



The Effect of POE Learning Strategy Assisted by Edmodo On Eco literacy In Elementary School

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Abstract: This study aims to examine the effect of learning predict observe and explain (POE) during the Covid-19 assisted by Edmodo on the environmental literacy of grade VI elementary school students. The research method used was a quasi-experimental non-equivalent control group design with a control and experimental group design. The subjects studied were sixth-grade students at a school in Bandung, which was divided into two into the experimental group (28 students) and the control group (28 students). The experimental group received Edmodo-assisted POE while the control group received Direct Instruction (DI). Eco literacy is measured by multiple-choice questions. Environmental care attitudes were compiled with an attitude questionnaire. The analysis used SPSS for Windows version 22 and excel. The results showed that there were differences in Eco literacy skills between the experimental class and the control class with the mean paired differences between the pre-test and post-test for the experimental class was 22, the significance value (2-tailed) was 0,000 and the t-test result was 0.482. In addition to differences in post-test results, Edmodo-assisted POE learning has a positive effect on environmental literacy which is shown by N-gain 72, 37% is in the high category with moderate effectiveness with a minimum N-Gain score of 50% and a maximum N-gain of 100% and medium criteria for the attitudes and environmental sensitivity domains with an average Likert scale of 34%.

Keywords: POE, Eco literacy, Environmental literacy, Edmodo.

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INTRODUCTION

The 21st century is marked by advances in science and technology accompanied by maximizing their use, and its role is very much felt during the Covid-19 pandemic, (2014). 21st-century skills that students must master during the Covid-19 period, among others critical thinking and problem-solving, communicating and collaboration, creativity, and innovation, information literacy, media literacy, ICT literacy, flexibility and adaptability, initiative and accountability, leadership and responsibility (Triling&Fadel, 2009).

Literacy according to PISA (Program for International Student Assessment; 2006 is considered as knowledge and skills acquired through lifelong processes both at school and through interactions with friends and society at large as a vehicle for developing higher-order thinking skills, the ability to work hard, various basic skills, being honest, disciplined and so on (Sujana, et al., 2014)

The results of further analysis of the 2012 PISA data for Indonesian children show that literacy outcomes are still low, with an average of around 32% for the whole. One of the reasons for the low literacy aspect of Indonesian children is the environment, the climate of reading and literacy in schools which is still lacking, and the gap between science learning applied in schools and PISA demands (Hayat & Yusuf, 2006; Rustaman in Muhajir, 2015; Arief et al., 2015). One of the literacies that must be instilled and developed in elementary school students is environmental literacy.

Eco literacy is a conscious attitude to protect the environment so that it becomes responsive and able to provide solutions to environmental issues. Measuring environmental literacy consists of four components, namely environmental knowledge, attitudes towards the environment, cognitive skills, and behavior towards the environment (McBeth, 2009). Environmental literacy of students can be



seen with environmental knowledge, environmental care attitudes, skills, and participants' participation in protecting the environment (Ardanita et al., 2017).

Literacy can be developed explicitly in science learning and of course, it can be developed in all subjects (Kusmana, 2017). The environmental literacy skills of students will increase along with the ability of teachers to organize learning carried out appropriately.

Learning that has been widely used by teachers is Direct Instruction (DI) using the Teacher-Centered Learning approach (Setiawan, 2010) through five stages, namely orientation, presentation or demonstration, structured training, guided training, and independent training (Joyce & Weil). (2000, 24)

Teachers need to pay attention to learning components that support each other to achieve learning success (Nugraha, 2015). By using the right learning model, the learning experience of students can be organized and the teacher has guidelines in planning and implementing learning activities (Sagala, 2010). One of the lessons that are expected to improve environmental literacy is to Predict Observe and Explain (POE) learning.

POE involves students in predicting a phenomenon, making observations through demonstrations and their previous predictions (Rozana & Jufrida, 2018), providing opportunities for students to produce conceptual knowledge through reconciliation and negotiation between initial knowledge and new knowledge (Teerasong et al., 2007; Muna 2017). POE provides a lot of freedom to students when designing discoveries so that with POE learning students are directly involved in finding concepts or learning skills so that learning process skills become livelier, (Nurmalasari et al., 2016).

The implementation of POE learning during the Covid-19 pandemic was carried out with the help of Edmodo e-learning. E-learning as an electronic medium can have a changing

effect on the learning process as an intermediary so that the nuances of learning become more attractive, visual, and interactive (Nugraha, 2014; Na'imah et al., 2015).

