



The Development of Electronic Problem Based Learning (E-PBL) Method in Entrepreneurship Course

Munawaroh^(✉), Nanik Sri Setyani, and Lina Susilowati

STKIP PGRI Jombang, Jombang, Indonesia
munawarohw@yahoo.co.id

Abstract. The purpose of this research was to develop a CTL learning approach based on the electronic problem-based learning (E-PBL) method for students of the Economic Education Department of STKIP PGRI Jombang, which can improve students' motivation, life skills, and problem-solving abilities. This study was designed as a research and development study which was conducted in 4 phases, i.e., phases including define, design, develop and disseminate. This design also involved the experts to validate the development of an entrepreneurial learning approach through E-PBL to generate input for the production of entrepreneurship textbooks. The research instrument used to collect the data were an observation form, a test, and a questionnaire. The subjects were students of the Economic Education department STKIP PGRI Jombang, and the data analysis techniques employed an exploratory descriptive analysis. The findings showed that the evaluation from the experts of the entrepreneur course and the learning design expert teams was proper to be implemented in teaching and learning entrepreneurship course. The findings of the development of entrepreneurship learning by implementing a contextual learning approach through the E-PBL method will shape the entrepreneurial attitude and soft skill competence of students in problem-solving abilities in entrepreneurship courses.

Keywords: Entrepreneurship Courses · Contextual Teaching Learning Approach · Electronic-Problem Based Learning Method

1 Introduction

In the 21st century, in the age of Industry 4.0, Society 5.0, entrepreneurship is a much-needed skill given the limited support of natural resources for the well-being of a growing and competitive world population. A well-educated and refined entrepreneurial spirit from an early age will be able to generate innovative human resources capable of liberating the nation and the nation from its dependence on natural resources.

An entrepreneurial An entrepreneurial of Merdeka Belajar Kampus Merdeka (MBKM-Independent Learning Independent Campus) possesses the following skills: entrepreneurial independent learning independent campus accomplishments include (1) technical abilities which create goods, services, or information; (2) conceptual abilities which develop goals, policies, and business strategies; (3) management capabilities

which perform functions such as planning, organizing, mobilizing, and monitoring to ensure that functions run smoothly; and (4) Interpersonal abilities which communicate and negotiate, as well as establish, maintain, and develop interpersonal relationships [1].

According to the 2018 Global Entrepreneurship Index (GEI), Indonesia only received 21% of entrepreneurs from all fields of work or ranked 94th out of 137 countries surveyed. Meanwhile, 69.1% of millennials in Indonesia were interested in entrepreneurship, according to a 2019 study by the IDN Institute. Unfortunately, the entrepreneurial potential of millennials has not been properly managed. The Merdeka Belajar Kampus Merdeka (MBKM-Independent Learning Independent Campus) is a type of learning in higher education that is autonomous and flexible to foster an innovative, unfettered, and student-centered learning culture [1]. By exchanging ideas in this discussion, lecturers can be effectively inspired to innovate and work together to create enjoyable learning environments (Enjoyable Learning) using contextual teaching and learning techniques. Giving entrepreneurship classes in colleges aims to give college graduates more value so they can start their enterprises or become young entrepreneurs once they finish their studies. CTL is an effective method for teaching entrepreneurship courses because it encourages students to actively learn in the real world by making connections between what they are learning and what they are experiencing in real life [2, 3].

This study is supported by [4] research on the importance of motivation in learning, which demonstrates that past performance, motivation, and future success are all strongly correlated. The achievement of students in learning foreign languages and all other aspects of global primary school competence is highly correlated with motivation [5].

In a study, according to [6] on the relationship between pedagogical influence, student interest, and learning achievement, it was found that students' perceptions of their learning are directly influenced by their interests, pedagogical influence, and learning performance, as well as indirectly by their interactions with their instructors, the instructors' responsiveness to them, the course is organized through their preferences and their learning achievement.

Entrepreneurship education will be more interesting, understandable, and motivating for students to pursue when proper methods and media are used. One way to do this is by using the Electronic Problem-based Learning (E-PBL) technique. This is carried out because the Electronic E-PBL knowledge and abilities, including problem-solving [7].

