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Development of a Research-Based Project Learning Model to Cultivate an Entrepreneurial Spirit in Entrepreneurship Subjects At Pagaralam Muhammadiyah High School

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Abstract:
This research aims to: 1) Develop a research-based project learning model in entrepreneurship subjects that can foster the entrepreneurial spirit of students at SMK Muhammadiyah Pagaralam. 2) To determine the effectiveness of the Research Based project learning model in entrepreneurship subjects which can foster the entrepreneurial spirit of students at SMK Muhammadiyah Pagaralam. The research approach used is Research and Development (RnD). The product developed is a learning module that has gone through a validation process by experts and was tested in one class. The results of this trial are the basis for revising the learning module product to produce a final product that can be used. The revised product was then validated by 3 experts and tested in two classes. The effectiveness test was carried out using paired sample test analysis. The implementation of the Research-Based PjBL Model in Entrepreneurship subjects at Muhammadiyah Pagaralam Vocational School has had a positive and effective impact. The findings show a positive impact on students' motivation and skills, as well as a contribution to increasing entrepreneurial spirit. The learning modules developed have been validated and have a significant impact on learning. However, the evaluation highlights aspects that need improvement, such as the level of difficulty of the material, learning resources and learning activities. This becomes the basis for continuous improvement in improving the quality of learning.

Introduction (مقدمة)

Technological developments in all fields are a form of progress in the current era. Improving high-quality work skills, especially through education, is considered essential to face the challenges of the 21st century (Joynes et al., 2019; Kim et al., 2019). One way to overcome the challenges of industrialization is through entrepreneurship. Entrepreneurship is defined as the ability to identify opportunities and exploit them, and plays an important role in a country's economic growth. Entrepreneurship education is the main focus in forming professional and functional human resources. Entrepreneurship education is needed from an early age because it has been proven to be effective in increasing students' knowledge and understanding of their potential (Debarliev et al., 2022; Kuratko, 2005). Entrepreneurship training can increase interests, attitudes and skills so that students can be empowered with an independent entrepreneurial spirit. The recommended learning model is a project-based learning model, which emphasizes student responsibility in carrying out their role in learning.

The basic principles of the project-based learning (PJBL) model are involving students in real-life tasks to enhance learning, emphasizing research based on a particular theme or topic in lessons, encouraging student responsibility, and focusing on realistic student activities that reflect the situation. Actual (Akhmad et al., 2020; Hontz, 2022). PJBL also focuses on questions or problems that encourage students to look for relevant answers, as well as developing essential skills such as problem solving and group work. In Indonesia, entrepreneurship programs have been implemented since 1973 and continue to develop through international cooperation and training programs. The aim of these programs is to help reduce educated unemployment by producing graduates who are not only job seekers, but also job creators. Entrepreneurship education is needed to produce a generation that has creativity and an entrepreneurial spirit from an early age, which is expected to make a significant contribution to national economic growth.

According to the provided explanation, the Project-Based Learning (PJBL) model underscores the importance of focusing on students in the learning process. This approach utilizes real-life experiences, where predetermined subjects and topics guide students in conducting experiments or research to produce tangible products aligned with their capabilities. The ultimate goal is to empower students to adeptly address problems using suitable concepts, principles, and knowledge, thereby imbuing their learning with greater significance. The characteristics of the Project-Based Learning (PJBL) model, as outlined by (Rahmania, 2021), further elucidate its nature. These characteristics include students making decisions within a given framework, encountering posed problems or challenges, designing processes for solving these challenges collaboratively, and being collectively responsible for accessing and managing information. The evaluation process is continuous, with students periodically reflecting on their activities. The final product is qualitatively assessed, and the learning environment is highly tolerant of errors and changes. In summary, the PJBL model requires teachers to identify problems for students to solve, prompting students to design processes and frameworks for solutions. This collaborative approach necessitates students working together to gather information, evaluate their work, and create products based on the identified problems.

