Development of Entrepreneurship Module Based on Project-Based Learning (PjBL) to Improve Problem-Solving Ability in Entrepreneurship

Lessa Roesdiana(✉) and Nita Hidayati

Mathematics Education Program, FKIP, Universitas Singaperbangsa Karawang, Karawang, Indonesia
lessa.roesdiana@fkip.unsika.ac.id

Abstract. This study aims to develop an entrepreneurship module based on project-based learning (PjBL) to improve problem-solving skills in entrepreneurship so that students can learn how to solve problems experienced by entrepreneurs. The design used in this study is a research and development model for developing a PjBL-based entrepreneurship module for students in learning materials. The product development component was validated by material experts and module design experts and tested on students. The results of this study are that the validity of the material is excellent, the validity of the module design is good, the practicality of the module is excellent, and it has a significant positive effect on problem-solving abilities of students in entrepreneurship. Thus, the PjBL-based entrepreneurship module is valid, practical, and effective in learning.

Keywords: PjBL, Problem-Solving Ability, Entrepreneurship Module.

1 Introduction

The increase in the number of unemployed every year in this country because the available job opportunities have not covered the number of unemployed. It is also because of the low interest in entrepreneurship among college graduates. Graduates should know that in Indonesia, not many job opportunities can absorb all the job seekers. They should begin to choose another alternative as a job, such as entrepreneurship. In Indonesia, it is supported by the potential of this country that is very conductive to entrepreneurship [1]. Therefore, in relation to the importance of entrepreneurship issues for improving the economy, the government has issued *Instruksi Presiden RI No. 4 Tahun 1995* concerning "*Gerakan Nasional Memasyarakatkan dan Membudayakan Kewirausahaan*".

In the past, entrepreneurship was seen as an innate talent from birth and honed through direct experience. Now, it is shifted. Entrepreneurship has become a scientific discipline that studies the values, abilities, and behavior in facing life's challenges to obtain opportunities with various risks they may have. To start being an entrepreneur, solid dream is a must thing that students have, but it is not built in a short time [2]. The risk of entrepreneurship, that is not small, also makes this solid dream becomes more

Z. B. Pambuko et al. (eds.), *Proceedings of the 4th Borobudur International Symposium on Humanities and Social Science 2022 (BIS-HSS 2022)*, Advances in Social Science, Education and Humanities Research 778,
https://doi.org/10.2991/978-2-38476-118-0_135

urgent and critical. If a student does not have a solid dream, then it is possible for him to give up quickly. Therefore, the lack of entrepreneurship teaching materials causes students to lack harmony in entrepreneurship. The entrepreneurship module can be an alternative for students to foster an entrepreneurial spirit and improve problem-solving skills in entrepreneurship. The purpose of preparing the module is to provide materials of teaching that in line with the curriculum by considering the students' needs, namely teaching materials that are under the characteristics of teaching materials and student characteristics.

The entrepreneurship module developed later must be based on project-based learning (PjBL), namely a learning model that uses projects as the core of learning [3]. It is in accordance with the leading research fields contained in the Universitas Singaperbangsa Karawang's research roadmap on the theme of economic and human resource studies with the topic of entrepreneurship research. The development and improvement of techno-sociopreneurs producing educational support technology and the industrial competence 4.0 towards excellent human resources. The targets to be achieved through this study are (1) entrepreneurship module, (2) scientific publications.

The module is one of the teaching materials that include material content, methods, and evaluations arranged systematically and attractively so that students can use them independently. The characteristics of a good module are self-instructional (module can make students learn independently), self-contained (module must contain all learning material), stand-alone (module doesn't depend on other media), adaptive (module can be used flexibly and organize the development of science and technology), and user friendly (module must be easy to understand) [4].

Project-based learning (PjBL) is a learning model based on the problem that used as a stimulus. The problem can encourage students to use their knowledge, so they can formulate a hypothesis and search for relevant information. The process of project-based learning (PjBL) is student-centred through a small group discussion in order to get a solution to the given problems [5].

The focus of project-based learning (PjBL) is developing students' knowledge and skills through a structured inquiry process that produces products. The students do not only memorize the theories, like in traditional learning, but also gain meaningful knowledge and skills for the long term. Project-based learning steps can be seen in Fig 1 [6].

