Science Education and Application Journal (SEAJ)
Program Studi Pendidikan IPA
Universitas Islam Lamongan
http://jurnalpendidikan.unisla.ac.id/index.php/SEAJ

March, 2025. Vol. 7, No. 1,
p-ISSN: 2656-6672
e-ISSN: 2656-8365
pp. 87-93

Implementation of Problem-Based Learning Model Using Youtube Media to Improve Numeracy Literacy of 8th Grade Students

[1*]Ririn Umi Lestari, [2]Arindra Trisna Widiansyah
[1,2]Universitas PGRI Mpu Sindok Nganjuk
Email Correspondence: ririnlestari623@gmail.com

Article Info
Article History
Received: January 13th, 2025
Revised: March 6th, 2025
Published: March 9th, 2025
Keywords
Problem-Based Learning; YouTube Media; Numeracy Literacy

Abstract

Application of Problem-Based Learning Model Based on Youtube Media to Improve Students' Numeracy Literacy. *In eighth grade, kids' limited numeracy literacy abilities make it difficult for them to understand science. One innovative solution is the project-based learning (PBL) approach, incorporating YouTube material. Applying the Problem Based Learning (PBL) pedagogy with the digital media platform YouTube, this research seeks to enhance students' numeracy literacy abilities. The participants in this Classroom Action Research (PTK) study are thirty eighth graders from class 8A. There were two rounds to this study. This research measured students' numeracy literacy abilities using data collected via interviews, observations, and tests, which were analysed descriptively. The study found that although students' average exam scores climbed by 14.5 points to 78.2 in Cycle II, they were 63.7 in Cycle I. Results show that eighth graders at SMP Negeri 2 Berbek may benefit from the Problem Based Learning approach, especially in science, when they use YouTube as a learning tool. The researchers recommend doing future experiments over a longer period to examine the persistent influence of YouTube-based PBL on students' numeracy, since the time constraint led to less than optimum results.*

Citations: Lestari, R. U., & Widiansyah, A. T. (2025). Implementation of problem-based learning model using YouTube media to improve numeracy literacy of 8th grade students. Science Education and Application Journal (SEAJ), 7(1), 87-93.

INTRODUCTION

As individuals and as members of society in Indonesia and beyond, numeracy literacy entails being able to solve real-world issues by using mathematical ideas, methods, facts, and senses. (B. A. Putri et al., 2021; Sutrimo et al., 2024). There has to be a new way to teach mathematics in Indonesia as junior high school pupils don't have good numeracy abilities. (A. A. Putri & Wijayanti, 2024; Umaya et al., 2024). Every individual should have the opportunity to acquire literacy skills, since they provide the groundwork for a lifetime of study, according to UNESCO. (Iman, 2022). One approach to education that has shown promise in raising students' numeracy literacy is problem-based learning. (Atika et al., 2024; Farikhah et al., 2024; Isa et al., 2023). The availability of engaging digital learning materials, such as instructional videos on YouTube, which aim to inspire students' imaginations and originality, lends credence to this idea. (Ambarwati & Kurniasih, 2021; Sari et al., 2023).

With an average AKM score of 53.7, the findings of the observations reveal that pupils in class 8A have inadequate numeracy literacy abilities. Despite the widespread belief that more modern approaches will better engage students in the learning process, I observed that many educators persist in using antiquated practices. One reason pupils lose proficiency in numeracy is because they aren't used to solving issues using numbers and symbols. One active and contextual learning strategy that has been shown to help pupils become more numerate is the Problem-Based Learning (PBL) method.

Research has shown that project-based learning (PBL) may help students become more numerate, but few studies have looked at how to use PBL to teach science using YouTube. Just as in the instance of studies undertaken by (Nasution, 2023; Riyana, 2024) Said that using videos to teach a subject might pique their attention and deepen their grasp of the material. Students' numeracy abilities may be enhanced by the incorporation of digital media, as shown in this research that focuses on energy, effort, and basic aeroplanes. An innovative approach to teaching that combines project-based learning with YouTube videos (Milala et al., 2024; Rahayu et al., 2023). This new approach to scientific education employs digital media in a targeted way to boost students' numeracy literacy. (Mudaningrat et al., 2024; Rosita et al., 2023).

