The Effect of the Based Learning (RBL) Model to Improve Students' Critical Thinking Skills

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Abstract: Critical thinking skills are needed to improve students' ability to face life's challenges in the 21st century. The RBL model offers another approach: students are placed as active subjects to improve critical thinking skills. This study aims to systemically design learning by integrating the principles and learning model of RBL to enhance critical thinking skills and investigate the effectiveness of the RBL learning model in improving students' critical thinking skills in various elementary schools. The research method used in this study is pre-experiment with a one-group pretest-posttest design. The sample of this research was conducted on about 20 fifth-grade students of SDN 03 Pekat. A critical thinking skills test and observation sheet were used to collect data to measure learning activities and analyze data using SPSS 25. The results showed that the difference in mean or average value from pretest (65.15) and posttest (82.7) showed that the RBL model affected students' critical thinking skills. Using RBL, students can be taught to analyze, evaluate, and solve problems. Thus, the RBL model can be used as an alternative learning model to improve critical thinking skills.

Abstrak: Kemampuan berpikir kritis sangat diperlukan untuk meningkat kemampuan siswa dalam menghadapi tantangan kehidupan di abad ke-21 ini. Model pembelajaran RBL menawarkan pendekatan lain, yang dimana siswa ditempatkan sebagai subjek yang aktif untuk meningkatkan kemampuan berpikir kritis. Penelitian ini bertujuan untuk pembelajaran dirancang secara sistemik dengan mengintegrasikan prinsip-prinsip dan model pembelajaran RBL untuk meningkatkan keterampilan berpikir kritis dan menyelidiki efektivitas model pembelajaran RBL dalam meningkatkan keterampilan berpikir kritis siswa di berbagai sekolah dasar. Metode penelitian yang digunakan dalam penelitian ini adalah pre-eksperimen dengan desain one-group pretest-posttest design. Sampel penelitian ini dilakukan pada sekitar 20 siswa kelas V SDN 03 Pekat. Tes kemampuan berpikir kritis dan lembar observasi digunakan untuk mengumpulkan data untuk mengukur kegiatan pembelajaran dan analisis data menggunakan SPSS 25. Hasil penelitian menunjukkan bahwa perbedaan mean atau nilai rata-rata dari pretest (65,15) dan posttest (82,7) menunjukkan bahwa model RBL berpengaruh terhadap kemampuan berpikir kritis siswa. Dengan menggunakan RBL, siswa dapat diajarkan untuk menganalisis, mengevaluasi, dan memecahkan masalah. Dengan demikian, model pembelajaran RBL dapat digunakan sebagai salah satu alternatif model pembelajaran untuk meningkatkan kemampuan berpikir kritis.

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A. Introduction

In today's digital era, students must have critical thinking skills and be able to adapt to technological advances. Everyone can access information easily through the internet. This allows students to explore and analyze various educational sources from different points of view, which is very important for improving their critical thinking skills (Shefira et al., 2024; Sulistiyawati, 2024). The use of technology in schools is essential for building critical thinking skills. Students can learn independently and solve problems with digital media. (Risti, 2021). Despite the proliferation of information technology, many students do not have access to the necessary educational or technological resources, which limits their ability to explore and learn independently (Sudarsana et al., 2019).

Within the contexts of globalization and rapid informational changes, critical thinking has emerged as one of the core competencies required by students to navigate through the complexities of the 21st century. The ability to think critically is a key factor in academic success and active participation in an ever-changing world. Critical thinking is the fundamental competence students of the 21st century will need to effectively cope with a globalized world (Nurkanti et al., 2023; Susanti et al., 2023). Competencies of educational strategies in technology, literacy, collaboration, and interdisciplinary learning should be the basis of their formation. Therefore, focusing on these approaches at school is necessary to meet future challenges and opportunities (Edelbroek et al., 2021; Yurt, 2023).

The implementation of different educational policies in Indonesia, such as the Merdeka Curriculum, makes sure that the development of these skills is part of learning. However, the results of national education evaluations, including PISA, reveal that students' critical thinking skills are still at a relatively low level (OECD, 2019). The Merdeka Curriculum seeks to develop critical thinking among other core competencies like scientific literacy and numeracy. It is designed to be more flexible, giving students a more personalized learning experience that will allow them to engage in deeper learning. However, one study in Surakarta found that 57% of students in elementary school were in the low category, while only 17% showed high competencies in critical thinking skills (Jumanto et al., 2024). More research also points out that though the Merdeka Curriculum effectively encourages critical thinking, its potential has been impeded by other issues like inadequate teacher support and resources (Pulungan et al., 2024).