This project-based learning (PJBL) model has a number of advantages, such as increasing student learning motivation, deepening problem-solving skills, encouraging collaboration between students, and providing valuable experience in organizing projects (Hussein, 2021; Zhang & Ma, 2023). However, there are also a number of challenges, such as taking a lot of time to solve problems, increasing costs associated with this learning model, and the potential for reducing activity in group work. Although there are shortcomings and challenges in implementing PJBL, steps can be taken to overcome these, such as providing time limits for completing projects, creating a positive learning atmosphere, and minimizing costs by using simple local equipment. Thus, although PJBL has certain advantages, such as increasing student

learning motivation and improving problem solving skills, there needs to be an appropriate approach to overcome the challenges that exist in its implementation. The steps for the PJBL (Project Based Learning) learning model are as follows: 1) Determining basic questions. Learning begins with essential questions, namely questions that can give assignments to students in carrying out an activity. 2) Arrange a schedule. Teachers and students collaboratively prepare a schedule of activities to complete the project. Activities at this stage include: a) Creating a timeline (time allocation) to complete the project, b) Creating a deadline (final deadline) for completing the project, c) Bringing students to plan new ways, d) Guiding students when they create ways that are not related to the project, and e) Ask students to make an explanation (reason) about the choice. 3) Monitoring students and project progress. Teachers are responsible for monitoring student activities while completing the project. 4) Testing the results of the assessment is carried out to help teachers measure the achievement of standards, play a role in evaluating the progress of each student, provide feedback about the level of understanding that students have achieved, and help teachers in developing subsequent learning strategies.

From the explanation above, it can be concluded that the project-based learning model starts with questions that can give students a task when they complete the activity. Guidance Guidelines in project-based learning in guiding students in project-based learning, there are several things that need to be considered and used as a basis for action (Boss & Krauss, 2022; Fleming, 2000). 1) Adherence to Academic Values. This can be done with the following strategies: a) Encourage and direct students to be able to apply various knowledge/disciplines in completing the tasks being carried out. b) Design and develop assignments that can challenge students to use various methods in solving problems. 2) Learning in the Real World. This can be done with the following strategies: a) Encouraging and guiding students to be able to work in the context of real problems that exist in society. b) Encourage and direct students so that they are able to work in organizational situations that use high technology. 3) Be active independently. This can be done with the following strategies: a) Encourage and direct students to complete their assignments according to the schedule they have made b) Encourage and direct students to conduct research using various methods, media and various sources. c) Encourage and direct students to be able to communicate with other people, either through presentations or other media. 4) Relationships with Experts This can be done with the following strategies: a) Encourage and direct students to be able to learn from other people who represent relevant knowledge. b) Encourage and direct students to work in discussions with other people/friends in solving problems. c) Encourage and direct students to invite/ask outside parties to be involved in assessing their performance. 5) Assessment This can be done with the following strategy a) Encourage and direct students to be able to carry out self-evaluation of their performance in carrying out their assignments. b) Encourage and direct students to assess their performance from opinions.

There are several things in project-based learning that need to be considered and used as a basis for action, namely authenticity, adherence to academic values, learning in the real world, being active independently, relationships with experts, assessment (Konrad et al., 2021; Sukackė et al., 2022). Project assessments can be carried out to determine students' understanding, application ability, investigation ability and ability to inform students on certain subjects clearly. In project assessment, there are at least three things that need to be considered, namely management ability, relevance, and originality: 1) Management ability. Students' ability to choose topics, search for information, and manage time for data collection and report writing. 2) The authenticity of the project carried out by students must be the result of their work, taking into account the teacher's contribution in the form of guidance and support to the students' project.

Research-based learning is learning that is based on a research approach or research as a step in the process, that the learning process takes place as a combination of the characteristics of research actions so as to create meaningful learning (Ranti, 2019). Research (research) as a process