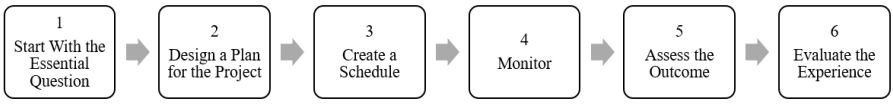

Fig. 1. Project-Based Learning Steps

In modern area, problem-solving is one of the abilities that indicates a person's quality. This ability can be improved using the learning activity that can construct new knowledge and facilitate learning in science. In addition, problem-solving activities help students construct new knowledge and facilitate learning in science, such as mathematics learning. By learning problem-solving in mathematics, students should acquire

ways of thinking, confidence in unfamiliar situations, and habits of persistence and curiosity [7]. It means that problem solving is the primary way to achieve students' goals in mathematics learning. Through solving mathematical problems, students also gain a way of thinking, hard work attitude, never giving up, and confidence in unusual situations. Problem-solving is the thinking that is directed to obtain answers to problems. Thus, the student's process of obtaining answers in problem-solving must be paid more attention than the results of the answers [8]. Indicators of problem-solving ability are as follows: identifying available data, adequacy of data for problem-solving, being asked, identifying strategies that can be taken, completing mathematical models with reasons, and checking the correctness of the solutions obtained [9].

2 Method

This research is a research and development focused on developing a PjBL-based Entrepreneurship Module. The development model used in this research is the ADDIE (Analysis, Design, Development, Implementation, Evaluation) development model. These steps can be seen in Fig 2.

Fig. 2. Research and Development Steps of Entrepreneurship Module

The sample in this study were students of the Mathematics Education Program at the Universitas Singaperbangsa Karawang. The sampling technique used is purposive sampling, which determines the sample with specific considerations. The total number of students is 18 students. The goal is to get a response as a user of the developed entrepreneurship module. Aspects measured in this stage include the achievement of subject learning, interest in the material being studied, language, and the feasibility of the presented material. The entrepreneurship module is validated by material experts, learning design experts, and language experts covering three aspects: material, presentation, and language. The instruments made in this study were in the form of a problem-solving ability test in entrepreneurship, expert validation questionnaires, module feasibility interviews, and student response questionnaires. The analysis used is descriptive quantitative analysis.

2.1 Product validity analysis

Material validity analysis was carried out using a validation sheet containing 24 statement items. Each item can be given points from 1 to 4 so that for each validator, the maximum points obtained are 96, and the minimum points are 24. The analysis of the validity of the module design was carried out using a validation sheet containing 10 statements. Each item can be given points from 1 to 4 so that for each validator, the maximum points obtained are 40, and the minimum points are 10.

2.2 Product practicality analysis

This practicality analysis is carried out by students using a questionnaire containing 21 statement items. Each item can be given points from 1 to 4 so that for each student, the maximum points obtained are 84, and the minimum points are 21. The criteria for product validity and practicality in the entrepreneurship module developed can be seen in Table 1 [10]. Furthermore, the product is valid if the average expert assessment is at least in the good category.

Table 1. Product validity and practicality criteria guidelines

SN	Score	Category
1	$\bar{x} > (\mathrm{M}_i + 1{,}5\mathrm{SB}_i)$	Excellent
2	$(\mathrm{M}_i + 0{,}5\mathrm{SB}_i) < \bar{x} \leq (\mathrm{M}_i + 1{,}5\mathrm{SB}_i)$	Good
3	$(\mathrm{M}_i - 0{,}5\mathrm{SB}_i) < \bar{x} \leq (\mathrm{M}_i + 0{,}5\mathrm{SB}_i)$	Fair
4	$(\mathrm{M}_i - 1{,}5\mathrm{SB}_i) < \bar{x} \leq (\mathrm{M}_i - 0{,}5\mathrm{SB}_i)$	Poor
5	$\bar{x} \leq (\mathrm{M}_i - 1{,}5\mathrm{SB}_i)$	Very Bad

2.3 Product effectiveness analysis

Data to analyze the product's effectiveness was obtained based on the results of small group trials using product designs that have been developed. The instruments used are student response questionnaires and tests. After learning by using the product, the test is as many as two questions about students' problem-solving ability in entrepreneurship. In analyzing the product's effectiveness, statistical data processing and analysis were carried out for the associative hypothesis, which was carried out to find the relationship between the variables of using PjBL-based entrepreneurship module with students' problem-solving abilities in entrepreneurship using simple linear regression analysis assisted by SPSS Statistics 25.

3 Result and Discussion

The development of teaching materials in an entrepreneurial module based on Project Based Learning (PjBL) uses the ADDIE development model, which consists of five stages, namely analysis, design, development, implementation, and evaluation.