Critical thinking equips students with the ability to analyze information critically. Studies show that upper-grade students show better essential skills in thinking, especially when exposed to effective teaching methods. For example, a study showed that problem-based learning significantly improved elementary school students' critical thinking skills in science (Kumala et al., 2022). Students' ability to think critically is their ability to use logical and critical thinking to analyze data, make decisions, and navigate arguments. Research has shown that essential thinking skills positively impact student learning outcomes (José Pinto Casquilho et al., 2023).

Critical thinking skills are increasingly being embraced as integral parts of modern education, reflecting a broader appreciation for the role that these abilities play in both

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academic and everyday life. As explained (Ennis 2011), critical thinking comprises several essential skills, such as analyzing arguments, assessing evidence, and making decisions based on sound reasoning. Ennis insists that beyond the skills themselves, critical thinking involves dispositions or the willingness to go through such analytical processes; these are the dual features of practical critical thinking (Poondej & Lerdpornkulrat, 2015).

The impact of critical thinking on learning outcomes has been well documented in the literature. Studies show that critical thinking improves learning outcomes in a variety of disciplines. For example, studies have shown that adding analytical writing and guided feedback to curricula significantly enhances students' critical thinking. In one study, cadets demonstrated a significant gain in their critical thinking performance after participating in structured writing assessments designed to challenge their analytical skills (Ahmed & Ibrahim, 2023). Furthermore, critical thinking is argued to be essential in equipping students with the ability to handle modern life's challenges. It helps them understand how to move around in an increasingly filled environment, where separating credible information from misinformation is essential. According to several studies, building critical thinking skills will lead students to become active learners who can adapt to changing circumstances and make informed decisions (Indrašienė et al., 2021).

The current educational system, relying on lecture methods and rote memorization, severely limits students' opportunities to develop critical analytical and evaluative skills. This situation calls for urgent reforms in learning design, emphasizing active and participatory learning approaches. By undertaking such reforms, educational systems can bring into being dynamic learning environments that foster not only better knowledge retention but also the ability of students to analyze, evaluate, and use their knowledge effectively in different situations (Albanna, 2024; Varachotisate et al., 2023; Young et al., 2020). This, therefore, calls for a pedagogical approach that focuses on using various learning resources to support learning, referred to as RBL.

The RBL model offers an alternative solution. RBL emphasizes utilizing various learning resources, such as practical experiments, texts, multimedia, and the internet. The RBL model is an approach that supports the self-directed learning process by using various learning resources, such as experiments, texts, and multimedia. The RBL model aims to increase students' involvement in learning and help them develop critical thinking skills. Research shows that applying the RBL model can improve students' concept mastery (Maghfiroh et al., 2024; Nugraha, 2018). Students become more active and involved in discussing and exploring material with RBL (Qodarsih et al., 2023; Sarip et al., 2022).

The RBL model is highly relevant in the independent curriculum, emphasizing learning that facilitates students' potential. This allows students to explore knowledge according to their interests and needs. The teacher's role as a facilitator is multifaceted, encompassing guidance in identifying sources, encouraging critical questioning, and creating an inclusive learning environment. By fulfilling this role, teachers increase student engagement and equip students with essential skills for lifelong learning. (Marwanto, 2021; Tjakradidjaja et al., 2016).

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RBL has been identified as a promising teaching approach to enhance students' critical thinking skills. On the other hand, in practice, RBL encounters several obstacles that hinder its implementation, such as problems relating to teacher training, reforming the curriculum, allocation of resources, and innovative assessment practices (Ahdika, 2021; Mahardini et al., 2019). The instructors can create conditions to enable students to learn better and develop critical thinking skills (Reyk et al., 2022). Meanwhile, research-based learning offers real potential for improving Indonesian students' critical thinking; however, significant barriers must be overcome.

Access to quality education remains a significant challenge in these areas, calling for a RBL model for the local context. A locally contextualized RBL model uses local resources as learning materials to achieve better learning outcomes. Developing an RBL model incorporating these strategies should help Indonesia resolve educational inequalities in remote areas while allowing for better student engagement and improved learning with locally available resources (Fayanto et al., 2023; Tuminah et al., 2022).