Edmodo is one of the applications for the use of e-learning that is recommended during the independent isolation period due to Covid-19 because it is a school-based e-learning environment. Edmodo has several advantages, namely easy to use, closed group collaboration, Free to access online on smartphone and iPhone devices, does not require a server at school, can be accessed unlimited space and time, can be applied in one class, one school, between schools in one city or district, can be used for students, teachers, and parents, used to communicate using social media models, learning materials, and evaluation, supports the team teaching model, co-teacher, and teacher, There are notifications, the badge feature can be used to increase motivation students (Fahrudin & Rohmani in Suparya, 2020).

Edmodo is a social network that is similar to the social media Facebook but is based on education with many uses that facilitate student and teacher communication in learning (Saputra, 2019). Edmodo provides data security facilities for teachers and students to communicate and collaborate on various learning content, homework (homework), tests, or doing assignments online, making grades (Handayani, 2019). Furthermore, Umaroh (2012) added that Edmodo's strengths include making the class more dynamic because of the interaction between teachers and students which is not limited to space and time. The teacher easily shares existing material and is posted on the class group feature and students find it easy to learn the subject matter first. Teachers can give assignments or quizzes to students through Edmodo more efficiently than class assignments (Daulay, 2016) the results of learning can be sent in the form of videos and pictures so that they are documented.

Research conducted by Lam & Tong (in Jayawardana, 2017; Amalina, 2019) states that the use of digital devices is effective in increasing motivation, meaningful behavior,



active exploration in searching for information online, and also increasing student learning participation. In line with the research of Nadiroh (2019) states that there is no significant difference in the ability to solve the environmental problems of students who have high eco-literacy and low eco-literation.

Edmodo used in this research is a website that can be accessed at www.edmodo.com which is used as a learning medium so that students better understand the theme of saving sentient beings because this website presents the material in the form of text, images, and videos. Besides being accessible via the website, Edmodo can also be downloaded via the Play store on smartphones.

METHOD

This study used a quasi-experimental method with a non-equivalent control group design to deal with difficulties in determining the control group but was not given full function in controlling external variables that might affect the implementation of the experiment (Sugiyono, 2008). In the control class, DI learning is used and in the experimental class, POE is supported by Edmodo

The subjects in this study were students of grade VI elementary school one of the schools in the city of Bandung totaling 56 students, which were divided into two groups, namely the experimental class of 28 students and the control class of 28 students. The sampling technique used was simple random sampling against the class

The environmental literacy evaluation instrument used refers to Simmons' framework, namely the use of the Environmental Literacy Instrument (Negev

et al., 2008). The indicators in this instrument are by Simmons' framework as a criterion in analyzing the level of environmental literacy (Simmon in Chu et al., 2007; Erdogan et al., 2011). The test covers all components of environmental literacy, among others; components of ecological knowledge, attitudes and concern for the environment, skills in solving environmental problems, and environmentally responsible behavior were analyzed using the average N-gain score (Meltzer, 2020; Apriana, 2017) in the knowledge domain, while attitudes were analyzed using the formula suggested by Kountur (2018) using a Likert scale which is analyzed based on the respondent's answer (Riduan, 2010)

RESULTS AND DISCUSSION

This research was carried out by combining learning, in the control class, two face-to-face meetings were carried out when visiting the home and directly doing the pre-test and post-test, while in the experimental class the learning was carried out by modification, namely face-to-face when visiting home and online. by using Edmodo learning facilities. Students work on pretest and posttest questions on the Edmodo application and the learning carried out by the teacher is not only fixed in the classroom. The teacher opens a discussion forum and displays learning videos and students respond by sending replies via the comment column available on the Edmodo application in both videos, writings, and pictures. In the domain of environmental literacy knowledge, to determine whether or not there is an effect of the use of Edmodo-assisted POE learning on environmental literacy in the experimental group, paired sample t-tests are analyzed.

Table 1. Pre and Post Test Results

	Experiment Group	Control group
N	28	28
Mean	-22.000	-16.571
Std. Deviation	9.764	9.355
df	27	27
Sig. (2-tailed)	.000	.000



Based on the table above the mean paired differences pretest and posttest for the experimental class is $22,000 > T_{table} 2.05183$ obtained from df 27 with 0.025 and a significance value (2-tailed) of $0.000 < 0.05$ then H_0 is rejected, which means it is significant and shows There is a difference in the average pre-test and post-test of students after the implementation of

Edmodo-assisted POE learning on environmental literacy of students.

