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Feasibility Study of Problem-Based Blended Learning Models to Improve Literacy

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Abstract: One of the learning models is the problem-based learning model, which is then implemented in a blended manner. The feasibility study aimed to observe that the developed model could improve students' literacy skills. The feasibility study was conducted at a junior high school in Semarang Regency in February for approximately three weeks. Meanwhile, the number of respondents observed was 20 students in the eighth grade. There were two main factors in the observation of the picking test: the first was the social interaction of students in groups, and the second was the interaction of students with learning resources. On the other hand, the third factor was the impact of the interaction, i.e., the product or group solution. To facilitate observation, one class was divided into several groups, each consisting of up to five people. The results revealed relatively significant results because each group could develop learning resources to solve the problems through google search, then give good results, and solve the problems presented by the teacher.

Keywords: *Blended Learning, Problem-Based Learning, Literacy*

Abstrak: *Salah satu ragam model pembelajaran tersebut adalah memodifikasi model pembelajaran berbasis masalah, yang kemudian dilaksanakan secara blended. Tujuan dilakukan study kelayakan adalah untuk mengamati bahwa model yang dikembangkan dapat meningkatkan keterampilan literasi peserta didik. Study kelayakan dilakukan pada sebuah sekolah jenjang SMP di Kab Semarang pada bulan februari selama lebih kurang 3 minggu. Adapun jumlah responden yang diamati adalah 20 siswa di kelas delapan. Faktor utama pada pengamatan uji petik ini ada dua, yang pertama adalah proses interaksi social peserta didik dalam kelompok, dan kedua adalah proses interaksi peserta didik dengan sumber belajar. Adapun factor ketiga merupakan dampak dari interaksi tersebut, yaitu produk atau solusi kelompok. Pada studi kelayakan ini, di triangulasikan antara proses kapan peserta didik mulai belajar, dan kapan peserta didik berhenti belajar kemudian ditriangulasikan dengan catatan pengamatan oleh guru pihak ketiga. Untuk memudahkan pengamatan, dalam satu kelas dibagi menjadi beberapa kelompok, kemudian tiap kelompok beranggotakan sampai dengan lima orang. Hasilnya menunjukkan hasil cukup signifikan, karena tiap kelompok mampu mengembangkan sumber belajar untuk menyelesaikan masalah yang diberikan melalui google search kemudian memberikan hasil dengan baik maupun membuat solusi atas masalah yang diberikan oleh guru.*

Kata Kunci: *Pembelajaran Blended, pembelajaran berbasis masalah, literasi*

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INTRODUCTION

The independent curriculum was launched by the government in 2021. The fundamental change in this curriculum is using digital media as a source of learning and utilizing a Learning Management System (LMS) (Bervell et al., 2020). The accessibility of teachers and students to learning resources and LMS is by providing certain LMS-based accounts (Shurygin et al., 2021). By providing this facility, the Ministry of Education and Culture hopes the learning process can occur more dynamically, not only by looking at each other through video conferences. On the other hand, the current learning keyword is literacy (Wijaya et al., 2016). Written on Wikipedia, literacy generally refers to individual abilities and skills in reading, writing, speaking, calculating, and solving problems at a certain level of expertise required in everyday life (Fahmi et al., 2020). Meanwhile, the origin of the word literacy is Latin, which means people who are learning.

Although most teachers already understand the learning keyword of literacy, most of the others interpret it narrowly. It is in accordance with the notion of school literacy as increasing students' reading interest (Arrosyad & Nugroho, 2021; Delgadova, 2015). Thus, in this paper, literacy is limited to reading activities. Meanwhile, Ho & Lau (2018) argued that literacy plays a role in moral responsibility, primarily moral responsibility, when someone communicates directly with digital media, termed digital literacy (Bekker et al., 2015; Suryanti & Wijayanti, 2018).

Moreover, the learning design in the independent curriculum is how to utilize open learning resources so that students throughout the country can accelerate the process of adopting knowledge and technology (Nasrulloh & Ismail, 2018; Widiyono & Millati, 2021). Understanding literacy must also be expanded so that independent curriculum goals can be realized more quickly. To accelerate the adoption process, teachers should be introduced to various hybrid or blended learning models. One of the steps the developer took was to create a blended learning innovation by integrating it into problem-based learning (Baragash & Al-Samarraie, 2018). Problem-based learning is one of the learning models in which the learning process involves students interacting directly with learning resources. This model uses open learning resources (Simanjuntak et al., 2021; Roemintoyo et al., 2021).