Among the most important are limited access to quality learning resources, low information literacy of students, and insufficient teacher training in the introduction of RBL (Paudel, 2024; Sara Lowe et al., 2015; Torres et al., 2024; Ws et al., 2024). These issues represent a more significant problem of educational efficacy and student engagement. Such barriers can be overcome through multilayered strategies of better resource management, enhanced information literacy programs, and investment in holistic teacher training programs. If addressed, these challenges will provide opportunities for educational systems to establish an equitable and efficient learning environment for all students.

The RBL model prioritizes active student involvement in accessing and analyzing information from various sources. In this way, students learn from their teachers and engage in the broader learning process. As this model allows students to practice critical thinking by sorting out valid information, understanding the material from different points of view, and connecting it to everyday life, teachers assist students by identifying relevant sources, providing direction, and encouraging them to make critical inquiries. This approach is expected to help students develop critical thinking skills early on. These skills will be beneficial for academic success and life in the future. The study aims to analyze the effect of the RBL learning model on improving students' critical thinking skills. From the above description, the objectives of this study provide some meaningful novelty contributions to learning, namely: (1). Structured and Context-Based Model Design: learning is designed systemically by integrating RBL principles and strategies to improve critical thinking skills. Implementation guidelines were also prepared to assist teachers in implementing this model, even in resource-constrained areas. (2). Measuring Effectiveness within an Educational Context: This study aimed to investigate the RBL model's effectiveness in improving students' critical thinking skills across diverse elementary schools. The current research offers an empirical base for policy and instructional practice development.

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B. Method

This type of research is quantitative research. The research design used in this research is a pre-experiment design, one group pre-test and one post-test. One Group pre-test post-test design is a form of research design used to determine the effect of treatment on the variable under study. In this design, there are two stages of measurement, namely, pretest and posttest. The pretest is done before the treatment is given, while the posttest is done after the treatment. The sample to be studied in this study, namely class V at SDN 03 pekat, totaling 20 people.

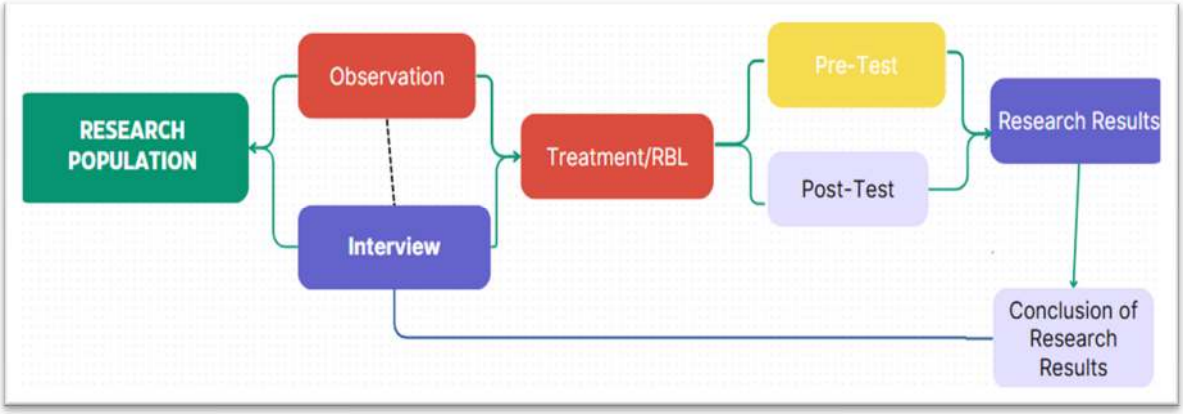

Figure 1. Flowchart Pre-Experiment

A research instrument is a tool used to measure observed natural and social phenomena (Sugiyono, 2019). Meanwhile, another opinion says that research instruments are tools used to collect data in research (Purwanto, 2018). These were tests, questionnaires, observation, and documentation, respectively. The tests have been employed to measure students' critical thinking skills both before and after the employment of the RBL learning model. In addition, questionnaires, observation, and documentation were utilized to support the test data. The final result of descriptive statistical analysis became students' final ability. The test instrument lattice was prepared by taking into account critical thinking indicators.

Data analysis of quantitative research uses statistical procedures or statistical analysis. Statistical analysis in quantitative research is divided into two functions, namely descriptive statistics and inferential statistics. Data analysis in this study also used descriptive statistics to give an overview of the data collection. Also, it used inferential statistical functions to answer the hypotheses and generalizations of this study. The inferential statistical tests used to answer the hypothesis in this study are the Normality Test, Homogeneous Test, Independent Sample T-test, and Regression Statistics. All statistical tests in this research will use SPSS 25 to avoid calculation errors and errors in concluding research results.