The goal of this study is to find out how to use the Problem-Based Learning paradigm with the use of YouTube digital media to raise students' numeracy literacy. One method that has been proposed to enhance students' numeracy literacy is problem-based learning. (Anugrah & Sarnawiah, 2023; Imro & Khaerunnisa, 2024; Indri Yani, 2024). Students may develop their own learning models, work effectively in small groups, and gain the key information necessary to solve issues via the use of the Problem-Based Learning paradigm. (Fauzanah et al., 2024; R. W. B. Putri et al., 2023).

This study is necessary because, in keeping with modern curricular demands and technological advancements, students' numeracy literacy abilities are an essential part of global literacy. The current challenges may be understood and overcome in this way. The goal of this study is to identify problems with current junior high science curricula and provide workable remedies.

METHODS

Classroom Action Research (PTK) is the methodology used in this study, which takes place at SMP Negeri 2 Berbek in Kec. Berbek, Kab. Nganjuk. During the even semester of the 2023/2024 school year, this study took place from April 23, 2024, to May 3, 2024. Thirty eighth graders from SMP Negeri 2 Berbek participated in the research.

The Classroom Action study paradigm was used to conduct this study in two cycles. The Kemmis and McTaggart style is the foundation of this classroom action research. (Arifudin, Anita Tamu Ina, 2024; Ngatiyem, 2021) The process, which is divided into four parts: preparation, execution, evaluation, and analysis. The steps that will be taken are as follows:

1. The first step in the planning process is to make lesson plans (RPP). Then, you need to have the teaching materials, learning media, instruments, and reflection for your lessons ready.
2. In the implementation stage, a problem-based learning (PBL) approach is used. This methodology involves using instructional resources, such as videos from YouTube, and assigning students to work in groups to solve problems that are relevant to the topic being taught.
3. Stage three, observation, involves keeping track of student activities (particularly those pertaining to numeracy and literacy) and how they are managed in relation to learning.
4. The instructor and observer address the areas of learning that need improvement in the reflection stage to prepare for the next phase.

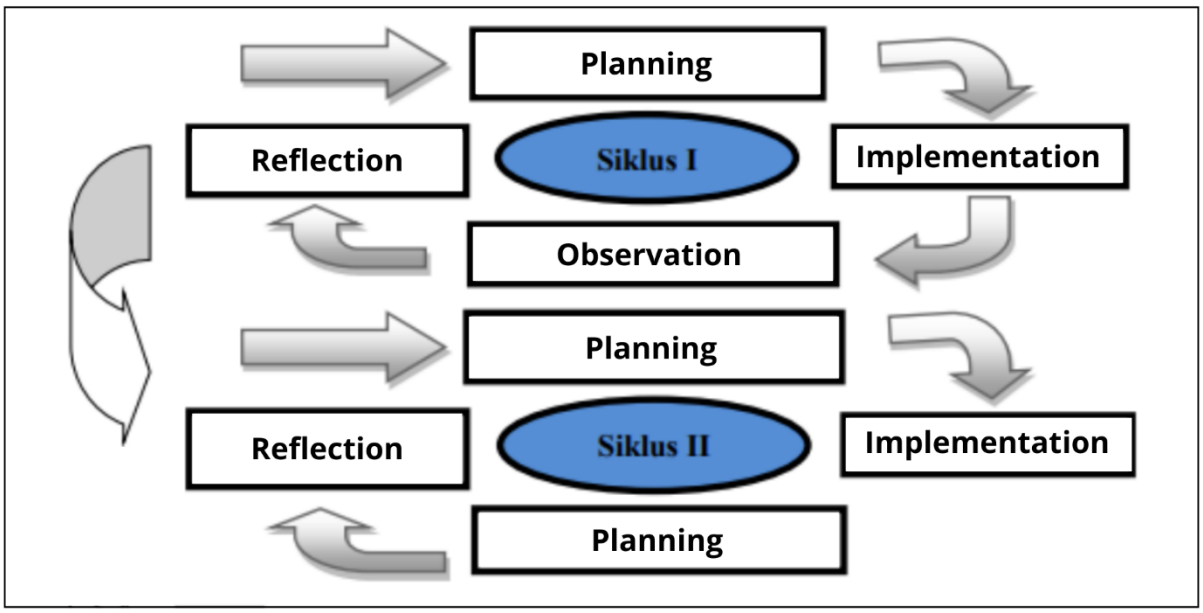

Figure 1. Action Research Cycle of Kemmis and McTaggart Model
Source. (Muh Ali et al., 2023)

Interviews, observations, and tests were used to gather data for this research. Pre- and post-test sheets are among the tools used. Descriptive statistics are applied to the data using an overall average score. If the student scores approach the KKM value, which is ≥70, then this Classroom Action Research (PTK) will be considered a success.