of careful inquiry or search Obtain new facts about a branch of science is a concept Suitable for application in learning. A research-based learning approach requires students to be able to discover, explore (develop knowledge) to solve the problems they face, then test the truth of that knowledge. Educators act as facilitators and mediators to bring students to the desired competencies (Chiu et al., 2023; Curran & Standage, 2017). A research program is defined as a study program that allows students to search, dig, explore something so that they can create work that is innovative and beneficial to society (Daly et al., 2014). This research program is designed to encourage students to gain knowledge and understanding of critical thinking concepts, learn independently, become proficient, participate in groups and become proficient in problem solving (Bean & Melzer, 2021; Lapek, 2018; Paul & Elder, 2019). Research also allows students to be actively involved in asking questions, exploring information, and finding ideas. Research-based learning encourages students to be able to solve problems that arise in the environment and act as a driving force for knowledge generation (Krajcik & Czerniak, 2018; Tan, 2021). Research-Based Learning is a student-centered learning method (SCL) that integrates research into the learning process. PBR allows students to search for information, hypothesize, collect data, analyze data, and draw conclusions based on the data collected, this activity uses a 'learning by doing' approach to learning.

Several research-based learning models can be developed based on the condition of the facilities and scientific knowledge of the educational unit concerned. The strategy for implementing PBR is part of a strategy developed empirically at Griffith University to integrate learning and research so that PBR implementation is effective and PBR goals are achieved (Budayawati et al., 2019; Sarker & Kaparaju, 2023). 1) Adding Teaching Materials from Educator Research Results Educators use research findings to improve teaching materials in the learning process. Educators can use real-world examples to present their research findings in lectures, which should help students understand research ideas, concepts, and theories. Values, ethics and research techniques that are relevant to the science subjects being taught can be transmitted to students in this activity to motivate them. Comprehensive discussions can be used to apply research conducted by educators to students. 2) Utilize the Latest Research Findings and Trace the History of Their Discoveries. The latest discoveries from the literature are reviewed in this learning process to support appropriate discussion material.

Application of the research-based learning model (PjBL) to improve the entrepreneurial spirit of class XI students at SMK Muhammadiyah Pagaralam. The main findings from primary data show that students have a low entrepreneurial spirit in Entrepreneurship subjects. Entrepreneurship teachers report problems in the learning process, including students who are passive and less enthusiastic and the lack of use of learning models that attract students' attention. Secondary data shows that learning tends to be conventional and less innovative, causing students to feel bored and less active in learning. In overcoming this problem, researchers propose the development of a research-based project learning model. The aim of this development is to increase students' entrepreneurial spirit, higher order thinking skills, and student character. This model is also expected to motivate students and make learning more interesting and relevant. It is hoped that by implementing this learning model, students can be more active and involved in learning, as well as increase their entrepreneurial spirit. This will help students to develop the skills and knowledge needed to face real-world challenges and obtain maximum learning outcomes.

Method (منهج)

Research and development can is a strategy that is quite effective in cultivating the entrepreneurial spirit of students in the process of developing new products or perfecting existing products (Sukmadinata, 2019). Development research can also be used to produce a product and test the effectiveness of the product (Sugiyono, 2022). This research procedure refers to a research

and development model that is modified into three stages: (1) preliminary study, (2) product development, and (3) product testing (Sukmadinata, 2019). Research and development in this study was carried out to produce a syntax for a data research-based project learning model in entrepreneurship subjects. It is hoped that the learning model developed will be useful for cultivating students' 21st century entrepreneurial spirit. The reason researchers use the research and development (RnD) method is because it has the advantage of a systematic work procedure, namely that each step that will be taken refers to the previous step that has been improved, so that an effective product will be obtained. The research that will be developed is a research-based project learning model to foster the entrepreneurial spirit of Class XI students at Muhammadiyah Pagaralam Vocational School, South Sumatra Province.

States that the preliminary stage is an initial or preparatory stage that is very necessary in developing products by means of literature studies, field surveys and drafting teaching modules (Sukmadinata, 2019). Apart from that, literature studies include literacy studies which contain concepts and theories that will be used in developing teaching modules. 1) The literature study in this research focuses on examining concepts or theories regarding research-based project learning models and the entrepreneurial spirit of students. Furthermore, this literature study also examines the results of previous research and other relevant literature in supporting the preparation of research and development activities. 2) Field surveys were carried out to collect data relating to fostering students' entrepreneurial spirit. 3) Interviews were conducted to find out the ongoing learning activities and the use of teaching materials, models, methods and learning media used. So you can find out the analysis of teacher teaching module needs, especially in implementing the research-based PjBL learning model. 4) The observations carried out were to determine the learning process that took place in the Class XI Entrepreneurship subject at Muhammadiyah Vocational School Pagaralam, South Sumatra. This aims to get an overview of the teacher's learning process by using approaches in the learning process, such as teaching materials and several learning strategies used. Based on the results of interviews, observations and documentation carried out by researchers, it appears that students are still passive in the learning process taking place in entrepreneurship subjects. So teachers need a learning model that is able to foster students' entrepreneurial spirit which is adapted to the competency provisions in the independent curriculum.