E-PBL approach aimed to provide students with the knowledge and abilities required for the profession, as well as the capacity to continuously develop the skills required to tackle brand-new problems and difficulties [8]. To increase students' motivation and problem-solving abilities enrolled in the Economic Education department of STKIP PGRI Jombang's entrepreneurship courses, the problem in this study is to create a learning model using the E-PBL (Electronic Problem Based Learning) method and the CTL (contextual teaching and learning) approach.

2 Methods

This study mixed research and development with classroom action research.

2.1 Stages of Teaching Materials Development

This study employs a 4-d model (four-d model) for the development of teaching materials, which consists of four stages: defining, planning, developing and disseminating [9]. The following are the stages:

- a. Stage I: Defining means determining and defining teaching needs some steps of analytical activities, culminating in the establishment of learning objectives
- b. Stage II: Design, Specifically, the concept of prototypes of instructional materials. Formats and media for teaching and production materials are chosen. The syllabus, lesson plans, and teaching material modules are all part of the design of teaching materials.
- c. Stage III: Development. Based on the reviewers' feedback, the development stage aims to produce draft I of the revised learning device. Draft II was created after the learning tools were revised based on the reviewers' feedback. Next, conduct a small group trial of 5–10 students to gather feedback and assess the reliability of the instrument used to produce draft III. In-class testing of teaching materials (draft III). Revisions were made based on the data and input from the class trials, resulting in draft IV or the final manuscript. The data collected during the trial in class was then analyzed and used to create reports.
- d. Stage IV: Dissemination. The dissemination stage is where the final products are spread and promoted.

2.2 Research Subject

The subjects of this study were taken from students of the Economic Education department at STKIP PGRI Jombang. The number of this research subject was 50 students who were taking an entrepreneurship course.

2.3 Research Instruments

The research used were an observation sheet of the implementation of learning in class, an observation sheet for student activities in class and tests (written and practical tests, and assignments), and students' responses.

2.4 Data Analysis

In this study, the data obtained were collected and analyzed according to the type of data, including: Content Analysis.

Qualitative data were obtained from the results of the study of entrepreneurship experts, and development design experts, and through a series of trials were analyzed using content analysis techniques in the form of input, feedback, analytical, and suggestions for improvement in groups. The results of this analysis are then used as a basis for revising the development product. Descriptive Statistic Analysis:

Table 1. Likert Scale

Score	Explanation
1	Very Poor
2	Poor
3	Moderate
4	Good
5	Very Good

2.4.1 Data Analysis of Observing Sheet in the Implementation of Learning Using the Electronic Problem Based Learning Method (E-PBL)

The following table contains data on the implementation of the learning method using Electronic Problem Based Learning (E-PBL) that were analyzed using the Likert scale (Table 1).

The data obtained were analyzed per question item and overall questions based on [10], each of which was processed in the form of an average score:

$$\text{The average score of certain items} = \frac{\sum \text{The average score of certain items}}{\sum \text{Observer}}$$

While the calculation of the success of the implementation of learning using the formula based on [10].

$$\text{The average score of items} = \frac{\sum \text{The average score of an items}}{\sum \text{items}}$$

2.4.2 Students' Activity Data Analysis

The data obtained were analyzed per question item and overall questions, each of which was processed in the form of an average score based on the formula of [11]:

$$\text{The average score of certain items} = \frac{\sum \text{The average score of a certain items}}{\sum \text{Observer}}$$

Based on the result of the activation criteria

$$\text{The average score of certain items} = \frac{\sum \text{The average score of certain items}}{\sum \text{items}}$$

2.4.3 The Analysis of the Learning Outcome Assessment Sheet with the Electronic Problem Based Learning (E-PBL) Method

Analysis of the achievement of learning indicators on each task through the average value of students is analyzed according to [12, 13]. The following calculations:

$$\text{Students' Average Score} = \frac{\sum \text{Students' scores}}{\sum \text{Students}}$$