Table 1. Numeracy Literacy Assessment Score Interval

Value Range	Category
≤40	Low
41-70	Medium
≥70	High

Source: (Setya & Purnomo, 2023)

RESULTS AND DISCUSSION

In this study, which is divided into two parts, pretests and posttests are administered at the beginning and conclusion of each part in order to get the desired results.

Table 2. Pretest and Posttest Results

Category	Cycle I		Cycle II	
	Pretest	Posttest	Pretest	Posttest
Number of Learners	30	30	30	30
Average Value	46	63,7	56,8	78,2
Highest Score	70	80	80	90
Lowest Score	30	45	35	70

Cycle I

Although there was no statistically significant change from Cycle I to Cycle II, pupils' numeracy literacy abilities did improve. This occurred because some students were not paying attention while the researcher was presenting the content, some students entered and left the classroom for specific reasons, and some students created disruptive noises. On top of that, the pupils were bored since the YouTube movie was too lengthy and of poor quality. During this

first cycle, pupils were not yet comfortable enough to speak out when they were having trouble. Since the collected findings were not comprehensive enough, the researcher moved on to cycle II of the study.

Cycle II

Several measures used to address issues that surfaced during Cycle I, including pupils' inattention, lack of self-control, and fear of failure. To include teaching methodologies that were by the scientific content, researchers used more engaging, pertinent, and interactive YouTube videos. The researcher asked the class to conduct some icebreakers before class started so that everyone could get back on track. Researchers also used small groups to get students more involved in their education. Students' achievement of the minimal completion goal (KKM) in numeracy literacy was used to evaluate the effectiveness of Cycle II. Table 2 shows that students' average scores have attained the completion objective, hence no intervention is needed in the following cycle.

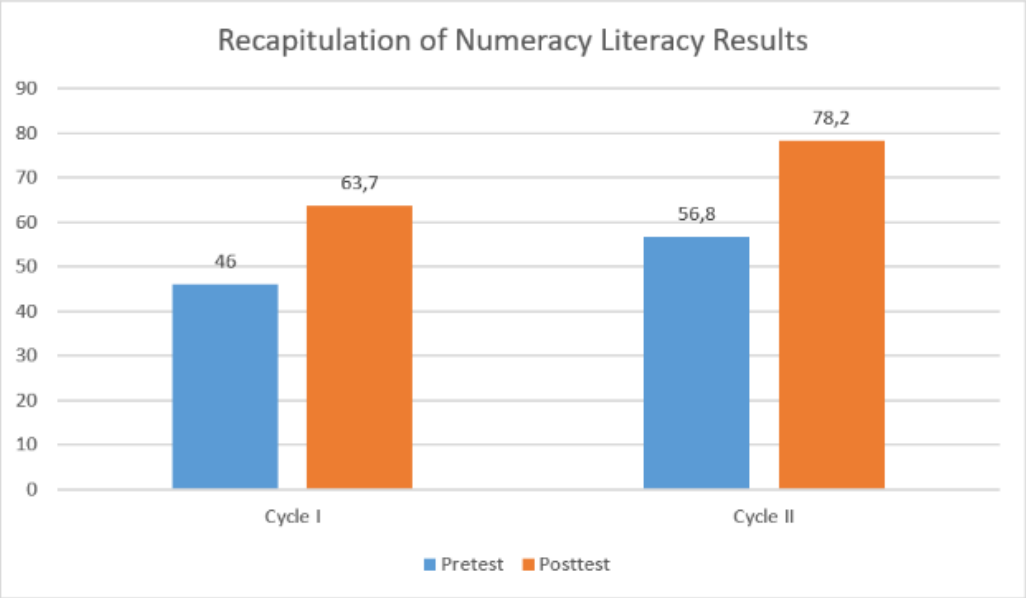

Figure 2. Diagram of Recapitulation of Numeracy Literacy Results

As was shown in the previous data recapitulation, the average value in each cycle has gone up. The average student posttest score in Cycle II was 78.2, up from 63.7 in Cycle I, an increase of 14.5 points. First impressions were that the kids' numeracy literacy levels were somewhat low, at 53.7. Using YouTube as part of the PBL technique resulted in a significant improvement in student performance, placing them in the high category.