Then the analysis was carried out. To find out the difference between the use of Edmodo-assisted POE learning and regular home visit learning on the environmental literacy of students, an Independent Sample Test analysis was carried out.

Table 2. Independent Samples Test Post Test Results

Group	N	Mean	Std. Deviation	Sig. (2-tailed)	Mean Difference
POST TES Experiment Group	28	68.643	15.5116	.482	2.8571
Control group	28	65.786	14.6575	.482	2.8571

From the table t-test, results also obtained a significance (2-tailed) of 0.482. The significant value will then be compared with a significant level of 5% (0.05) and shows that the researcher's hypothesis or H_0 is rejected, which means that there is a difference in the environmental literacy skills of students after learning. POE with Edmodo.

category with a fairly effective level of effectiveness. medium with a minimum N-Gain score of 50% and a Maximum N-gain of 100%. While the average N-gain score of the contrast class is 24.19 or 24, 19% is in the low and ineffective category, with a minimum N-gain score of 5.66% and a maximum N-gain score of 50%. This shows that POE learning assisted by Edmodo e-learning is quite effective in increasing the environmental literacy of students compared to DI learning.

After knowing the effect of Edmodo-assisted POE learning, then the domain of students' environmental literacy knowledge was analyzed using the N-gain mean using SPSS 22 showing the average experimental class was 72, 37 or 72, 37% was in the high

Table 3. Distribution of Student Environmental Literacy Values

No	Subject	Min	Max	Mean	Sd
1	Experiment	50,00	100,00	72,37	15,17
2	Control	5,66	50,00	24,19	10,58

While the domain of attitudes and skills in solving environmental problems as many as 2 or 7.14% of students have very high environmental attitude criteria, as many as 13 or 46.43% of students have high environmental attitude criteria, as many as 10 or 35.71% of students have criteria for moderate environmental attitudes, as many as 3 or 10.71% of students have criteria for low environmental attitudes, and 0% percent of students have criteria for very low environmental attitudes. Whereas in the

control class as much as 1 or 3.57% of students had very high environmental attitude criteria, as many as 10 or 35.71% of students had high environmental attitude criteria, as many as 12 or 42.86% of students had moderate environmental attitude criteria, as many as 5 or 17.86% of students have low environmental attitude criteria, and 0% percent of students have very low environmental attitude criteria. While the overall results between the control class and the experimental class have the same

environmental attitude criteria, namely moderate with an average of 33% for the

control class and 34% for the experimental class.