In the analysis stage, the researcher analyzed the needs of teaching materials to 15 students by giving a questionnaire in the form of questions about the teaching materials they used during class learning. It aims to find out how students need teaching materials and serve as the basis for researchers in making teaching module. Based on the needs analysis questionnaire results, all students who were respondents to the questionnaire agreed that teaching materials in the form of PjBL-based entrepreneurship module should be developed to improve problem-solving skills in entrepreneurship in learning Entrepreneurship courses for Mathematics Education.

In the design stage, before making the draft design, the researcher made a chart about module content that can be seen in Fig 3. The researcher also designed the materials

and exercise presented in the entrepreneurship module. The items are made for evaluation purposes at the implementation stage. Items made in this study were validation sheets, student response questionnaire sheets and test instruments.

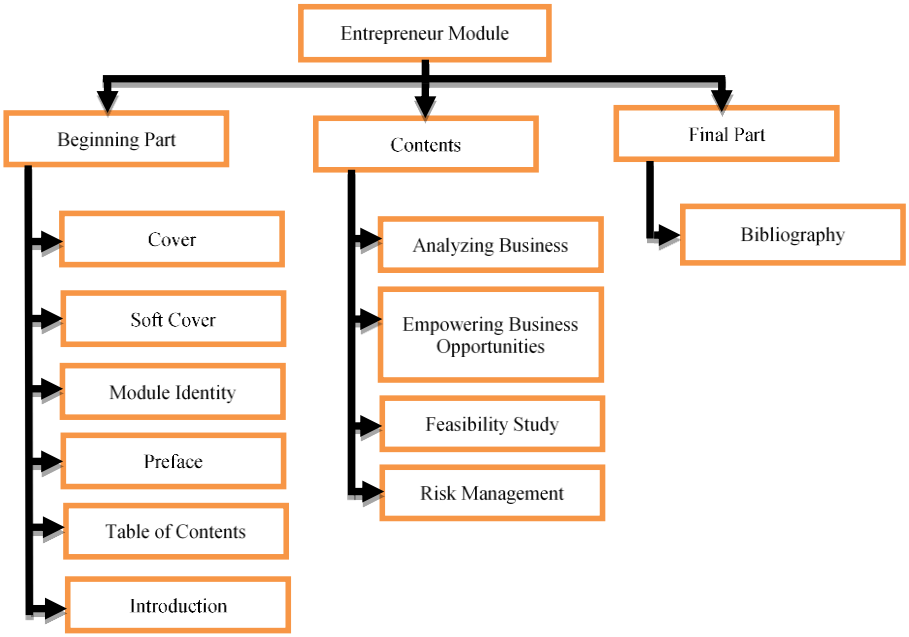

Fig. 3. Entrepreneurship Module Flowchart

The researcher started to produce entrepreneurship module in the development stage. The module is created and modified to achieve learning objectives and to improve students' problem-solving abilities. The materials in module were designed based on the Project Based Learning. After the module developed, the next step is validation by the experts. The validation results show that the module is excellent as general with 83>78. In every aspect, the module has excellent content with 42>39, excellent presentation with 24>22.75, and excellent language with 17>16.25. Meanwhile, the validation states that the module design is in the good category with 27.5<32<32.5. The result of validation can be seen in Table 2.

Table 2. Result of product validity analysis

	Aspect	$\bar{x}$		M_i		SB_i		Category	
Material	Content	42		30		6		Excellent	
	Presentation	24	83	17.5	60	3.5	12	Excellent	Excellent
	Language	17		12.5		2.5		Excellent	
Design		32		25		5		Good	

After the product is valid, the research continues at the implementation stage. It is the stage for implementing the developed entrepreneurship module in real classroom situations. It is carried out for two months, starting from September to October. It was carried out during entrepreneurship lecture activities in the Mathematics Education Program of FKIP Unsika. Implementation of this entrepreneurship module begins by providing modules to students as teaching materials. Then, students are given guidance to solve the problems that exist in the module.

Evaluation is the last stage in the ADDIE development model to provide value to the development of the entrepreneurship module in learning. The evaluation was carried out in the form of a summative evaluation, namely by giving students a test after the lesson's end using a PjBL-based entrepreneurship module. The final results of the tests and questionnaires are used to provide feedback on the development of the entrepreneurship module so that it will be known how the students' abilities improve after learning, the benefits felt by students after learning, and student assessments of the developed modules.

The analysis of the questionnaire results stated that the product's practicality was 76.33. Based on the criteria used, the product is declared practical and is in the excellent category with a value of 76.33>68.25. Meanwhile, the test was analyzed using regression to know the product's effectiveness. The regression result can be seen in Table 3, Table 4, and Table 5.

