

Requirements Analysis of the Development of Project Based Learning (PJBL)-based Blended Learning Model Assisted by MOOC

Eko Risdianto¹, Rosane Medriati², Parwito³, Iwan Setiawan⁴

¹ Universitas Bengkulu, Bengkulu, Indonesia; eko_risdianto@unib.ac.id

² Universitas Bengkulu, Bengkulu, Indonesia; rosanemedriati@yahoo.com

³ Universitas Ratu Samban, Bengkulu, Indonesia; parwito@fdi.or.id

⁴ Universitas Bengkulu, Bengkulu, Indonesia; iwansetiawan@unib.ac.id

ARTICLE INFO

Keywords:

Blended learning;
MOOC;
PJBL

Article history:

Received 2022-10-18

Revised 2023-01-14

Accepted 2023-03-08

ABSTRACT

The research aims to determine the needs of students for the PJBL-based blended learning model assisted by MOOC at universities. This type of research is survey research. The research was conducted at a university using a purposive sampling technique with a total of 46 student respondents who were representatives of semester 2, 4, 6, and 8 students. The data collection technique used a questionnaire developed from three aspects: the need for the blended learning model, the need for learning using the MOOC system, and the need for project-based learning. The results of this study indicate that students need a PJBL-based blended learning model using the MOOC system in universities. The results of this research can be used as a basis for development related to the MOOC-assisted project-based blended learning model in further research.

This is an open-access article under the [CC BY-NC-SA](#) license.



Corresponding Author:

Eko Risdianto

Universitas Bengkulu, Bengkulu, Indonesia; eko_risdianto@unib.ac.id

1. INTRODUCTION

Currently, the world of education is growing and developing along with advances in technology and information. This development also affects the learning process in both the classroom and the classroom. The learning process takes place in each individual, so it was found that the learning process occurs because of the interaction between people who learn with messages packaged in certain mediums. The message can be in the form of a medium that is only used. It can also be deliberately designed to achieve certain goals. Therefore, learning can happen anytime, anywhere, with anything (Bgur et al., 2018). One of the learning concepts in accordance with these provisions is distance learning. Distance Learning has several types, one of which is a combined online mode (blended learning) (Muzakkir, Wibawa, Astutik, & Muhakkikin, 2018).

Blended Learning (BL) is part of the learning steps in higher education, not only for campus-based programs but also programs designed for distance learning as well as for learning communities and personal practice (Mardikaningsih & Kurniasari, 2019). The basic components of blended learning consist of face-to-face learning and online learning. Face-to-face learning emphasizes the

delivery of teaching materials carried out by lecturers to students in a classroom environment, while online learning is carried out virtually by utilizing technology, information and communication (Muwallidah, Sedyati, & Ani, 2018; Rizki & Daniamiseno, 2019). There are six elements for Blended Learning Planning and Implementation, namely, 1) leadership (Leadership), 2) professional development (Professional Development), 3) teaching (Teaching), 4) operations (Operations), 5) content (Content), and 6.) technology (Technology) (Hamka & Vilmala, 2019).

In an effort to optimize the achievement of learning objectives in practical fields, especially during the pandemic, Blended learning is the right learning solution because this method provides an opportunity to integrate innovation and technology provided in the form of online learning (Rohendi, Ujeng, & Mulyati, 2020).

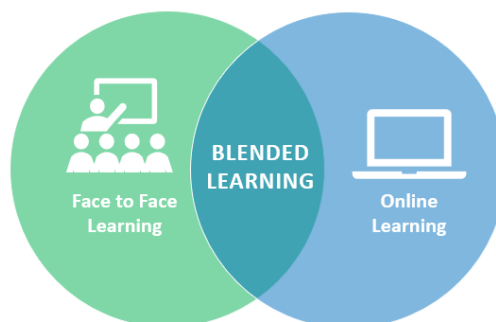


Figure 1. Illustration of Blended Learning

(Wasito, Riswandi, & Herpratiwi, 2022)

During the pandemic, the government has urged universities to implement blended learning and hybrid learning processes. One of these learnings can be done using the PjBL (Project Based Learning) method. Project-Based Learning is a learning approach that provides conditions of positive interdependence between students (Baharuddin & Jumarniati, 2018). Through this model, students can work directly on learning projects according to the material or basic competencies to be taught (Sari, Musthafa, & Yusuf, 2021). The main advantages of this course are self-management, real project completion, working in a supportive environment, and getting students used to work in teams to build their leadership spirit (Sulistiyorini & Anistiyasari, 2020).

