtyas (2017) adding that learning through a medium is a natural way to increase one's knowledge and skills.

Media that functions as a means to facilitate the delivery of communication between teachers and students experience interference, so that the message received in learning is not as intended by the teacher. This is in accordance with Rahman (2012), the decrease in the achievement of learning outcomes can occur due to the lack of maximum learning media that is applied because there are disturbances in its application.

For learning motivation questionnaires, students fill out a questionnaire after a series of learning activities using learning video media have been completed. The results of this response are used to evaluate the learning video media developed. Students' responses can be used as a reference for the development of further learning video media according to their needs. This is in line with the research conducted by Taufiqqurrahman et al. (2017) where student responses are used to revise the developed teaching material products.

## CONCLUSION

Based on the results of research regarding "Development of PBL (Problem Based Learning) Model-Based Learning Video on Problem Solving Ability and Motivation in Students" the following conclusions can be obtained:

1. Development of a learning video design using the ADDIE model starting from the design stage, followed by a feasibility test for each material and media expert 3. Based on this, the learning video can be declared very feasible because it gets an average result of 89.24% on the expert material and 95.8% for media experts and have met the eligibility standards based on the validator.
2. According to the readability analysis test, the learning video on environmental pollution was tested to the validators, getting homogeneous results of 89.6% in very good criteria. Accordingly, the instructional video design can be used in a study because it meets the readability conditions.
3. The results of the analysis adapted to the indicators of research success found that the learning video with the problem based learning model was effectively applied to environmental pollution material on the problem solving ability and learning motivation of students.

## REFERENCES

- Anggraeni, R. D., & Kustijono, R. (2013). Pengembangan Media Animasi Fisika pada Materi Cahaya dengan Aplikasi Flash Berbasis Android. *Jurnal Penelitian Fisika dan Aplikasinya (JPFA)*, 3(1), 11-18.
- Asmarani, I., Sumarni, W., & Wardani, S. (2017). Pengembangan Media Motion Comic Berbasis Inkuiri untuk Menumbuhkan Keterampilan Berpikir Kritis. *Chemistry in Education*, 6(1).
- Indriasih, A. (2015). Pemanfaatan Alat Permainan Edukatif Ular Tangga dalam Penerapan Pembelajaran Tematik di Kelas III SD. *Jurnal pendidikan*, 16(2), 127-137.
- Maharani, M., Supriadi, N., & Widyastuti, R. (2018). Media Pembelajaran Matematika Berbasis Kartun untuk Menurunkan Kecemasan Siswa. *Jurnal Matematika*, 1(1), 101-106.
- Mayasari, T., Kadarohman, A., Rusdiana, D., & Kaniawati, I. (2016). Apakah Model Pembelajaran Problem Based Learning dan Project Based Learning Mampu Melatihkan Keterampilan Abad 21?. *Jurnal Pendidikan Fisika dan Keilmuan (JPFK)*, 2(1), 48-55.
- Muliana, S., Muhiddin, N. H., & Yunus, S. R. (2019). Pengaruh Model Kooperatif Tipe Group Investigation (Gi) terhadap Keterampilan Berpikir Kritis Peserta Didik pada Materi Pokok Sistem Ekskresi Kelas VIII SMP Negeri 15 Makassar. *Jurnal Ipa Terpadu*, 2(2).
- Purwandari, A., & Wahyuningtyas, D. T. (2017). Eksperimen Model Pembelajaran Teams Games Tournament (TGT) Berbantuan Media Keranjang Biji-Bijian terhadap Hasil Belajar Materi Perkalian dan Pembagian Siswa Kelas II SDN Saptorenggo 02. *Jurnal Ilmiah Sekolah Dasar*, 1(3), 163-170.
- Rahman, F. A. (2012). Peningkatan Motivasi dan Hasil Belajar Siswa Melalui Metode Eksperimen dan Course Review Horay Pada Mata Pelajaran IPA Kelas IV SDN Kebonsari 04 Jember

Tahun Pelajaran 2011/2012.

- Ratnaningsing, N. (2016). Membangun Keterampilan Berpikir Kritis Matematik Mahasiswa Melalui Pengembangan Media Pembelejaran Interaktif pada Teori Group. *Jurnal Siliwangi*, 2(2).
- Saheri, S., Supardi, K. I., & Haryani, S. (2017). Pengembangan Instrumen Penilaian Keterampilan Berpikir Kritis Siswa SMA Melalui Model Pembelajaran Berbasis Masalah Materi Larutan Penyangga. *Journal of Innovative Science Education*, 6(1), 40-48.
- Sudjana, N., & Rivai, A. (2011). *Media Pengajaran*, Sinar Baru Algensindo: Bandung, cet.
- Taufiqurrohman., M. Effendy., & Sulton. (2017). Pengembangan Bahan Ajar Bahasa Sasak Berbasis High Order Thingking Skills. *Jurnal Pendidikan*, 2(10).
- Tawil, M., & Liliasari, L. (2013). Berpikir Kompleks dan Implementasinya dalam Pembelajaran IPA. *Makassar: Universitas Negeri Makassar*.
- Zubaidah, S. (2016). Keterampilan Abad Ke-21: Keterampilan yang Diajarkan melalui Pembelajaran. In *Seminar Nasional Pendidikan* (Vol. 2, No. 2, pp. 1-17).