The Learning Model of Project-Based Learning (PjBL) on the Resilience of Students' Misfortunes

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A B S T R A K

Rendahnya ketahanmalangan peserta didik, terlihat dari kurang mampunya dalam menghadapi tantangan dan kesulitan dalam proses pembelajaaran. Kurangnya penerapan model pembelejaran yang melibatkan siswa dalam pemecahan masalah mengakibatkan siswa mengeluh jika dihadapkan dengan materi dan soal yang sulit. Serta siswa menolak ketika diberikan tugas berbasis proyek. Tujuan penelitian ini untuk menguji pengaruh model pembelajaran Project Based Learning (PjBL) terhadap ketahanmalangan peserta didik. Metode penelitian berupa kuantitatif dengan Eksperimen Semu (Quasi Experimental Desain) dengan menerapkan model pembelajaran PjBL pada kelas Eksperimen, dan tidak menerapkan model PjBL pada kelas kontrol. Populasi penelitian berjumlah 160 orang dengan sampel 34 orang untuk kelas eksperimen, dan 36 orang untuk kelas kontrol. Pengumpulan data dengan non tes yang berupa kuesioner, dan instrumennya yakni angket. Teknik analisis data yakni analisis statistika deskriptif dan statistika inferensial (uji-t). Hasil pengujian hipotesis diperoleh terdapat pengaruh yang siginifikan model PjBL terhadap ketahanmalangan peserta didik. Disimpulkan bahwa model PjBL dapat meningkatkan ketahanmalangan peserta didik.

A B S T R A C T

The low resilience of students can be seen from their inability to face challenges and difficulties in the learning process. The lack of application of learning models that involve problem-solving results in students complaining when faced with difficult material and questions. As well as students refuse when given project-based assignments. This study aimed to examine the effect of the Project Based Learning (PjBL) learning model on students' resilience. The research method is quantitative with Quasi-Experimental Design by applying the PjBL learning model to the Experiment class and not applying the PjBL model to the control class. The study population consisted of 160 people, with a sample of 34 people for the experimental class and 36 for the control class. Collecting data with a non-test is a questionnaire, and the instrument is a questionnaire. The data analysis techniques are descriptive and inferential statistics (t-test). The results of testing the hypothesis showed a significant effect of the PjBL model on students' resilience. It was concluded that the PjBL model could improve the resilience of students.

1. INTRODUCTION

In the 21st century, the nation's progress depends on education. Learning must be oriented toward the needs of the 21st century, namely creativity, critical thinking, cooperation, problem-solving, communication, community, and character (Mardhiyah et al., 2021; Montessori et al., 2023; Widodo & Wardani, 2020). In line with this opinion, students must also have various competencies in the academic field, such as mathematics, language, or science, but master the skills of critical thinking, creativity, communication, and collaboration (Putri et al., 2022; S. Rahayu, 2017; Riastini et al., 2020). This means that 21st-century learning patterns require students to find out, formulate problems, be analytical, and collaborate to solve real problems that occur (Andrian & Rusman, 2019; Indraswati et al., 2020; Nirmayani & Dewi, 2021). For this reason, in following 21st-century learning patterns, students need the endurance to face difficulties and be able to turn these difficulties into challenges and opportunities to achieve goals.The ability of students to face difficulties and turn these difficulties into challenges and opportunities to achieve goals is called the Adversity Quotient (Resilience to adversity) (Ristiana, 2020;

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Sukardewi et al., 2013; Susanto & Sofyani, 2019). In line with this opinion, resilience is overcoming academic, work, personal, and social difficulties (Hastuti et al., 2018; Leonard & Amanah, 2014). Students can be known to have resilience if they have characteristics such as having self-confidence, accepting difficulties, being able to take action to face difficulties, being brave enough to take risks, persisting in difficulties faced in learning and outside of learning, and being able to express ideas. Creative ideas in solving problems faced in learning (Fadhilah et al., 2020; Susanto & Sofyani 2019). Resilience against adversity is very important for students to have. By being resilient to adversity, students can take advantage of obstacles, difficulties, and problems as opportunities to survive and solve their problems (Amir et al., 2017; Fadhilah et al., 2020).