This finding is in line with research conducted by (Rohmah et al., 2023) Who said that the application of the PBL method can improve students' numeracy literacy skills? Research from (Andini et al., 2023; Perdana et al., 2024) Also said that the use of YouTube media that presents material in audio and visual form can help students to understand the material being taught. In addition, research from (Ambarwati & Kurniasih, 2021) Also said that PBL using YouTube media has more impact and is better than conventional learning on numeracy literacy.

The improvement of students' numeracy literacy can be seen from students being able to understand and solve the solution of a problem using the concepts and knowledge they have learned. The use of the PBL method is effective in improving skills and problem-solving, which is an important part of numeracy literacy. (Ariyanti & Rusilowati, 2021). YouTube media in this study serves as an additional learning resource to assist students' learning processes. Interesting and relevant videos help students more easily understand difficult concepts such as Energy, Effort, and Simple Aircraft. The use of YouTube digital media

provides clear and interesting images and sounds, so that it can increase student interest and understanding.

The researcher's follow-up studies aim to enable educators to make the most of online resources like YouTube for student learning. Further study is needed to determine the long-term effects of using the PBL technique, particularly about students' numeracy literacy abilities. To see how well this approach works in different contexts, it may also be applied to other courses and disciplines.

The study had certain limitations, such as the fact that it only included one class with a small sample size, which meant that the findings were not as representative of the whole. Due to the constrained time frame of the study, a comprehensive assessment of the PBL method's long-term effects is now impossible. Furthermore, this study cannot be used as a standard for other classes as it just addresses energy, effort, and basic aircraft materials. Despite YouTube's usefulness as a teaching tool, not all students have reliable home internet connections, which can impede their ability to study independently.

CONCLUSION

It has grown in the 2023–2024 academic year according to the findings of the class 8A debate and study at SMP Negeri 2 Berbek. With each cycle, the number of tests conducted has grown. The first cycle saw an increase from an initial average of 46 to 63.7 students. Between 56.8 and 78.2 in cycle II, the typical upper limit for KKM values is 70. An increase of 14.5 percentage points occurred between cycles I and II, from an average of 63.7 to 78.2. This demonstrates that students' numeracy literacy is enhanced by the use of YouTube material in conjunction with the Problem-Based Learning learning approach. Hence, it is anticipated that scholars in the future would investigate alternative methods and instructional materials that might improve students' numeracy literacy, with a focus on the Problem Based Learning paradigm.

SUGGESTION

The PBL learning model can be adapted and applied directly to materials that require an understanding of numeracy literacy. Teachers can create situational problems related to students' daily lives, which can make students more interested in solving problems and indirectly improve their numeracy skills.

ACKNOWLEDGMENTS

Thank you to all those who have provided support, guidance, and input to the author during the process of preparing this journal. Thus, this journal can be completed on time.

REFERENCES

Ambarwati, D., & Kurniasih, M. D. (2021). Pengaruh Problem Based Learning berbantuan media Youtube terhadap kemampuan literasi numerasi siswa. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, *5*(3), 2857–2868.

Andini, F. S., Fuady, A., & Nursit, I. (2023). Eefktivitas Model Problem Based Learning Berbantuan Media Youtube Terhadap Kemampuan Literasi Numerasi Matematika Peserta Didik Pada Materi Peluang Kelas VIII SMP Raden Fatah Batu. *Jp3*, *18*(12), 1–12.

Anugrah, A. R., & Sarnawiah. (2023). ©JP-3 Jurnal Pemikiran dan Pengembangan Pembelajaran ©Akhsan Peningkatan Kemampuan Literasi Numerasi Peserta Didik Melalui Penerapan Model Problem-Based Learning di Kelas X MIPA 6 SMAN 2 Soppeng. *Jurnal Pemikiran Dan Pengembangan Pembelajaran Peningkatan*, *5*(2), 673–679.