Table 2. Interpretation of Percentage of Grades and Student Responses [14, 15]

No	Percentage	Category
1	0%–20%	Very Poor
2	21%–40%	Poor
3	41%–60%	Moderate
4	61%–80%	Good
5	81%–100%	Very Good

The data analysis technique employed was intended to ascertain the overall worth of student entrepreneurship course learning outcomes. The percentage of the student's score by the written test, performance, and assessment rubric was calculated. Lecturers evaluated students using benchmark criteria, which indicated whether students have achieved the expected competence in the form of a percentage (percentage) of achievement or the 0–100 Competency Standard. Performance-based scoring is used, with predetermined scoring criteria. The students achieve a minimum grade of C, which is at least 60 if the following calculations are used:

$$\text{Student achievement score} = \frac{\sum \text{achievement score} \times 100\%}{\sum \text{The maximum score that can be achieved}}$$

2.4.4 Students' Response Data Analysis

The data was analyzed by gathering the questionnaire results and converting them from the frequency value form to the percentage form using the formula below, according to, as the following:

$$P = \frac{f \times 100\%}{n}$$

Explanation

P = Percentage of respondents' answers

f = Number of respondents' answers

n = Number of respondents.

The interpretation of the percentage of student scores and responses is shown in Table 2.

3 Findings and Discussion

The following data analysis results are presented: 1) Learning implementation using the Electronic Problem Based Learning (E-PBL) method, 2) Student Learning Activities Using the Electronic Problem Based Learning (E-PBL) Method 3) Student Evaluations of the Entrepreneurship Lecture, 4) Overall evaluation and standard of student learning completion, 5). Questionnaire for Student Response to the Application of Electronic Problem Based Learning (E-PBL) Method Assessment.

3.1 The Implementation of Entrepreneurial Learning by Applying the Electronic Problem Based Learning (E-PBL) Method

Based on the findings of the preliminary phase observations, which include (1) perception (the lecturer asks, “Do students understand WEB-based learning?”) (2) The lecturer alignment shows pictures related to WEB-based electronic material for problem-based learning (3) (Gives examples of the advantages of using the E-PBL model to study entrepreneurship content.) as well as providing references: (4) Material Outline for the principles of entrepreneurship (5) Groups of lecturers are formed. (6) Lecturers from tutors show an average score of 4.1 on meeting I, 4.3 on meeting II, 4.4 on meeting III, and 4.6 on meeting IV, indicating good criteria.

Stages of main activities include 1. Submission of problems, specifically: 1. Lecturers express problems about Taking Risks in Entrepreneurship (observing); 2. Lecturers convey problems about Attempts to Minimize Risk; or 3. Lecturers transmit problems about Risk Management in Entrepreneurship. (observer), 2. Investigation, in which (1) lecturers encourage students to carry out inquiries and (2) students are encouraged to ponder issues to reduce risk or practice risk management (questioning), 3. Problem clarification, which involves helping groups of students search for potential issues that can develop (by gathering information), 4 Problem identification Students list the issues that have been identified (looking for information), Students in groups examine problem-solving techniques related to efforts to avoid/minimize risk or risk management in the fifth diagnostic discussion (associate), 6. Students seek sources as a source of information about problem-solving (associating) to make a decision., 7 Production, consisting of (1) Students make final judgments as issue solvers on Attempts to avoid or minimize risk (communicate), (2) Students document solutions to problems that have been identified (communicate), Presentations: Students use presentations to communicate ideas about issue solving that they have discovered (communicating), Each student creates a schema, which is a summary of their learning outcomes, for each of the nine concept maps (communicating), 10 assessments, including peer evaluations by students, yielded average scores of 4.2, meeting I criteria of 4.3, meeting III requirements of 4.7, and meeting IV criteria of 4.8, all of which are satisfactory.

Closing activities include (1) concluding with students about efforts to reduce risk in entrepreneurship. (2) Providing reading assignments on how to start a business with minimal risk. (3) When the post-test was administered, the average score at the first meeting was 4, the second meeting was 4.3, the third meeting was 4.7, and the fourth meeting was 4.8, all of which indicated a good category. The average score for all activity items from the implementation of learning activities using EPB for four meetings is 4.4, indicating that they are in a good category.