The draft product in question is a teaching module that was developed and prepared by referring to the results of literature studies and field surveys and then reviewed by experienced experts. Based on the results of literature studies and field surveys, it can be concluded that to foster the entrepreneurial spirit of class XI students, namely by implementing the PjBL Based On Research learning model. The use of research-based project learning models in learning can foster students' entrepreneurial spirit, and the application of the models presented in the ongoing learning process can encourage students to be active. After the potential and problems can be demonstrated factually and up to date, data needs to be collected from various specific information which is expected to support the development of learning in the form of the PjBL Based On Research model. There are various sources that can support this development such as books, journals, results of interviews with teachers and students as well as references such as previous theses and dissertations, several relevant references related to research and development. Knowing all this will help adapt product design and development to the needs of students. Researchers can then identify the competencies that students will acquire so that they can be used as a reference when designing various materials needed for product development. The development of the PjBL Based On Research model in entrepreneurship subjects requires planning the implementation of learning, including determining the achievement of learning objectives using PjBL Based On Research. Apart from that, the validator was also asked to validate the student response questionnaire regarding the use of teaching modules that implement the PjBL Based on Research learning model. All input, criticism, suggestions and

recommendations from subject experts and teachers are recorded and used as a basis for improving the product design being developed. Products that receive validation from validators will be able to identify their weaknesses, these weaknesses will then be tried to be reduced by improving the design. Product testing by students and using response responses using the PjBL Based on Research teaching module to improve the entrepreneurial spirit. Revisions carried out at this stage can be carried out many times to improve the suitability of the product when tested on as many subjects as possible, and researchers can use it to carry out revisions to optimize the model, thus enabling the implementation of the PjBL Based on Research learning model that suits the needs of teachers and participants. This was tested on a wide scale to determine the level of effectiveness and feasibility of the research-based learning model to foster students' entrepreneurial spirit.

Result (نتائج)

Preliminary Study Results

A preliminary study was carried out to develop a Project Based Learning (PjBL) teaching module based on research on entrepreneurship subjects at Muhammadiyah Pagaralam Vocational School. This study identifies student needs, curriculum characteristics, as well as the views of teachers and related stakeholders. The findings of this study highlight the importance of paying attention to practical understanding, critical thinking skills, collaboration, and innovation in teaching modules. Teaching modules should be designed to comply with competency standards and performance-based assessment methods, and encourage collaboration and communication between students. The results of the analysis conclude that teaching modules must take into account integration with the business world, the flexibility of active learning, and performance-based assessment. The next step is to design, develop and test a prototype of the Research-Based PjBL teaching module for entrepreneurship at Muhammadiyah Pagaralam Vocational School. It is hoped that this module can make a positive contribution in increasing students' entrepreneurial spirit and preparing them to face the challenges of the business world in the future. Literature study is an important first step in detailing the framework and approach that will be applied in the design of teaching modules. Literature analysis highlights the research-based concept of project-based learning (PjBL) as a learning approach that emphasizes real-life experiences, application of knowledge in practical contexts, and collaboration between students.

The literature study discusses the importance of combining PjBL principles with a research component to ensure that students not only participate in practical projects but also in a process of in-depth inquiry and problem solving. Project-based learning is a learning method that can be used at all levels of education, where students learn concepts about how to solve problems and develop critical thinking skills. Through group work, students investigate real-world problems while learning concepts and critical thinking skills. It is hoped that learning using this method can make students more active and creative by learning from the surrounding environment. Literature research also highlights learning theories and models that have proven effective in forming an entrepreneurial spirit in students, with a focus on concepts such as entrepreneurship, creativity, innovation, and critical thinking skills. A deep understanding of competency standards and competency performance indicators is also the basis for designing teaching modules that are in accordance with the curriculum, so that students are better prepared to face the business world.