Resilience in students is needed to solve various problems and challenges of 21st-century learning (Wulandari et al., 2020). Along with the importance of resilience to survive and resolve problems not in line with what is happening in the field. The results of the Trends in the International Mathematics and Science Study (TIMSS) survey in 2015 showed that students in Indonesia have low problem-solving abilities (Hadi & Novaliyosi, 2019). The low problem-solving ability of students in Indonesia is proven by Indonesia occupying 49 out of 53 TIMSS participating countries (Arifin et al., 2019). Moreover, current learning activities still tend to be passive, as evidenced by the minimal participation of students in raising questions, and the questions raised by teachers are often not answered, which is due to students' lack of self-confidence in learning (Nurhadiyati et al., 2021; Wibowo et al., 2022). This shows that students are still less able to face the challenges and difficulties encountered during the learning process. In other words, students' resilience to adversity is still low.

This problem is in line with the results of observations carried out in Cluster IV Klungkung District (SDN 2 Selat, SDN 3 Selat, SDN 4 Selat, SDN 2 Tegak, SDN 3 Tegak, SDN Manduang, and SDN Selisihan) with the principal and fifth-grade teacher. The results of interviews with the principal at the elementary school revealed that students had low enthusiasm when the learning process took place. Second, when given assignments, many students do not carry out the tasks given by the teacher. However, students tend to take other activities that do not meet the assignments' demands. Third, less than 50% of students can answer teacher questions regarding the material during the learning process. This can be seen when the teacher asks questions about explaining the material, and only 2-3 students can answer. Fourth, when given a project assignment to be done at home, the assignment tends to be completed by the student's parents.

The following information was obtained based on the results of distributing the questionnaire. First, the application of learning models that involve students in problem-solving is still rarely applied by teachers. Second, resilience to adversity is still common among teachers. Third, teachers have never measured students' resilience to adversity. Apart from the results regarding teachers, questionnaire results were also obtained regarding students. The results obtained from the questionnaire are: 1) students tend to be passive during the learning process. Only a few students are active in the learning process; 2) Students complain when they receive assignments classified as difficult and project-based assignments; 3) students refuse to be given project-based assignments; 4) students assign assignments given by the teacher to their friends. This shows that students' resilience to adversity is still relatively low or students' fighting attitude is still low. Thus, a solution is needed to deal with this problem.

One of the factors that causes low levels of resilience in students is the learning process (Fadillah et al., 2020; Murti & Handayani, 2022). One solution that can be done to deal with this problem is to implement appropriate learning strategies (Murti & Handayani, 2022; Rosmiati & Lestari, 2021). Learning that can increase students' resilience to adversity is student-centered learning and related to solving everyday problems (Fadillah et al., 2020; Rahayu et al., 2019). One of the appropriate learning models to increase students' resilience to 21st-century learning patterns is the Project Based Learning or PjBL model (Nirmayani & Dewi, 2021; Yulianti & Wulandari, 2021).

The PjBL model provides opportunities for students to solve problems (Guo et al., 2020; Rahardjanto, 2019; Rifai et al., 2019; Yulianti & Wulandari, 2021). By implementing the PjBL model, students will learn how to solve problems and develop critical thinking skills (Murniarti, 2017; Utomo et al., 2020). Previous research findings reveal that implementing the PjBL learning model can increase student activity in the classroom and student learning outcomes (Lestari, 2019; Sumardiana et al., 2019; Susilawati et al., 2017). This success can be seen from the achievement of all predetermined indicators of success, including teacher activities or abilities, student learning activities, and learning outcomes achieved by students. The PjBL learning model effectively teaches students to carry out complex processes starting from planning, communication, problem-solving, and decision-making (Lestari, 2019; Niswara et al., 2019; Taufik et al., 2019). Thus, implementing this model will make students more active during learning and hone their resilience to adversity.

Applying the PjBL model in the learning process is very important so that students are challenged and skilled in solving problems (Ardianti et al., 2017; Wibowo et al., 2022). Previous research also states that applying the PjBL model significantly influences students' activeness in learning (Anggraini & Wulandari, 2020; Izati et al., 2018). Further research proves that the PjBL model positively influences students' creativity (Ardianti et al., 2017; Widya et al., 2019). The PjBL model positively influences students' 4C skills (Avianty & Tobing, 2022). However, the results of this research do not yet show the effect of PjBL on students' resilience to adversity. So, this research aims to analyze the influence of the PjBL learning model on the resilience of fifth-grade students at Gugus IV Elementary School, Klungkung District.