3.2 Student Activities in Learning by Applying the Electronic Problem Based Learning (E-PBL) Method

The average student performance in using the Electronic Problem Based Learning (E-PBL) method to analyze business opportunities for processing vegetable and animal materials into regional specialties The first meeting had a score of 4.1, the second had a score of 4.2, the third had a score of 4.6, and the fourth had a score of 4.7. From the first to the fourth meeting, it was in the satisfactory category.

3.3 Entrepreneurship Course Student Value Scores, and Overall Grades and Standards of Student Study Completeness

The average value in entrepreneurship courses has increased for four meetings, as shown in the first meeting, where the average entrepreneurial value is 80.27, the second meeting, where the average entrepreneurial value is 82.27, and the third meeting, where the average entrepreneurial value is 83.47, and the fourth meeting, where the average entrepreneurial value is 85.67. Aside from the average value, the student's learning completeness is also visible. According to the STKIP PGRI Jombang Academic Manual, students who pass or do not repeat the course with a minimum grade of C or 60 are considered to have passed. From the first to the fourth meeting, all students received a score greater than 60, indicating that learning outcomes obtained through the use of the Electronic Problem Method Based Learning (E-PBL) met the standard of student learning completeness established by the STKIP PGRI Jombang Academic Manual Book.

3.4 Student Response Questionnaire on the Application of Electronic Problem Based Learning (E-PBL) Assessment Methods

The Electronic Problem Based Learning (E-PBL) method is new to me, and it shows that 50% of students strongly agree, 40% agree, and 10% are undecided (N). According to student responses to a questionnaire, compiling a problem regarding techniques in finding business opportunities for regional specialties in the local environment is a valuable experience; 20% strongly agree, 70% strongly agree, and 10% are undecided (N). According to the questionnaire compiling problems regarding techniques in finding business opportunities for regional specialties in the local environment did not increase the learning burden by 20% strongly agreed, 60% agreed, 10% hesitated (N), and 10% disagreed. Questionnaire responses that summarize problems concerning techniques in finding business opportunities for regional specialties in the local environment are well prepared, with 50% strongly agreeing and 40% agreeing because summarizing problems concerning techniques in finding business opportunities for regional specialties in the local environment motivates students to be more creative at work and the remaining 10% disagree.

Assignment compilation using the Electronic Problem Based Learning (E-PBL) method necessitates clear instructions and criteria to achieve a response rate of 30% strongly agree, 60% agree, and 10% disagree. According to the response questionnaire, discussing problem-solving strategies for business opportunities for regional specialties and techniques for finding business opportunities for regional specialties in the local environment is very useful; 30% of students strongly agree, 60% agree, and 10% are undecided (N). Students making presentations to convey ideas about solving problems that have been found are fun and useful for students, with 30% strongly agreeing and 70% agreeing.

This is also supported by 40% strongly agreeing and 60% agreeing with the assessment by colleagues on the presentation and 60% strongly agreeing with the problem of analyzing business opportunities for the processing plant and animal materials into regional specialties, students believe they get an opportunity to show creativity in making the management of plant and animal ingredients into special regional food.

All components of the assessment results of the product development of the Electronic Problem Based Learning (E-PBL) learning model in the entrepreneurship course are categorized as good and feasible to use based on expert analysis of experimental data.

4 Conclusion

Based on the findings of the study we previously mentioned, it can be said that (1) innovation has a favourable and significant impact on company performance in MSMEs in South Sulawesi Province, and (2) promotion has a favourable and considerable impact on the business performance of MSMEs in South Sulawesi Province. (3) innovation and marketing also have a significant impact on this performance.

MSMEs and stakeholders in South Sulawesi Province should continuously innovate their products by boosting added value in existing products and creating new products since these are two variables that can increase MSME company performance. Promotion is equally crucial for MSMEs, so more must be done to spread awareness of MSME products. The government offers MSMEs a venue for product promotion in their local areas so that MSMEs can access the market.