The results of the literature study also provide a basis for developing effective teaching modules in overcoming the challenges of globalization, as well as identifying knowledge gaps that can be filled by the teaching modules being developed. Literature studies are an important step to continue the design, development and testing of research-based teaching module prototypes that can become study guides for entrepreneurship subjects at Muhammadiyah

Pagaralam Vocational School. Field surveys were carried out to collect data related to fostering students' entrepreneurial spirit, with interviews and observations carried out to analyze the needs of teaching modules and observe the ongoing learning process. From the results of literature studies and field surveys, it was concluded that to foster an entrepreneurial spirit in class XI students, it is necessary to apply the Research-Based PjBL learning model.

Product development

The PjBL (Project-based Learning) research-based learning module for Entrepreneurship subjects in class XI SMK is designed by considering several important aspects. The learning objectives of this module include identifying the importance of promotion in independent business, analyzing the advantages and disadvantages of advertising, personal selling, and publicity, selecting promotional media, and creating creative and collaborative promotional media. Learning material includes the definition of promotion, the importance of promotion, and types of promotion, as well as the advantages and disadvantages of advertising, personal selling, and publicity, as well as a focus on promotional media and creative ways to create them. The learning method applied involves several steps, such as providing materials, discussing promotional concepts, forming project groups, making schedules, completing projects with guidance and monitoring, compiling reports and presenting project results, and evaluating project processes and results. Learning activities involve students in discussing promotional concepts, presenting the results of promotional media designs, practicing creating promotional media, and researching the effectiveness of the promotional media they create. Learning resources used include textbooks, class journals, images, clippings and videos about promotions, as well as the use of information technology such as the web, computers and smartphones.

Learning evaluation is carried out through written tests, observing student activities, and interviews with students to get their opinions about the learning they are taking part in. With this Research-Based PjBL approach, it is hoped that students can develop entrepreneurial and critical thinking skills in the context of promoting independent business. This teaching module is designed with a focus on understanding the concept of promotion and developing entrepreneurial skills. The learning method is Research-Based PjBL to encourage students to become active and independent learners, as well as develop critical and creative thinking skills through research projects. Learning evaluation is carried out through various types of tests and observations to measure the achievement of learning objectives at each learning stage. Initial trial results show a significant increase in students' learning motivation, problem solving skills, resource management skills, communication skills, organizational skills, and learning atmosphere after using this module.

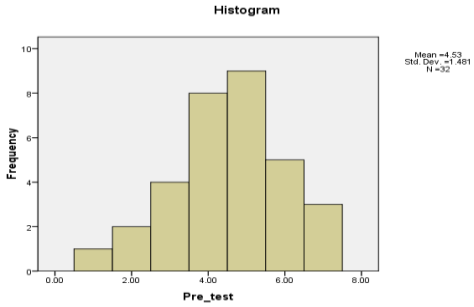

Figure 1. Pretest Score Frequency Distribution Histogram Diagram

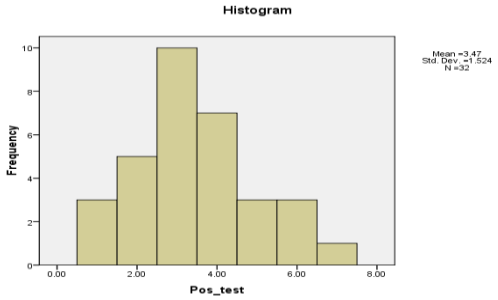

Figure 2. Post_Test Score Frequency Distribution Histogram Diagram

Table 1. Data normality test results

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		32
Normal Parameters[a]	Mean	.0000000
	Std. Deviation	2.84535759
Most Extreme Differences	Absolute	.104
	Positive	.097
	Negative	-.104
Kolmogorov-Smirnov Z		.585
Asymp. Sig. (2-tailed)		.883

a. Test distribution is Normal.