Table 3. Regression Equation and Significance Test of Regression Coefficient

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	2.338	26.719		.088	.931	-54.304	58.980
	X	.869	.328	.553	2.652	.017	.174	1.564

a. Dependent Variable: Y

In Table 3, it is obtained that a= 2.338 and b= 0.869, so the regression equation obtained is $\hat{Y}$=2.338+0.869X. The value of a= 2.338 means that if the PjBL-based entrepreneurship module did not use in learning, the value of students' problem-solving abilities in entrepreneurship would be 2.338. Meanwhile, the value of b= 0.869 means that for every 1% addition to the use of the PjBL-based entrepreneurship module, students' problem-solving ability in entrepreneurship will increase by 0.869. In addition, the value of t is obtained for testing the significance of the regression coefficient, namely t_a= 0.088 and t_b= 2.652. The value of t_a<t_table, then H_0 is accepted. It means that at the 95% confidence level, it can be concluded that the constant a is not significant. The value of t_b>t_table, then H_0 is rejected. It means that at the 95% confidence level, it can be concluded that the use of the PjBL-based entrepreneurship module has a positive effect on students' problem-solving abilities in entrepreneurship. In addition, it is also known that the P-value for the regression significance test is 0.017 and P-value <α, so H_0 is rejected. It means that at the 95% confidence level, it can be concluded that the regression equation $\hat{Y}$=2.338+0.869X is significant.

Table 4. Regression Linearity Test

			Sum of Squares	df	Mean Square	F	Sig.
Y * X	Between Groups	(Combined)	769.444	10	76.944	1.626	.267
		Linearity	336.031	1	336.031	7.101	.032
		Deviation from Linearity	433.413	9	48.157	1.018	.503
	Within Groups		331.250	7	47.321		
	Total		1100.694	17			

Based on Table 4, the P-value for the regression linearity test is obtained, which is 0.503. Because of P-value >α, so H_0 is accepted. It means that at the 95% confidence level, it can be concluded that the regression equation $\hat{Y}$=2.338+0.869X is linear.

Table 5. Effect of Variable X on Y

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.553[a]	.305	.262	6.91314	.305	7.031	1	16	.017

a. Predictors: (Constant), X

Based on table 5, it is known that the R Square value is 0.305. It means that the effect of using the PjBL-based entrepreneurship module on students' problem-solving abilities in entrepreneurship is 30.5%, while 69.5% of students' problem-solving abilities in entrepreneurship are influenced by other factors not examined.

Based on this description, it can be concluded that the use of the PjBL-based entrepreneurship module has a significant positive effect on students' problem-solving abilities in entrepreneurship with a significant effect of 30.5%.

4 Conclusion

Based on the research results obtained, the validity of the material in the resulting module is excellent, the validity of the module design is good, the practicality of the module is excellent, and it has a significant positive effect on students' problem-solving abilities in entrepreneurship with a significant effect of 30.5%. Thus, the developed module is valid, practical and effective for entrepreneurial learning.

Acknowledgements. Author thanks to LPPM Unsika.

References

1. R. Lesmana and R. Surjanto, Financial Performance Analyzing: Pedoman Menilai Kinerja Keuangan untuk Perusahaan Tbk., Yayasan, BUMN, BUMD, dan Organisasi Lainnya, Jakarta: Elex Media Komputindo, 2003.
2. J. Yager, Creative Time Management, Jakarta: Bhuana Ilmu Populer, 1995.
3. Government, Instruksi Presiden Republik Indonesia Nomor 4 Tahun 1995 Tentang Gerakan Nasional Memasyarakatkan dan Membudayakan Kewirausahaan, Jakarta: Tetrahedron Letters, 1995.
4. Ditjen PMPTK, Penulisan Modul, Jakarta: Direktorat Tenaga Kependidikan, 2008.
5. Suyatno, Menjelajah Pembelajaran Inovatif. Sidoarjo: Masmedia Buana Pustaka, 2009.
6. C. N. Oktavian, Model-model Pembelajaran IPS yang Inovatif: Tinjauan Teoritis dan Praktis untuk Guru dan Calon Guru. Bandung: Rizqi Press.
7. NCTM, Principles and Standards for School Mathematics, VA: NCTM, 2000.
8. J. P. Mairing, Pemecahan Masalah Matematika: Cara Siswa Memperoleh Jalan untuk Berpikir Kreatif dan Sikap Positif, Bandung: Alfabeta, 2018.
9. U. Soemarmo and H. Hendriana, Penilaian Pembelajaran Matematika, Bandung: Refika Aditama, 2019.
10. S. Azwar, Sikap Manusia: Teori dan Pengukurannya, Yogyakarta: Pustaka Pelajar, 2002.