For this reason, the fundamental problem in this research is how the learning process can improve students' literacy skills. One strategy to overcome this problem is to develop a problem-based blended learning model to enhance student literacy. Therefore, this activity's primary objective is to conduct a feasibility test on developing a problem-based blended learning model to improve student literacy.

METHOD

This feasibility study used the triangulation method (Salim, 2019). This method was selected because the developer aimed to observe the student learning process using this learning model. The students' learning process was then observed to determine when the students started to learn, when students stopped learning and how the literacy process occurred. The developer also observed the learning process in one school with one teacher. In making observations, the developer involved several teachers in observing the learning process using an observation guide. Meanwhile, the developer summarized the observation guide on the activities resulting from data collection. In simple terms, the guide contents provided "guidance" for the developer to observe the interactions of students, teachers, and learning hypermedia. Observational data were then triangulated with student learning outcomes.

The feasibility study was carried out in early 2021, in February. The method for collecting data was performed using observation techniques on the learning activities of 12 students (learning during the

pandemic at Islamic boarding schools) and teachers during the learning process. Learning activities were conducted using the micro-teaching method. Thus, a total of 12 students during learning process were grouped into three people in each group. Observation time was approximately two weeks.

RESULTS AND DISCUSSIONS

The learning process was entirely carried out by the mathematics teacher. Meanwhile, the learning framework was conducted using a problem-based blended learning model. The problem-based blended learning activity stage was developed by considering the situation, the facilities, and the infrastructure owned by the school so that there was a face-to-face learning section and online learning, both of which could be followed by students. In this case, the developer in this activity acted as an observer of the learning process. However, when designing the learning process, the developer was involved by providing a brief description of the learning model used by the teacher. Mathematics learning was generally carried out by applying the realistic material concept. Physically, the educator still needs much time to train students in solving various math problems. In this lesson, the teacher also used the school's web to bring problems closer to students. The stages of problem-based blended learning are presented in Table 1.

Table 1. Stages of problem-based blended learning activities

Stage	Teacher Activities	Student Activities	Strategy	Method	Learning Media
1	Problem orientation to students -The teacher writes down the problems and what criteria are needed so students can formulate solutions to these problems. -Problems must be given in detail and written so students can learn more.	Studying the problems presented authentically	-Virtually conferencing -Information in writing	Delivery of information by the teacher	Zoom, google meet School website
2	Organizing students in groups	Forming a group and preparing a problem investigation plan	online chat In this case, the teacher can form groups and give them to all students.	Information by the teacher, independent discussion in groups	Information through the school web; independent discussion in groups can be via WA chat or chat via LMS, can also meet offline in groups.

3	Accompanying students In addition, the teacher also involves teachers of other subjects when the problem becomes thematic material.	Investigating the problem in groups The investigation is carried out using authentic methods and related literature studies.	Independent learning Investigations can be developed by looking for learning resources independently (with teachers, resource persons, or searching online learning resources).	Discussion with independent chat Students can also ask the teacher or expert resource persons under teacher supervision or use a web search. It would be better if the teacher prepared the material using the web.	WA chat or LMS or video conference via meet Searching material uses web search or school web.
4	Accompanying students when developing innovative works and making products	Collaboratively, formulating problem-solving based on findings and literature development and then compiling products and reports based on group formulations -The last step is to present the results of problem-solving.	Offline collaboration for groups, preparing presentations	Group collaboration	Google doc or google slides for preparing presentations
5	Evaluating the problem-solving process (process assessment)	Presenting work and submitting reports	Offline/online related to exposure to the results of the formulation of problem solutions	Presentation and evaluation assessment	Google slides, google docs, and teacher assessment sheets can be found in google classroom.

Meanwhile, the results of the observations are shown in Table 2. The data presentation attempted to be written clearly to describe how literacy growth was observed in the learning process.

Table 2. Observation of the literacy process in students

No.	**Observed activities**	**Observation Result**	
		Appear	**Has not Appeared**

1	Improving reading literacy skills	12	
2	Strengthening character	12	
3	Improving numeracy skills	6	6
4	Improving students' critical thinking skills	8	4
5	Increasing student creativity	10	2
6	The convenience of students while studying	12	
7	Providing convenience for teachers in processing a lesson (respondents are teachers.)	1	

The interaction of students with learning problems is the spirit of active student learning of sentences (cyberman). The problem-based learning model's primary goal is to activate students in learning so that the problem-based learning process will bring students closer to learning problems used as "trending topics."