Then from the output the Sig value is known. of 0.883. Because the Sig value. the group is > 0.05, so as is the basis for decision making in the Kolmogorov Smirnov normality test above, it can be concluded that the pre_test and post test score data are normally distributed.

Table 2. Output Paired Sample Statistics Product Trial

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre_test	49.4688	32	2.94009	.51974
	Post Test	76.4688	32	1.52367	.26935

Descriptive statistical results from the two samples studied, namely pre_test and posttest scores. For the pre_test questionnaire score, the average or mean was 49.46. Meanwhile, the post test score was 76.46. The number of respondents or students used as research samples was 32 students. For Std. Deviation (standard deviation) in the pre_test was 2.94 and the post test was 1.52. Lastly is the Std value. Mean error for the pre_test is 0.52 and for the post test is 0.269.

Because the average pre_test and posttest scores for using the Research-Based PjBL teaching module before were 49.46 < 76.46, this means that descriptively there is a difference in the average score of the student perception questionnaire regarding the use of the Research-Based PjBL teaching module.

Table 3. Output Paired Samples Correlation Product Trial

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	Pre_test & Post Test	32	.252	.164

Correlation test results or the relationship between the two data or the relationship between students' perception questionnaire scores regarding the use of Research-Based PjBL teaching modules before and after. Based on the output above, it is known that the correlation coefficient (Correlation) value is 0.252 with a significance value (Sig.) of 0.164. Because the Sig value. 0.252 > probability 0.05, so it can be said that there is no relationship between the pre_test and posttest scores on the student perception questionnaire regarding the use of Research-Based PjBL teaching modules.

Table 4. Output of Paired Samples Test Product Trial

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Pre_test - Post Test	-2.70000E1	2.95122	.52171	-28.06403	-25.93597	-51.753	31	.000

Based on the "Paired Samples t Test" output table above, the Sig value is known. (2-tailed) is 0.000 < 0.05, then Ho is rejected and Ha is accepted. So it can be concluded that there is an average difference between the pre_test and posttest scores. The output table "Paired Samples t Test" above also contains information about the value of "Mean Paired Differences" which is -2.70. The difference is between -28.06 to -25.93 (95% Confidence Interval of the Difference Lower and Upper). Based on the "Paired Samples Test" output table above, it is known that tcount has a negative value, namely -51.75. This tcount is negative because the pre_test score is lower than the post test score. In this case, a negative tcount value can have a positive meaning. So the calculated t value becomes 51.75.

Next is the stage of finding the ttable value, and the ttable is searched based on the df value (degree of freedom) and the significance value (α/2). From the output above, it is known that the df value is 31 and the value 0.05/2 is equal to 0.025. We use this value as a basic reference in finding ttable values in the distribution of statistical ttable values. Thus, because the value of tcount is 51.75 > ttable 2.04, then from the decision above it can be concluded that Ho is rejected and Ha is accepted. So it can be concluded that there is a difference in pre_test and posttest scores.

Discussion (مناقشة)

Research-based project learning model for entrepreneurship subjects at Muhammadiyah Pagaralam Vocational School.

Initial research on the development of PjBL (Project-based Learning) research-based learning modules in entrepreneurship subjects at Pagaralam Muhammadiyah Vocational School explored the initial conditions, challenges and potential to increase students' entrepreneurial spirit. The focus of this research is analyzing student needs, including practical understanding, critical thinking skills, collaboration, communication, and creativity. The research results provide an overview of potential problems that may arise when implementing teaching modules and

provide strategies to overcome them. The main goal is to actively contribute to the development of a research-based project learning model to improve the entrepreneurial spirit of Pagaralam Muhammadiyah Vocational School students and prepare them to face future business challenges.

PjBL helps students create products through steps such as defining basic questions, designing a project plan, creating an implementation plan, monitoring project progress, evaluating results, evaluating experiences, and participating in activities. This research also emphasizes the importance of combining PjBL principles with a research component to ensure students engage not only in practical projects but also in-depth investigation and problem solving. In addition, this literature provides insight into the entrepreneurship curriculum at SMK Muhammadiyah Pagaralam and a better understanding of competency standards. It is hoped that the teaching module developed can overcome this problem by implementing the research-based PjBL model.