The characteristics of the Project-based Learning model include that students are faced with concrete problems, find solutions, and work on projects in teams to overcome these problems (Lailatunnahar, 2021; Lion, Ludang, & Jaya, 2022).

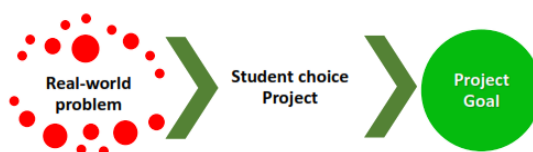


Figure 2. Characteristics of Project-Based Learning Model

Preparing important questions related to a material topic to be studied, creating project plans, creating schedules, monitoring the implementation of project-based learning (PjBL), conducting assessments, and evaluating project-based learning are just some of the six steps necessary for a successful implementation, as stated by The George Lucas Educational Foundation (2005) in (Dinda & Sukma, 2021).



Figure 3. Project-Based Learning Model Steps

The stages of the project-based learning model can be detailed as follows: a) Presentation of Problems, problems are asked in the form of questions. b) Making plans, teachers need to plan competency standards that will be reviewed when discussing problems. c) Compiling schedules, students must make project implementation schedules that are agreed upon with the teacher. Students propose the stages of project work by setting a reference that will be reported at each class meeting so that the project can be completed on time according to the previous plan. d) Monitoring the making of projects, the implementation of student work must be monitored and the process facilitated, at least in two stages carried out by students (Checkpoint). Teachers need to mentor the implementation of the process, and provide rubrics and instructions on what to do for each learning content. e) Conducting assessments, assessments are carried out authentically and teachers need to vary the types of assessments used. Project appraisal assesses a task that must be completed within a certain period of time. f) Evaluation is intended to provide opportunities for students to reflect on learning carried out individually and in groups (Negara, 2020).

According to Thomas in (Candra, Elfizon, & Islami, 2019; Eliza, Syamsuarnis, Myori, & Hamdani, 2017), Project-based learning (PjBL) has several principles, which can be seen in the following figure.



Figure 4. Principles of Project Based Learning Model

The principle of centrality argues that project work incorporates the essence of the curriculum, where students learn the essential concepts of knowledge through project work. The notion of driving/guiding questions, essentially project work that focuses on “questions/problems” that might help students to absorb the main concepts or principles of a given discipline. The idea of constructive research is a process that leads to achieving goals, involving inquiry, concept formulation and resolution. The principle of autonomy is described as the freedom of students in carrying out the learning process, meaning being free to make their own decisions, and being responsible. The principle of realistic (realism) suggests that the project is a real product, not as in school.

Implementing online learning in the PjBL-based blended learning model can be done through the Massive Open Online Courses (MOOCs) system. MOOCs are an alternative model of distance learning (Utomo & Rosmansyah, 2020). MOOCs are one of the latest platforms at the higher education level, especially when the government orders learning at home due to the transmission of the Covid-19 pandemic (Awang, Ghani, Muhammad, Bakar, & Sulaiman, 2021). MOOCs are also said to be a form of technological innovation in the world of education today that brings fundamental changes in the method of studying (Syifa, 2022). The positive side of the existence of MOOCs is viewed from the provider aspect, namely: (a) online lectures are individual, provided for anyone with the aim of learning; (b) MOOCs platforms have been widely used, for example, EdX, Coursera, Udacity, Future Learn and so on; (c) the provider or producer of MOOCs learning materials is a university or organization (Mardina, 2018).

Based on the description above, the researchers conducted a study with the aim of knowing student responses regarding their needs to the PjBL-based blended learning model using the MOOCs system in universities.

2. METHODS

This type of research is survey research. The research was conducted at a university with a research sample of 46 students who were representatives of semester 2, 4, 6, and 8 students. The data collection technique used a questionnaire which was developed from three aspects, namely the need for a blended learning model consisting of 6 statement items, needs to learn using the MOOC system which consists of 11 statement items, and the need for project-based learning which consists of 8 statement items. The statement developed is a positive statement with a modified Likert Scale with 4 answer choices, namely strongly agree, agree, disagree, and strongly disagree.