2. METHOD

This quantitative research uses a Quasi-Experimental Design approach with a nonequivalent posttest-only control group design. This design was chosen because we only wanted to know the differences in resilience between the experimental and control groups. The population in this study used all fifth-grade elementary school students, totaling 160 students, by taking samples using a random method to find out the classes used as samples, as control and experimental classes. It was found that the experimental class, namely fifth-grade students at SD Negeri Manduang, had 34 students, and the control class, namely fifth grade at SD Negeri 2 Selat, had 36 students. Data was collected using a questionnaire, which used a Likert scale with a score range of 1 to 5. The variables used were the PjBL learning model and Adversity Resilience. The adversity resilience questionnaire grid is presented in Table 1.

Table 1. Adversity Resilience Questionnaire

Aspect	Indicator	Total Statement		
		Positive	Negative	Σ
Control	Self-control is related to social relations toward difficulties	1,2	3,4	4
	Self-control is related to psychomotor skills	5	6,7	3
Origin dan Ownership	Can find the origin of difficulties and look for the causes of these difficulties.	8,9	10	3
	Dare to admit and take responsibility for the problems you have committed.	11,12	13,14	4
Endurance	Shows resilience to problems	15,16	17,18	4
	Optimistic	19,20	21,22	4
Reach	Not afraid of failure in solving problems	23,24, 25	26,27,	5
	Do not let problems influence learning activities	38, 29	30	3

(Agusniatih & Nurzuama, 2020; Libraeni & Yadnyana, 2018; Stolz, 2000)

The data collected using a questionnaire that has been tested is then analyzed by carrying out descriptive statistical analysis and inferential statistics. A prerequisite test is required before the test, in the form of a normality test, to determine the data distribution using Kolmogorov-Smirnov analysis. The criteria for data to be normally distributed is if X2count < 2table at a significance level of 5% with the standard of freedom dk = (k-1). As well as the Homogeneity Test, using Levene's Test of Equality of Error Variance. The criteria for testing data homogeneity are seen from the significance value in the Levene column. Testing was carried out with a significance level of 5%. The data is declared homogeneous if the significance value (p) is > 0.05. The data analysis method used is the t-test.

3. RESULT AND DISCUSSION

Result

Based on descriptive analysis of the results of the posttest analysis of resilience to adversity in the experimental group, a mean (average) value of 125.15 was obtained, the lowest score was 95, and the highest score was 145. Meanwhile, the post-test analysis of resilience to accidents in the control group found that the mean (average) is 99.94. The lowest score was 85, while the highest was 130. The normality test results using the Kolmogorov Smirnov test in the experimental group were 0.128, and in the control group were 0.119. These values show 0.128>0.05 and 0.119>0.05, so it can be concluded that the data is normally distributed. Moreover,

the test for homogeneity of variance in the distribution of posttest value data in the experimental and control groups is homogeneous because the significance value is greater than 0.05. Hypothesis testing was carried out using the t-test with a significance level of 5%. The statistical analysis used was an independent sample t-test with the help of the SPSS 26 for Windows software program. The t-test results can be seen in Table 2.

Table 2. Recapitulation of t-test results

Variable	Levene's Test		T-test for Equality Means				
	F	Sig.	t	df	Sig. (2-tailed)	Means Difference	Std. Error Difference
Value of resilience to adversity *(Equal variances Assumed)*	0.061	0.806	5.523	68	0.000	16.508	2.989

Based on Table 4, recapitulation of t-test results, it is known that the value in the sig column (2-tailed) is 0.000. When compared with a significance value of 0.05. So it can be seen that 0.000 <0.05 and get tcount = 5.523 while ttable = 1.668 (tcount > ttable). This means that H0 is rejected and H1 is accepted. It can be concluded that the PjBL model's significant influence on the resilience of fifth-grade students at SD Gugus IV, Klungkung District, Academic Year 2022/2023.

Discussion

The PjBL learning model has proven effective in increasing students' resilience because teachers can train students directly to be involved in real projects. In addition, the application of this model can train students' abilities to face challenges, solve problems, collaborate, overcome difficulties, and learn actively through the stages of working on products and exchanging ideas with friends and teachers (Guo et al., 2020; Handayani et al., 2021). Thus, through learning with the PjBL model, students can develop resilience through adversity through skills to face challenges and overcome difficulties (Edy et al., 2019; Lu, 2023). This is because resilience refers to a person's ability to face and overcome challenges and difficulties in life. Learning using the PjBL model provides opportunities for students to be involved in real projects that present challenges and difficulties that must be overcome (Funke, 2022; Ruslan et al., 2021). Students face challenging situations and require creativity, innovation, and problem-solving. A learning model that is student-centered and oriented to everyday problems provides students with opportunities to increase resilience to adversity (Fadillah et al., 2020; Pérez-Escolar et al., 2021).