Arifudin, Anita Tamu Ina, A. L. M. (2024). Penerapan Model Pembelajaran Problem Based

Learning Berbantuan Media Vidio Animasi Dilengkapi Quiz Wordwall Untuk Meningkatkan Hasil Belajar Siswa Di Sma Muhammadiyah Waingapu. *Jurnal Pendidikan Biologi*, *9*(2), 1344–1351.

Ariyanti, S. W., & Rusilowati, A. (2021). *Penerapan bahan ajar gelombang bunyi berbasis akm dengan model pbl untuk meningkatkan literasi numerasi siswa sma*. 370–379.

Atika, N., Ayu, N., & Murniati, N. (2024). *Penerapan Model PBL Berbantuan Media Wordwall Untuk Meningkatkan Hasil Belajar IPAS Kelas IV SDN Rejosari 01*. *11*(1), 201–210.

Farikhah, L., Reffiane, F., Alimah, S., & Subekti, E. E. (2024). *Pengaruh Model Pembelajaran Problem Based Learning (PBL) Berbantuan Media Papan Perkalian Terhadap Kemampuan Literasi Numerasi Kelas II SDN Bugangan 02*. *4*, 9038–9047.

Fauzanah, A. E., Koes, L., & Astuti, P. (2024). Meningkatkan Kemampuan Literasi Numerasi Matematika Siswa SMA melalui Model Problem Based Learning. *Jurnal On Education*, *06*(04), 22778–22788.

Iman, B. N. (2022). Budaya literasi dalam dunia pendidikan. *Conference of Elementary Studies*, 23–41. http://journal.um-surabaya.ac.id/index.php/Pro/article/view/14908

Imro, N., & Khaerunnisa, E. (2024). *Pengembangan E-Modul Berbasis Problem Based Learning (PBL) Untuk Mendukung Literasi Numerasi Siswa*. *8*, 18401–18411.

Indri Yani, S. N. S. dan A. M. P. (2024). Implementasi Model Problem Based Learning terhadap Peningkatan Kemampuan Literasi Numerasi. *Journal for Research in Mathematics Learning)*, *7*(1), 69–78.

Isa, V. N., Pramulia, F., Juita, R., Syahira, F., Harliyani, W., Metriani, L. P., & Jambi, U. (2023). MENINGKATKAN KEMAMPUAN LITERASI NUMERASI SISWA PADA PEMBELAJARAN IPA MELALUI METODE PROBLEM SOLVING DI SEKOLAH DASAR. *Jurnal Penelitian Guru Indonesia*, *3*, 50–58.

Milala, D., Walujan, M., & Pangalila, T. (2024). Pemanfaatan Youtube Sebagai Media Pembelajaran Guna Meningkatkan Motivasi Belajar Peserta Didik. *Tumoutou Social Science Journal*, *1*(1), 15–20. https://doi.org/10.61476/eydc9b25

Mudaningrat, A., Khumairoh, E. N., & Badruttamam, M. I. (2024). Implementasi Pembelajaran Berbasis Masalah (Problem Based Learning) untuk Meningkatkan Kemampuan Numerasi Siswa pada Mata Pelajaran IPA di SMPIT Sabilul Huda Kota Cirebon. *PEDAGOGI BIOLOGI (Jurnal Pendidikan Dan Pembelajaran Biologi)*, *02*(01), 31–38.

Muh Ali, A., Satriawati, S., & Nur, R. (2023). Meningkatkan Hasil Belajar IPA Menggunakan Metode Eksperimen Kelas VI Sekolah Dasar. *PTK: Jurnal Tindakan Kelas*, *3*(2), 114–121. https://doi.org/10.53624/ptk.v3i2.150

Nasution, M. D. (2023). *PENGARUH MODEL PROBLEM BASED LEARNING*. *10*(2), 10–16.

Ngatiyem. (2021). PENERAPAN PEMBELAJARAN PROBLEM BASED LEARNING UNTUK MENINGKATKAN KEMAMPUAN BERPIKIR KRITIS SISWA. *Jurnal Inovasi Penelitian Tindakan Kelas Dan Sekolah*, *1*(2), 149–157.