3. FINDINGS AND DISCUSSION

This research was conducted by distributing questionnaires to 46 students who were representatives of university students semesters 2, 4, 6, and 8 at a university. The questionnaire consists of 25 statements whose results can be seen in the following table.

Table 1. Results of Filling Out Needs Questionnaires by Students

Item Number	Number of Respondents who Answered in Each Answer Category			
	Strongly agree	Agree	Disagree	Strongly Disagree
1.	56.5%	30.4%	8.7%	4.3%
2.	52.2%	32.6%	13%	2.2%
3.	45.7%	50%	4.3%	0
4.	71.7%	21.7%	6.5%	0
5.	37%	30.4%	17.4%	15.2%
6.	71.7%	23.9%	4.3%	0
7.	58.7%	32.6%	8.7%	0
8.	60.9%	30.4%	4.3%	4.3%
9.	54.3%	39.1%	4.3%	2.2%
10.	58.7%	39.1%	2.2%	0
11.	56.5%	43.5	0	0
12.	73.9%	21.7%	4.3%	0
13.	45.7%	30.4%	15.2%	8.7%
14.	63%	37%	0	0
15.	69.6%	26.1%	4.3%	0
16.	54.3%	32.6%	6.5%	6.5%
17.	63%	21.7%	13%	2.2%
18.	39.1%	45.7%	10.9%	4.3%
19.	63%	34.8%	0	2.2%
20.	50%	43.5%	6.5%	0
21.	58.7%	34.8%	4.3%	2.2%
22.	50%	30.4%	13%	6.5%
23.	47.8%	37%	13%	2.2%
24.	60.9%	30.4%	6.5%	2.2%
25.	60.9%	32.6%	2.2%	4.3%

From the table above, it can be seen that all statement items contained in the student needs questionnaire obtained the largest percentage of strongly agree answers. In graphical form, it can be seen in the following figure.

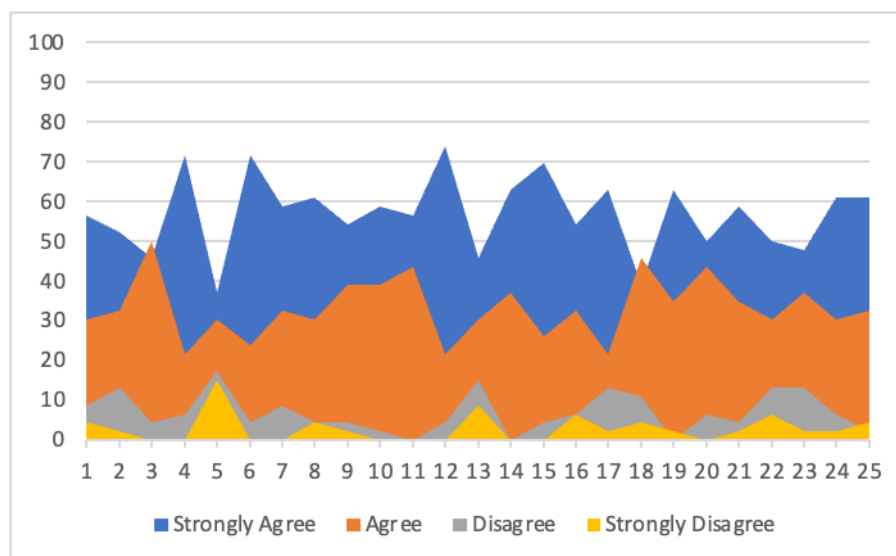


Figure 5. Graph of the Results of Filling Out Needs Questionnaires by Students

From figure 5 above, it can be seen that the blue field, which symbolizes the strongly agree category and the orange field which symbolizes the agree category is much wider than the gray or yellow field which is a symbol of the disagree and strongly disagree categories. This means that the majority of students in the category strongly agree or agree with the development PjBL-based blended learning model using the MOOC system in universities.