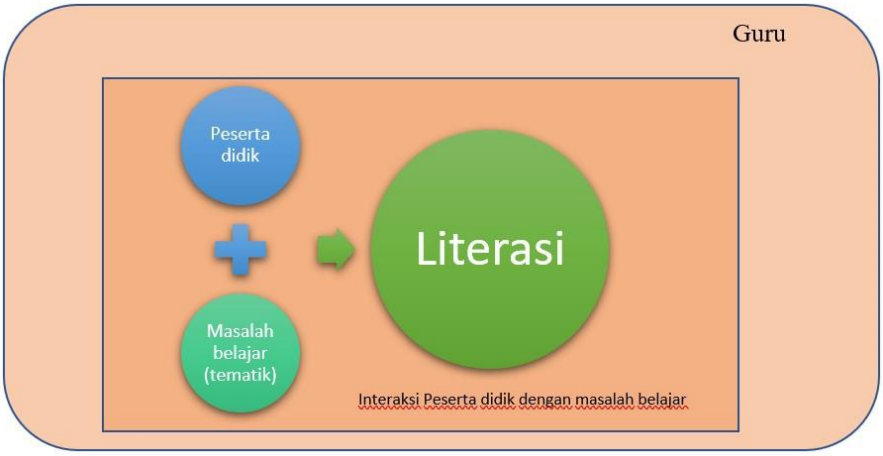

Figure 1. Student interaction with learning problems

Problem-based blended learning was developed based on blended situations during the pandemic and transitional learning. The blended learning design itself was carried out by referring to synchronous and asynchronous learning processes as conveyed by Dwiyogo. Figure 1 clearly explains that literacy can grow because of the relationship between students and learning problems. Learning problems can be brought closer to students in the form of concrete issues around the school or area. The term is a matter of learning by considering local cultural wisdom. In this case, the problem-based blended learning design was suitable for growing students' literacy skills. Meanwhile, according to Lepinski, a good learning process is bringing students closer to contextual problems so they can develop maturity in students. These problems could be packaged in the form of articles and then presented on the school website. When students interacted with learning problems actively, they would practically use a variety of available hypermedia. Apart from using already known hypermedia, students would usually be "curious" about the problem by browsing information independently. Without realizing it, this learning process can develop students' literacy skills (S.Sirate & Ramadhana, 2017).

The process of interacting with learning problems at an early stage will also make students think about where they get information about the problem (Kurniawan et al., 2019). Next is deciding whether students will find information using the internet or the library using books or other print media. For students, it demonstrates what literacy they have mastered. If students' digital literacy is high, they will choose how to find information online or online. Learners are already "experts" looking for information online, where the process of finding information occurs quickly and, of course, according to their needs (Ling et al., 2020). This search process, undoubtedly, involves various literacy skills, such as digital,

reading, and special literacies, which are closer to their learning problems. In the end, the maturity of students will certainly appear with the more skilled they are in making solutions if they find the latest problems.

This study presents the development of learning activities in problem-based blended learning in Table 1. Table 1 shows that learning activities refer to student learning activities to improve literacy skills, as written in the previous paragraph. Students' learning interactions with problems were initially approached by articles on the new school's web. Then, after going through the discussion process, students began to develop information so that the solutions they provided developed.

Moreover, the literacy process in learning activities can be observed in Table 2. In Table 2, the educator could carry out the learning process. Meanwhile, it seems that numeracy skills have not emerged enough that participants could learn independently. It could be possible that the complexity needs to be explored so that numeracy skills can be improved. Besides, literacy other than numeracy has started to appear in students significantly.

CONCLUSION AND SUGGESTIONS

A feasibility study was carried out to observe whether there was an increase in student literacy after participating in learning using a problem-based blended learning model. As a result, the problem-based blended learning model could be feasible to apply in junior high schools. Based on observations, the literacy process could also be well developed so that students could improve their literacy after participating in learning using a problem-based blended learning model.

However, activities related to numeracy literacy can be further improved so that students' numeracy skills are also expected to increase significantly.