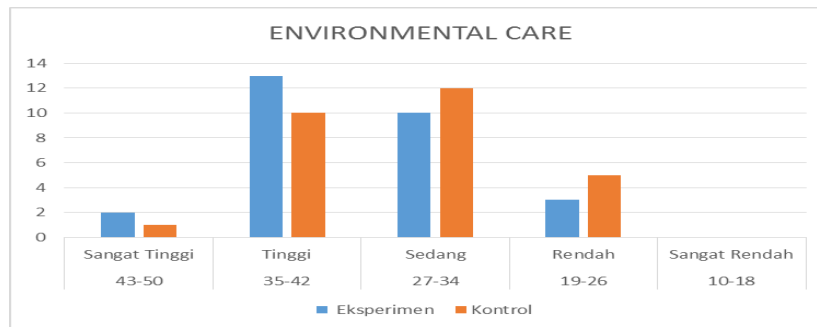


Figure 1. Environmental Care Graph

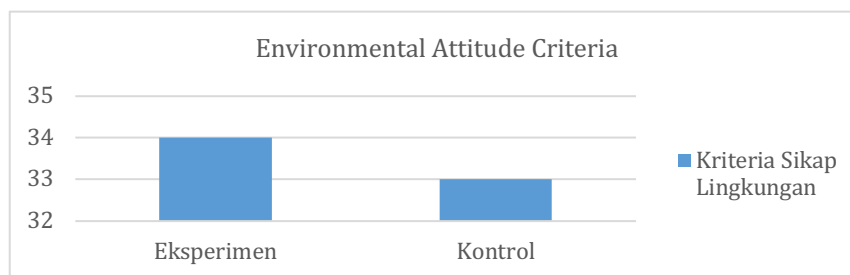


Figure 2. Environmental Care Conclusion Graph

Based on the results of the analysis on the results of the pre-test and post-test and questionnaires, it is known that Edmodo-assisted POE learning can be used to improve students' environmental literacy on theme 1 Save Living Things, Preserving Animals and Plants This is in line with research conducted by Zen (2019) that POE can be used to improve students' scientific literacy in the Natural Events material of learning. POE is also effectively used in science learning at the elementary school level. As the research results of Yulianti, et al. (2020), the syntax in the POE model is more effective in changing students' concepts when implemented in learning. Another study was conducted by Priatna, (2017) with the research title "The Effect of Conservation Biology Lecturing Programs with a Contextual Approach Based on Acehese Local Wisdom on Increasing Environmental Literacy". The results of the analysis show that the conservation biology lecture program with a contextual approach based on Acehese local wisdom can improve students' environmental literacy. Thus, in addition to helping improve students' conceptual understanding skills, POE syntax can be used as a solution for

educators to create inspirational, collaborative, and investigative learning and help students develop the skills needed in the 21st century (Saido et al. 2015; Tembang, 2017; Nugroho, 2018).

CONCLUSION

Based on the results of the study it was concluded that POE learning assisted by Edmodo e-learning during the Covid-19 pandemic had an effect on the domain of students' environmental literacy knowledge but it still had no effect on the domain of students' environmental attitudes. moderate achievement. This situation is because the Edmodo e-learning used has not been able to control the activities of students directly. After all, it has not been facilitated by video conferencing such as WA, zoom, or google meet. Edmodo e-learning only helps students listen to material and work on cognitive exercises. Edmodo can be used as a reference for online learning plots, but it must be balanced with a visit home or modified with a zoom or google meet when delivering practical or experimental material.



REFERENCES

- Abidin, Y. (2014). *Desain Sistem Pembelajaran dalam Konteks Kurikulum 2013*. Bandung: Refika Aditama.
- Amalina, V. N. (2019). *Implementasi E-Learning Berbasis Edmodo Untuk Meningkatkan Motivasi Belajar Dan Hasil Belajar Siswa Pada Konsep Sistem Gerak* (Doctoral dissertation, FKIP UNPAS).
- Apriana, Evi. (2017). Pengaruh Program Perkuliahan Biologi Konservasi Dengan Pendekatan Kontekstual Berbasis Kearifan Lokal Aceh Terhadap Peningkatan Literasi Lingkungan. *Jurnal Serambi Ilmu* 18(1), 59-67
- Ardanita, B. A., Utaya, S., & Ruja, I. N. (2017). Membentuk Karakter Peduli Lingkungan melalui Komunitas Pelajar Peduli Lingkungan Hidup (KPPLH). In *Seminar Nasional Teknologi Pembelajaran dan Pendidikan Dasar*. 969-974.
- Daulay, U. A. (2016). *Pengaruh Blended Learning Berbasis Edmodo Dan Motivasi Belajar Terhadap Hasil Belajar IPA Biologi Dan Retensi Siswa Pada Sistem Peredaran Darah Manusia Di Kelas VIII SMP N 5 Medan*. (Doctoral dissertation, UNIMED).
- Erdogan, M., & Ok, A. (2011). An Assessment of Turkish Young Pupils' Environmental Literacy: A Nationwide Survey. *International Journal of Science Education*, 33(17), 2375-2406.
- Gates, Bill; Myhrvold, Nathan, and Rinearson, Peter (1996). *The Road Ahead*, Penguin Books. ISBN 978-0-14-026040-3.
- Handayani, M. F. (2019). *Efek Model Pembelajaran Problem Based Learning Berbantuan Edmodo Terhadap Kemandirian Belajar Siswa Pada Materi Fluida Statis Kelas Xi Semester I SMAN 1 BINJAI TP 2019/2020* (Doctoral dissertation, UNIMED).
- Joyce, B., & Weil, M. (2000). *Models of teaching*. Amerika: A.
- Kountur, R. (2018). *Metode penelitian untuk penulisan skripsi dan tesis*. PPM.
- Kusmana, S. (2017). Pengembangan literasi dalam kurikulum pendidikan dasar dan menengah. *Diglosia: Jurnal Pendidikan, Kebahasaan, dan Kesusastraan Indonesia*, 1(1).
- McBeth, W., & Volk, T. L. (2009). The national environmental literacy project: A baseline study of middle-grade students in the United States. *The Journal of Environmental Education*, 41(1), 55-67
- Muhajir, S., & Rohaeti, E. (2015). Perbedaan penerapan model pembelajaran STS dan CTL terhadap literasi sains dan prestasi belajar IPA. *Jurnal Pendidikan Matematika dan Sains*, 3(2), 143-155.
- Muna, Izza Alyatul. (2017). Model Pembelajaran POE (Predict-Observe-Explain) dalam Meningkatkan Pemahaman Konsep dan Keterampilan Proses IPA. *El-Wasathiyah: Jurnal Studi Agama*. 5(1). 73-92
- Nadiroh, S. M. S. (2019). Analisis Kemampuan Memecahkan Permasalahan Lingkungan dan Ekoliterasi Siswa. *Jurnal Parameter* 31(2), 96.
- Nugraha, R. G. (2015). Meningkatkan Eco literacy Siswa SD Melalui Metode Field-Trip Kegiatan Ekonomi Pada Mata Pelajaran Ilmu Pengetahuan Sosial. *Mimbar Sekolah Dasar*, 2(1), 60-72.
- Nugroho, R. A. (2018). *HOTS (Kemampuan Berpikir Tingkat Tinggi: Konsep, Pembelajaran, Penilaian, Dan Soal-Soal)*. Jakarta: Gramedia Widiasarana Indonesia
- Nurmalasari, A. L., Jayadinata, A. K., & Maulana, M. (2016). Pengaruh Strategi