Student needs for the blended learning model are elaborated upon as follows: students prefer learning where the material is presented online and then discussed face-to-face; students prefer internet-based learning coupled with conventional learning; students desire learning that can be accessed both online and offline; students prefer learning that they can do independently through an online system, with the questions that arise later to be discussed through facsimile; and students prefer learning that can be accessed both online and offline. Students also feel that they show greater discipline while completing assignments and evaluations given by lecturers in the form of a programmed learning system followed by face-to-face (traditional) discussion.

In the aspect of the need for project-based learning, it is stated that students like learning whose activities lead to producing a product that it is easier to remember. In project-based learning, students will find it easier to understand the work structure if it is explained through videos and students also prefer that group discussion activities are carried out directly in class. In terms of the characteristics of project-based learning, it is stated that students want learning that starts with essential questions or basic questions, students want learning that can help them design project plans, students want learning that can help them make a schedule or timeline for completing a project, students want learning where there is someone who monitors the progress of their project, and students want learning that can help them reflect or evaluate the investigation and its processes.

It has been argued that students are more motivated to learn content that is presented sequentially or structured, that students prefer learning environments where they can monitor their own learning progress, and that students prefer learning where they can use electronic devices like computers and cell phones to access the content at any time and from any location. Based on their responses to these three questions, students clearly indicate a desire for a PjBL-based blended learning approach utilising the MOOC system in higher education.

The project-based learning-based blended learning model is also called the project-based blended learning model, where the learning orientation emphasizes projects given to students through virtual (online) learning combined with theory conveyed during face-to-face learning

(Hasyim, 2020). The application of the Project Based Learning (PJBL) model is one of the priority programs in the current Merdeka Curriculum. With the development of the times and the acceleration of digitalization due to the pandemic, currently, the implementation of PJBL can be combined with Blended Learning to create a Project Based Blended Learning (PJB2L) model.

Based on the results of a study conducted by Fahlevi (2022), the PJB2L Model is ideal for application to lectures, especially if it is designed to provide opportunities to learn to write scientific papers in the form of reports and posters. However, there are still a number of things that must be considered, such as the individual attitude of students which also often hinders communication between group members, then the wide variety of activities in some students because they are often involved in campus activities, internal and external organizations, and the presence of students who are studying chilli works.

Currently, there is a trending learning media that can accommodate the application of the blended learning model, namely Massive Open Online Courses (MOOC) (Jordan, 2014; Sumarsono, 2021). The advantages of MOOC are being able to use a data cloud framework, flexibility, easy to access, unlimited number of participants, user-focused learning, and use according to user needs (Darmi et al., 2022). In addition, the advantage of MOOC is that they are also equipped with interactive forums that make it easier for the community to interact between students and their instructors, professors or assistant professors. Realizing conditions like this, universities should immediately improve, perfecting the higher education system from upstream to downstream is an alternative to answering the challenges of the times (Hapsari, 2019).

The discussion above certainly supports the results of the research that a project-based learning-assisted blended learning model is indeed needed. The results of this research can be used as a basis for development related to the MOOC-assisted project-based blended learning model in further research.

4. CONCLUSION

The research was carried out by collecting questionnaire data filled in by 46 respondents who were 2nd, 4th, 6th and 8th-semester students from a university. The results of the study show that students need a PJBL-based blended learning model using the MOOCs system in tertiary institutions. However, this research still has drawbacks, namely the research sample taken is too narrow, namely only from one university. Similar research can be done by taking a wider research sample. However, the results of this study can still be used as a basis for the development of further research.