5 Conclusion

The results of the development of entrepreneurship learning methods using the Electronic Problem Based Learning (E-PBL) method are suitable for use and will be further developed based on the findings of an analysis of student and lecturer needs, written and practical tests, learning objectives, and learning materials components. The product components of the development of entrepreneurship learning methods through the Electronic Problem Based Learning (E-PBL) method, which have been tested through four stages and revisions, for Subject Lecturers, Learning Design Experts, with an average good assessment.

The finding of the development of entrepreneurship learning through the Electronic Problem Based Learning (E-PBL) method will shape the entrepreneurial attitude and soft skill competence of students in the problem-solving abilities of students in an entrepreneurship course.

Acknowledgments. We want to thank the Institute of Technology and Business of Nobel Indonesia for supporting the author through financial or administrative assistance so that the author can complete the research.

References

1. Buku Panduan Merdeka Belajar - Kampus Merdeka. (2020). *Direktorat Jenderal Pendidikan Tinggi Kemdikbud RI*.
2. Yusyac, B., Muslem, R., & Yasin, A. (2021). Using contextual teaching and learning (CTL) approach to improve students' speaking ability. *English Education Journal*, 12(3), 460–476. <https://doi.org/10.24815/eej.v12i3.19189>

3. Lotulung, H., Ibrahim, C. F., Tumurang, N. (2018). Effectiveness of learning method contextual teaching learning (CTL) for increasing learning outcomes of entrepreneurship education. *Turkish Online Educational Technology Journal - TOJET*, 17(3), 37–46. <https://eric.ed.gov/?id=EJ1184198>
4. Cao, Q., & Meng, C. (2020). Exploring personality traits as predictors of English achievement and global competence among Chinese university students: English learning motivation as the moderator. *Learning Individual Differences Journal*, 5(4), 77–87. <https://doi.org/10.1016/j.lindif.2019.101814>
5. Hu, S., McGeown, X. (2020). Exploring the relationship between Foreign language motivation and achievement among primary school students learning English in China. *System*. <https://doi.org/10.1016/j.system.2020.102199>
6. Hendarwati, N., Nurlaela, E., Bachri, L., Sa'ida, B. S. (2021). Collaborative problem based learning integrated with online learning. *International Journal Emerging Technologies in Learning*, 16(13), 29–39. <https://doi.org/10.3991/ijet.v16i13.24159>
7. Haley, B., Brown, C. M. (2021). Adapting problem based learning curricula to a virtual environment. *Journal of Dental Education*, 1(2), 122–132. <https://doi.org/10.1002/jdd.12189>
8. Iwu, O. A., Opute, C. G., Nchu, P. A., Eresia-Eke, R., Tengeh, C., Jaiyeoba, R. K., & Aliyu, O. (2021). Entrepreneurship education, curriculum and lecturer-competency as antecedents of student entrepreneurial intention. *The International Journal of Management Education*, 19(1), 100. <https://doi.org/10.1016/j.ijme.2019.03.007>
9. Marra, E. (2014). Why problem-based learning works: Theoretical foundations. *Journal of Excellence in College Teaching*, 25(3), 221–238.
10. Abdul Kadir, Z. (2016). Does problem-based learning improve problem solving skills?—A study among business undergraduates at Malaysian premier technical university. *International Education Studies*, 9(5), 166.
11. Creswell, J. W. (2013). *Research design: qualitative, quantitative, and mixed methods approaches*. Sage Publications.
12. Creswell, J. W. (2013). *A concise introduction to mixed methods research*. Sage Publications.
13. Mistry, N., Chetty, K., Gurung, N. C., Levell, P. (2020). Digital problem-based learning: An innovative and efficient method of teaching medicine. *Journal of Medical Education and Curricular Development* 6, 1–10.
14. Schaufeli, W. B., Maslach, C., & Marek, T. (2017). *Professional burnout: Recent developments in theory and research*. Taylor & Francis.
15. Sugiyono. (2018). *Metode Penelitian Kuantitatif Kualitatif, dan R&D*. Alfabeta.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