- Predict Observe Explain Berbantuan Permainan Tradisional Terhadap Kemampuan Berpikir Kritis Siswa Pada Materi Gaya. *Jurnal Pena Ilmiah*, 1(1), 181-190.
- Negev, M., Sagy, G., Garb, Y., Salzberg, A., & Tal, A. (2008). Evaluating the environmental literacy of Israeli elementary and high school students. *The Journal of Environmental Education*, 39(2), 3-20.
- Riduwan (2010). *Skala Pengukuran Variabel-Variabel Penelitian*. Bandung: Alfabeta
- Rozana, Tiara, Jufrida Jufrida, and Fibrika Rahmat Basuki. (2018) Penerapan Model Pembelajaran Poe Untuk Meningkatkan Keterampilan Proses Sains Kelas XI SMAN 11 Jambi. *Edufisika: Jurnal Pendidikan Fisika*. 3(2). 66-80
- Saputra, A. K. *Pengaruh Media Edmodo Terhadap Hasil Belajar Pendidikan Agama Islam Siswa Kelas XI SMKN 9 Bandar Lampung*.
- Setiawan, W. dkk, 2010, Penerapan Model Pengajaran Langsung (*Direct Instruction*) Untuk Meningkatkan Pemahaman Belajar Siswa Dalam Pembelajaran Rekayasa Perangkat Lunak (RPL). *Jurnal Pendidikan Teknologi Informasi Dan Komunikasi (PTIK)*, 3(1).
- Syaiful, S. (2010). *Konsep dan Makna Pembelajaran untuk Membantu Memecahkan Problematika Belajar dan Mengajar*. Bandung: Alfabeta, CV.
- Sujana, A., Permanasari, A., Sopandi, W., & Mudzakir, A. (2014). Literasi Kimia Mahasiswa PGSD dan guru IPA Sekolah Dasar. *Jurnal Pendidikan IPA Indonesia*, 3(1).
- Suparya, I. (2020) Peningkatan Motivasi Dan Kemampuan Berpikir Kritis Mahasiswa Melalui Model Pembelajaran Berbasis Masalah Berbantuan Media Edmodo. *Jurnal Ilmiah Pendidikan Citra Bakti*. p-ISSN 2355-5106, e-ISSN 2620-6641.
- Sugiyono. (2008). *Metode Penelitian Pendidikan: (Pendekatan Kuantitatif, Kualitatif dan R&D)*. Bandung: Alfabeta.
- Trilling, B., & Fadel, C. (2009). *21st-century skills: Learning for life in our times*. John Wiley & Sons.
- Umaroh, S. (2012). *Penerapan Project Based Learning Menggunakan Microblogging Edmodo Untuk Meningkatkan Prestasi Belajar Siswa Pada Mata Pelajaran TIK*. Skripsi tidak diterbitkan. Jakarta: Universitas Pendidikan Indonesia.
- Yulianti, R., Suhandi, A., & Sopandi, W. (2020). The Effect of Poe Strategy on Students' conceptual Change Regarding Water Density. *JPSd (Jurnal Pendidikan Sekolah Dasar)*, 6(1), 15-29.
- Zen, M. Z. (2019). *Pengaruh Pembelajaran Predict Observe Explain Pada Materi Peristiwa Alam Terhadap Literasi Sains Siswa Kelas VA*. (Doctoral dissertation, Universitas Pendidikan Indonesia)