REFERENCES

- Awang, A., Ghani, R. A., Muhammad, F. safura, Bakar, R. A., & Sulaiman, N. H. (2021). An Analysis Student Acceptance of Islamic Education through Interactive MOOC Learning during Covid-19 Pandemic. *BITARA International Journal of Civilizational Studies and Human Sciences*, 4(4), 1–14.
- Baharuddin, M. R., & Jumarniati, J. (2018). Pola Interaksi Belajar Matematika Siswa Berkemampuan Awal Rendah dalam Pembelajaran Berbasis Proyek. *Al-Khwarizmi: Jurnal Pendidikan Matematika Dan Ilmu Pengetahuan Alam*, 6(2), 149–156. <https://doi.org/10.24256/jpmipa.v6i2.316>
- Banggur, M. D. V., Situmorang, R., & Rusmono, R. (2018). Pengembangan Pembelajaran Berbasis Blended Learning Pada Mata Pelajaran Etimologi Multimedia. *JTP - Jurnal Teknologi Pendidikan*, 20(2), 152–165. <https://doi.org/10.21009/jtp.v20i2.8629>
- Candra, O., Elfizon, & Islami, S. (2019). Efektivitas Project based Learning pada Mata Kuliah Praktek Instalasi Listrik Industri. *JUPITER (Jurnal Pendidikan Teknik Elektro)*, 4(2), 19–24.
- Darmi, T., Anwar, F., & Mujtahid, I. M. (2022). Akselerasi pengembangan pembelajaran jarak jauh untuk mahasiswa. *BEMAS: Jurnal Bermasyarakat*, 3(1), 59–64. <https://doi.org/10.37373/bemas.v3i1.255>
- Dinda, N. U., & Sukma, E. (2021). Analisis Langkah-Langkah Model Project Based Learning (PjBL)

- Pada Pembelajaran Tematik Terpadu di Sekolah Dasar Menurut Pandangan Para Ahli (Studi Literatur). *Journal of Basic Education Studies*, 4(2), 44–62.
- Eliza, F., Syamsuarnis, S., Myori, D. E., & Hamdani, H. (2017). Project Based Learning in Lighting Instalations for Simple Buildings Course. *INVOTEK: Jurnal Inovasi Vokasional Dan Teknologi*, 17(1), 1–10. <https://doi.org/10.24036/invotek.v17i1.13>
- Fahlevi, M. R. (2022). Kajian Project Based Blended Learning Sebagai Model Pembelajaran Pasca Pandemi dan Bentuk Implementasi Kurikulum Merdeka. *Jurnal Sustainable*, 5(2), 230–249.
- Hamka, D., & Vilmala, B. K. (2019). Pengembangan Perangkat Pembelajaran Blended Learning Melalui Aplikasi Google Classroom Untuk Peningkatan Kemandirian Belajar Mahasiswa. *Journal of Education Informatic Technology and Science (JeITS)*, 1(2), 145–154.
- Hapsari, D. (2019). Tantangan Perpustakaan Perguruan Tinggi di Era Disrupsi. *Jurnal Pustakaloka*, 11(1), 151–160. <https://doi.org/10.21154/pustakaloka.v11i1.1599>
- Hasyim, M. (2020). Pengembangan Multimedia Pembelajaran Statistika Berbasis ICT dengan Model Blended Project Based Learning. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, 4(2), 1083–1097. <https://doi.org/10.31004/cendekia.v4i2.339>
- Jordan, K. (2014). Initial trends in enrolment and completion of massive open online courses Massive Open Online Courses. *International Review of Research in Open and Distance Learning*, 15(1), 133–160.
- Lailatunnahar, T. (2021). Penerapan Metode Pembelajaran Project Based Learning Guna Meningkatkan Hasil Belajar IPA di Masa Pandemi Covid 19 pada Siswa Kelas VII.1 di SMP Negeri Binaan Khusus Kota Dumai. *Jurnal Pendidikan Tambusai*, 5(1), 1084–1094.
- Lion, E., Ludang, Y., & Jaya, H. P. (2022). Edukasi Penerapan Pembelajaran Project Based Learning Untuk Meningkatkan Hasil Belajar Di Masa Pandemi Covid-19 Desa Telangkah. *Jurnal Pengabdian Kepada Masyarakat*, 2(1), 3635–3642.
- Mardikaningsih, A., & Kurniasari, P. (2019). Pengembangan Model Pembelajaran Blended Learning (Synchronous vs Asynchronous) Pendidikan Jasmani Kesehatan Dan Rekreasi. *Madrosatuna: Journal of Islamic Elementary School*, 3(1), 27–36. <https://doi.org/10.21070/madrosatuna.v3i1.1997>
- Mardina, R. (2018). Artikel Inovasi Perpustakaan Melalui Moocs : Peluang Pustakawan Embedded Di Era Industri 4 . 0. *Jurnal Perpustakaan Universitas Airlangga*, 8(1), 1–7.
- Muwallidah, M., Sedyati, R. N., & Ani, H. M. (2018). Pengembangan Model Pembelajaran Blended Learning Pada Mata Pelajaran Ekonomi Kd Sistem Dan Alat Pembayaran Kelas X Ips Di Sman 2 Jember Tahun Pelajaran 2016/2017. *Jurnal Pendidikan Ekonomi: Jurnal Ilmiah Ilmu Pendidikan, Ilmu Ekonomi Dan Ilmu Sosial*, 11(2), 140. <https://doi.org/10.19184/jpe.v11i2.6461>
- Muzakkir, M., Wibawa, R., Astutik, F., & Muhakkikin, M. (2018). Pengembangan Perangkat Model Blended Learning untuk Meningkatkan Efektivitas Penerapan Pendidikan Jarak Jauh di SMKN 2 Gerung. *Jurnal Kependidikan: Jurnal Hasil Penelitian Dan Kajian Kepustakaan Di Bidang Pendidikan, Pengajaran Dan Pembelajaran*, 4(2). <https://doi.org/10.33394/jk.v4i2.1126>
- Negara, I. M. A. D. (2020). Penerapan Model Pembelajaran Berbasis Proyek Dapat Meningkatkan Hasil Belajar Teknik Pengambilan Gambar Siswa Kelas XII MM 1 SMK N 1 MAS UBUD Semester Ganjil Tahun Pelajaran 2017/2018. *Jurnal Widyadari*, 21(1), 81–91. <https://doi.org/10.5281/zenodo.3742515>
- Rizki, G. A. F., & Daniamiseno, A. G. (2019). Pengembangan model blended learning dengan pendekatan cooperative mata kuliah ilmu lingkungan. *Jurnal Inovasi Teknologi Pendidikan*, 6(1), 42–55. <https://doi.org/10.21831/jitp.v6i1.15560>
- Rohendi, H., Ujeng, U., & Mulyati, L. (2020). Pengembangan Model Blended Learning Dalam Meningkatkan Learning Outcome Mahasiswa Di Lahan Praktik Klinik Keperawatan. *Jurnal Ilmu Kesehatan Bhakti Husada: Health Sciences Journal*, 11(2), 336–350. <https://doi.org/10.34305/jikbh.v11i2.205>
- Sari, R. A., Musthafa, B., & Yusuf, F. N. (2021). Persepsi Guru terhadap Pembelajaran Berbasis Proyek di Sekolah Menengah Kejuruan. *Jurnal Penelitian Pendidikan*, 21(2), 1–11.