The prototype Research-Based PjBL teaching module for Entrepreneurship subjects was developed with the aim of exploring financial concepts and improving students' entrepreneurial mindset. The learning method used is research-based PjBL to encourage active, independent learning and the development of critical and creative thinking skills. Testing of the teaching module showed a significant increase in students' entrepreneurial spirit and a positive learning atmosphere. Student reactions to this learning model were very positive, with active participation in project activities and high interest in the learning material. The role of teachers in implementing the research-based PjBL model is also very important. Thus, the use of the Research-Based PjBL model in the Entrepreneurship subject at SMK Muhammadiyah Pagaralam has had a positive impact in increasing students' entrepreneurial spirit and creating a learning environment that is relevant to real life.

Through the PjBL Based on Research learning model, students not only understand business concepts theoretically, but also apply them in the context of real projects (Diah, 2023; Susanti, 2023). To ensure the success of this learning model, an evaluation of the PjBL Based on Research Teaching Module was also carried out. Overall, the results and discussion show that the PjBL Based On research learning model and the teaching modules developed have a positive impact on entrepreneurship learning at Muhammadiyah Pagaralam Vocational School. Students become more involved, teachers play an active role, and their entrepreneurial skills improve.

The effectiveness of the research-based project learning model for entrepreneurship subjects at Pagaralam Muhammadiyah Vocational School.

The research results show that the application of the PjBL Based on Research model in entrepreneurship subjects at Muhammadiyah Pagaralam Vocational School has had a positive and effective influence. Various aspects of the effectiveness of this model can be seen through student responses, teacher participation, and the development of entrepreneurial skills (Anggraini & Wulandari, 2021; Rili, 2021). Student responses show that the PjBL Based on Research model is successful in creating a motivating and attractive learning environment for students (Hairunisya, n.d.). This positive response is reflected in the high level of student participation in project activities, high interest in learning material, and increased learning motivation. Learners actively participate in all stages of the project and demonstrate their enthusiasm for hands-on, hands-on learning. Teacher participation in implementing the PjBL Based on Research model also plays an important role in the success of learning. Therefore, the PjBL Based On Research model also has a positive effect on improving students' entrepreneurial skills (Lestari, 2019; Noviani et al., 2022). A trial of the "Research-Based PjBL" educational module was carried out to evaluate its effectiveness in increasing student entrepreneurship. A survey instrument to measure students' perceptions of the module was also validated. We then performed frequency distribution analysis, normality tests, and paired sample t tests to evaluate the results of using the module. The frequency distribution shows a positive change in the survey results before and after using the module.

Conclusion (خاتمة)

The implementation of the PjBL Based On Research Model in the Entrepreneurship subject at Muhammadiyah Pagaralam Vocational School has had a positive and effective impact. Research shows that this model is successful in creating a motivating and engaging learning environment for students and has received very positive responses from students. Students' active participation in project activities, increased interest in learning material, and increased learning motivation are signs of the success of this model. The role of teachers is also important for the success of this model, because teachers with an entrepreneurial spirit are actively involved in designing, implementing and evaluating project activities. Collaboration between teachers and students is clearly visible, creating a dynamic and collaborative learning atmosphere in the classroom. In addition, this model successfully improves students' entrepreneurial skills, including problem-solving skills, communication skills, time management, and creativity, which are important in the business world.

Evaluation of the 'Research-Based PjBL' education module shows that it is effective in providing in-depth understanding and helping students achieve the desired competencies. Even though the results were positive, the evaluation identified several things that needed to be improved, including adjusting the level of difficulty of the material, adding learning resources, and expanding activities to help students solve problems. Overall, the results and discussion confirm that the research-based project learning model and teaching modules developed have a positive impact on entrepreneurship learning at Muhammadiyah Pagalaram Vocational School. Students become more engaged, teachers take an active role, and their entrepreneurial skills improve. However, module evaluation is the basis for continuous improvement to improve the quality of this learning.

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