Implementing PjBL also trains students' resilience to adversity through self-control aspects related to social relations regarding difficulties and psychomotor skills. In the PjBL learning stage, students are invited to plan and evaluate the projects created. Suppose students are always trained to plan and evaluate projects (Lestari, 2019; Sumardiana et al., 2019; Susilawati et al., 2017). Students are trained in decision-making, problem-solving, and risk management. In these activities, they can take full control of themselves when searching for and determining a decision or solution to solve a problem in project completion (Murniarti, 2017; Utomo et al., 2020). In this way, students can achieve resilience, namely control, especially self-control, when seeking and determining a decision or solution to solve a problem. The control aspect relates to the extent to which an individual has control over events that cause difficulties, such as being able to control certain situations and the like (Kartika et al., 2021; Susanto & Sofyani, 2019). Furthermore, students' learning success is determined by their ability to control themselves, namely how they face and overcome difficulties (Susanto & Sofyani, 2019).

Apart from that, the PjBL model can increase students' resilience and sense of responsibility so that when facing problems or obstacles, students can look for the origins or solutions to the causes of problems. This happens because, in its application, the PjBL model involves students in real situations, which requires students to have resilience when facing challenges and encourages students to find solutions to overcome obstacles (Guo et al., 2020; Rahardjanto, 2019; Rifai et al., 2019; Yulianti & Wulandari, 2021). In this way, students can develop problem-solving skills, perseverance, resilience, and self-confidence. Hence, the PjBL model is suitable for increasing students' resilience, especially in endurance origin and ownership. Factors that can help build resilience to adversity include activities that can train perseverance tenacity in facing challenges, and embracing change (Rifai et al., 2019; Wiguna, 2020). Apart from that, students can develop an attitude of responsibility through various activities such as discussions, practicums, simulations, and working on projects (Mamahit et al., 2020; Rifai et al., 2019). Learning that emphasizes student completion of projects can also help train and develop students' capacity to face difficulties and obstacles (Dewi et al., 2017). Collaboration during the product completion process can expand understanding of various ways to overcome problems and develop communication and collaboration skills that are important in facing difficulties. Thus, students can develop adversity

awareness through this collaborative activity, namely control (self-control) (Izati et al., 2018; Niswara et al., 2019). This is supported by the benefits of collaborative activities in learning, namely recognition of individual differences, a sense of responsibility, development of cooperation to achieve common goals, helping each other and understanding problems and finding solutions, providing positive responses to other parties, developing common views, and the existence of a sense of mutual dependence on each other (Ardianti et al., 2017; Husain, 2020). Through the PjBL model, students are encouraged to collaborate and be responsible for tracking and managing information to solve problems (Khanifah, 2019; Utomo et al., 2020).

Learning with the PjBL model encourages students to see failure as an opportunity to learn and grow. When students face challenges that are not successfully resolved in completing the project, students are invited to reflect on the failure, identify the causes, and formulate improvement strategies (Hadiyanti et al., 2021; Koh et al., 2010; Sumarni & Kadarwati, 2020). This process trains students to build mental toughness and see failure as a natural part of the learning process (Faridy & Rohendi, 2022; Ismuwardani et al., 2019). So, the PjBL model helps students change their perception of failure and respond to it with a positive attitude, which contributes to developing students' resilience in facing challenges and overcoming failure. Someone resilient to adversity is seen from a person's ability to respond to the difficulties and changes they face and turn obstacles into opportunities to achieve goals (Ismuwardani et al., 2019; Juwana & Sastra Wiguna, 2019). When students have resilience, they can analyze a learning problem, not give up easily, and solve problems to find a solution (Kartika et al., 2021).

This research still has limitations, namely the scope of the research, which only focuses on one cluster, namely Cluster IV, Klungkung District, using fifth-grade students at SD Negeri Manduang as the experimental group and fifth-grade students at SD Negeri 2 Selat. Apart from that, another limitation of this research is collecting data on resilience using a questionnaire as a collection method. Questionnaires tend to be susceptible to the influence of respondents' subjective perceptions and opinions, so the answers given can sometimes be biased.

4. CONCLUSION

The results of data analysis show that the PjBL model significantly affects students' resilience to adversity. It was concluded that the PjBL model can increase students' resilience to adversity. The application of the PjBL model invites students to work in teams and collaborate in completing projects. The PjBL model can improve students' collaboration abilities. While completing a project, students learn to share ideas, listen to other people's perspectives, and work together to face challenges.

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