REFERENCES

Arrosyad, M. I., & Nugroho, F. (2021). Pengembangan Model Pembelajaran Membaca dan Numerasi di Tengah Evolusi Konsep Literasi. *Jurnal Basicedu*, *5*(6), 6378–6384. https://doi.org/10.31004/basicedu.v5i6.1758

Baragash, R. S., & Al-Samarraie, H. (2018). Blended learning: Investigating the influence of engagement in multiple learning delivery modes on students' performance. *Telematics and Informatics*, *35*(7), 2082–2098. https://doi.org/10.1016/j.tele.2018.07.010

Bekker, T., Bakker, S., Douma, I., van der Poel, J., & Scheltenaar, K. (2015). Teaching children digital literacy through design-based learning with digital toolkits in schools. *International Journal of Child-Computer Interaction*, *5*, 29–38. https://doi.org/10.1016/j.ijcci.2015.12.001

Bervell, B., Nyagorme, P., & Arkorful, V. (2020). LMS-Enabled Blended Learning Use Intentions among Distance Education Tutors: Examining the Mediation Role of Attitude Based on Technology-Related Stimulus-Response Theoretical Framework (TR-SR-TF). *Contemporary Educational Technology*, *12*(2), ep273. https://doi.org/10.30935/cedtech/8317

Delgadova, E. (2015). Reading literacy as one of the most significant academic. *5th International Conference of the Spanish Association of Language and Literature Education*.

Fahmi, F., Syabrina, M., Sulistyowati, S., & Saudah, S. (2020). Strategi Guru Mengenalkan Konsep Dasar Literasi di PAUD Sebagai Persiapan Masuk SD/MI. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, *5*(1), 931–940. https://doi.org/10.31004/obsesi.v5i1.673

Ho, E. S. C., & Lau, K. (2018). Reading engagement and reading literacy performance: effective policy and practices at home and in school. *Journal of Research in Reading*, *41*(4), 657–679. https://doi.org/10.1111/1467-9817.12246

Kurniawan, W., Darmaji, D., Astalini, A., Kurniawan, D. A., Hidayat, M., Kurniawan, N., & Farida, L. Z. N. (2019). Multimedia physics practicum reflective material based on problem solving for science process skills. *International Journal of Evaluation and Research in Education*, *8*(4), 590–595. https://doi.org/10.11591/ijere.v8i4.20258

Ling, V., Sotnikova, L., Rodionova, I., Vasilets, I., Zavjalova, O., Fedorovskaya, V., & Datkova, E. (2020). Online educational resources for students and digital barrier. *TEM Journal*, *9*(1), 373–379. https://doi.org/10.18421/TEM91-51

Nasrulloh, I., & Ismail, A. (2018). ANALISIS KEBUTUHAN PEMBELAJARAN BERBASIS ICT. *Jurnal Pendiidkan Teknologi Informasi Dan Komunikasi (PETIK)*, *3*(1), 28–32. https://doi.org/10.31980/jpetik.v3i1.355

Roemintoyo, R., Nugraheni, C. D., Saputro, I. N., & Budiarto, M. K. (2021). Implementation of Production Based Learning Models in the Workshop Program of Education of Building Engineering Education Sebelas Maret University. *Journal of World Englishes and Educational Practices*, *3*(6), 43–45. https://doi.org/10.32996/jweep.2021.3.5.5

S.Sirate, S. F., & Ramadhana, R. (2017). PENGEMBANGAN MODUL PEMBELAJARAN BERBASIS KETERAMPILAN LITERASI. *Inspiratif Pendidikan*, *6*(2), 316. https://doi.org/10.24252/ip.v6i2.5763

Salim, H. (2019). Penelitian Pendidikan : Metode, Pendekatan, dan Jenis. In *Jakarta: Kencana*.

Shurygin, V., Berestova, A., Litvinova, T., Kolpak, E., & Nureyeva, A. (2021). Universal Models and Platforms in E-Learning. *International Journal of Emerging Technologies in Learning*, *16*(9), 63–75. https://doi.org/10.3991/ijet.v16i09.19697

Simanjuntak, M. P., Hutahaean, J., Marpaung, N., & Ramadhani, D. (2021). Effectiveness of problem-based learning combined with computer simulation on students' problem-solving and creative thinking skills. *International Journal of Instruction*, *14*(3), 519–534. https://doi.org/10.29333/iji.2021.14330a

Suryanti, & Wijayanti, L. (2018). Literasi Digital : Kompetensi Mendesak Di Era Revolusi Industri 4.0. *Jurnal Pendidikan Dasar*. https://doi.org/https://doi.org/10.26740/eds.v2n1.p1-9

Widiyono, A., & Millati, I. (2021). Peran Teknologi Pendidikan dalam Perspektif Merdeka Belajar di Era 4.0. *Journal of Education and Teaching (JET)*, *2*(1), 1–9. https://doi.org/10.51454/jet.v2i1.63

Wijaya, E. Y., Sudjimat, D. A., & Nyoto, A. (2016). Transformasi Pendidikan Abad 21 Sebagai Tuntutan. *Jurnal Pendidikan*, *1*, 263–278.

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