Perdana, D. R., Hapit, P., Nurwahidin, M., & Apriliyani, R. (2024). Pengaruh Model Pembelajaran Problem Based Learning Berbantuan Media Video Youtube Terhadap Hasil Belajar IPS Kelas V SD Negeri 5 Metro Timur. *Nuwo Abdimas*, *3*(1), 19–27.

Putri, A. A., & Wijayanti, P. (2024). Studi Kasus: Literasi Numerasi Siswa SMP dalam Menyelesaikan Soal AKM. *J-PiMat*, *6*(1), 1211–1222.

Putri, B. A., Utomo, D. P., & Zukhrufurrohmah, Z. (2021). Analisis Kemampuan Literasi Numerasi Peserta Didik SMP dalam Menyelesaikan Soal Cerita Aljabar. *JRPM (Jurnal Review Pembelajaran Matematika)*, *6*(2), 141–153. https://doi.org/10.15642/jrpm.2021.6.2.141-153

Putri, R. W. B., Setiana, H., & ... (2023). Peningkatan Kemampuan Literasi Numerasi Siswa Melalui Model Problem Based Learning di SMP Negeri 20 Semarang. *… Seminar*

Nasional IPA, 157–164. https://proceeding.unnes.ac.id/index.php/snipa/article/view/2299%0Ahttps://proceeding.unnes.ac.id/index.php/snipa/article/download/2299/1782

Rahayu, D. A., Hadi, F. R., & Warsini. (2023). PENINGKATAN KETERAMPILAN LITERASI DAN NUMERASI MELALUI MODEL PROBLEM BASED LEARNING BERBANTUAN GAME BASED LEARNING. *Jurnal Ilmiah Pendidikan Dasar*, *VIII*(I), 1–19.

Riyana, D. (2024). Efektivitas Penggunaan Media Pembelajaran Berbasis Video Pada Peserta Didik Sekolah Dasar Negeri 07 Wonogiri. *BAHUSACCA : Pendidikan Dasar Dan Manajemen Pendidikan*, *4*(1), 31–37. https://doi.org/10.53565/bahusacca.v4i1.927

Rohmah, R. K., Roshayanti, F., & Wati, L. E. (2023). Peningkatan Kemampuan Numerasi Peserta Didik Melalui Model Pembelajaran Berbasis Masalah pada Materi Bilangan Cacah Kelas IV SD Negeri Bendungan. *Prosiding Seminar Nasional Pendidikan Profesi Guru*, *1*(2), 2107–2117.

Rosita, E., Utomo, A. P., Azizah, S. A., & Sukoco, S. (2023). Penerapan Model Pembelajaran Problem Based Learning (PBL) Berbasis Kearifan Lokal Berbantuan Media Ular Tangga untuk Meningkatkan Aktivitas dan Hasil Belajar Biologi. *Jurnal Biologi*, *1*(3), 1–13. https://doi.org/10.47134/biology.v1i3.1973

Sari, R. R., Sutisna, I., & Hardiyanti, W. E. (2023). *Pengaruh Penggunaan Youtube Terhadap Kemampuan Literasi Numerasi Pada Anak Usia Dini Kelompok B*. *3*(2), 313–323.

Setya, D., & Purnomo, H. (2023). Analisis Kemampuan Literasi Numerasi Siswa Kelas 5 Sd Negeri Tamansari 1. *MIDA: Jurnal Pendidikan Dasar Islam*, *6*(2), 216–227.

Sutrimo, M. S., Sajdah, S. N., Veronica, Y., & Sinambela, F. (2024). PENINGKATAN LITERASI NUMERASI MELALUI MODEL PEMBELAJARAN DAN HUBUNGANNYA DENGAN KEMAMPUAN SELF-EFFICACY : SYSTEMATIC LITERATUR REVIEW. *Jurnal Pembelajaran Matematika Inovatif*, *7*(1), 61–72. https://doi.org/10.22460/jpmi.v7i1.21650

Umaya, F., Subali, B., & Januarsi, T. D. (2024). Peningkatan Literasi Numerasi Siswa Materi Usaha, Energi dan Pesawat Sederhana Melalui Model Pembelajaran Discovery Learning pada Kelas VIII SMPN 16 …. ... *Nasional Pendidikan Dan …*, 649–657. https://proceeding.unnes.ac.id/snpptk/article/view/3191%0Ahttps://proceeding.unnes.ac.id/snpptk/article/download/3191/2656