- <https://doi.org/10.17509/jpp.v21i2.36972>
- Sulistiyorini, L., & Anistyasari, Y. (2020). Studi Literatur Analisis Kelebihan dan Kekurangan LMS Terhadap Pembelajaran Berbasis Proyek pada Mata Pelajaran Pemrograman Web di SMK. *IT-Edu: Jurnal Information Technology and Education*, 5(01), 171–181.
- Sumarsono, S. (2021). Peran Massive Open Online Courses dalam Pendidikan Agama Islam di era digital. *Ta'dibuna: Jurnal Pendidikan Islam*, 10(1), 28–44. <https://doi.org/10.32832/tadibuna.v10i1.3451>
- Syifa, I. W. (2022). Solusi Pendidikan Islam terhadap aspek-aspek problematis pada MOOCs. *Ta'dibuna: Jurnal Pendidikan Islam*, 11(1), 20–34. <https://doi.org/10.32832/tadibuna.v11i1.6276>
- Utomo, R. G., & Rosmansyah, Y. (2020). Framework untuk Mendesain Sistem Massive Open Online Courses (MOOCs) untuk Universitas di Indonesia. *Edsence: Jurnal Pendidikan Multimedia*, 2(2), 65–74. <https://doi.org/10.17509/edsence.v2i2.29776>
- Wasito, N., Riswandi, & Herpratiwi. (2022). Pengembangan Model Diklat Blended Learning Untuk Peningkatan Kompetensi Pengelolaan PAUD di Balai Pengembangan PAUD Dan. *Jurnal Wacana Akademika: Majalah Ilmiah Kependidikan*, 6(20), 49–58.