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C. Result and Discussion

Result

This research uses a Quantitative approach. Researchers conducted a validity test at the beginning of the study. The validity test refers to the testing method applied to the questionnaire to determine how good the questionnaire is. Namely, the questions in the questionnaire can successfully remove something that the questionnaire wants to measure. The results are shown in Table 1 below:

Table 1. Instrument Validity Test Results

Instrument	R Count	R Table	Description
1	0,763	0,444	Valid
2	0,591	0,444	Valid
3	0,718	0,444	Valid
4	0,668	0,444	Valid
5	0,479	0,444	Valid
6	0,591	0,444	Valid
7	0,669	0,444	Valid
8	0,697	0,444	Valid
9	0,787	0,444	Valid
10	0,736	0,444	Valid
11	0,741	0,444	Valid
12	0,731	0,444	Valid
13	0.761	0,444	Valid

Based on Table 1 above, 13 valid instruments out of 15 were used, so the instrument used as a source of information on data collection in the study was 13. After the instrument is tested valid, there are 13 valid instruments, and the reliability test of the instruments that do everything is reliable. A reliability test is applied to ensure that measurements over the same object will obtain information representing accurate and close data. By its definition, measurement includes a continuous process leading to some relatively permanent quantification resulting in numbers. An instrument of measurement is usually deemed reliable in a situation whereby, through applying it, one can achieve measurement results for symptoms from the same object, and they become consistent and reliable; more details can be seen in Table 2 below.

Table 2. Reliability Test Results

Variables	Cronbah's Alpha	Role of Thumb	Description
Critical Thinking	0,791	0,6	Reliable

Table 2 above shows that in this test, it can be seen that the result is Cronbah's alpha value of 0.791, which is greater than 0.6, so it is said to be reliable.

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The normality test is used to test whether confounding or residual variables have a normal distribution in the regression model. The normality test method used to test the normality of residuals is Shapiro Wilk, as shown in Table 3 below.

Table 3. Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	**Df**	**Sig.**	**Statistic**	**Df**	**Sig.**
Pre-test	.143	20	.200*	.935	20	.195
Post-test	.163	20	.172	.923	20	.112

Table 2 shows the resulting value on the Asym.sig Pretest is 0.195 while the Posttest is 0.112, which is the value of the pretest and Posttest asymp.sig 0.195 and 0.112 are more significant than 0.05, so the data has a normal distribution. A homogeneity test is a statistical test whereby the evaluation between two or more samples selected from different populations ascertains whether the variances of the distributions or characteristics are drawn from the same distribution. A homogeneity test will determine if the assumptions that must be satisfied for parametric statistical tests have been completed, for instance, by running an Independent Sample T-test. Therefore, the homogeneity test becomes the statistical method to determine whether two or more samples taken from different populations happen to show a similar characteristics distribution of variance, just as Table 4 depicts below:

Table 4. Tests of Homogeneity of Variances

		Levene Statistic	**df1**	**df2**	**Sig.**
Critical Thinking Ability	Based on Mean	1.355	1	38	.252
	Based on Median	1.249	1	38	.271
	Based on the Median and with adjusted df	1.249	1	34.575	.271
	Based on trimmed mean	1.502	1	38	.228

Based on decision-making in the homogeneity test, if the significance value is> 0.05, the data is declared to be a homogeneous distribution. Based on Table 3 above, it can be seen that the significance value is 0.252> 0.05. A paired sample t-test is used to determine whether there is a difference in the average of two paired samples, the two samples in question, namely in this study using a Group pretest and posttest research design, which means that the research only uses 1 class with the same sample consisting of 20 students and consists of two pretest and posttest data.

Table 5. t-Test: Paired Two Sample for Means

	Pretest	**Posttest**
Mean	65,15	82,7
Variance	55,187	30,64211

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	Pretest	Posttest
Observations	20	20
Pearson Correlation	0,566	
Hypothesized Mean Difference	0	
Df	19	
t Stat	-12,518	
P(T<=t) one-tail	0	
t Critical one-tail	1,729	
P(T<=t) two-tail	0,000	
t Critical two-tail	2,093	

Based on table 5 states the difference in the mean or average value of the pretest (65.15) and Posttest (82.7) with a total sample of 20 samples. By looking at the two-tail significance value of 0.000 <0.05, it can be concluded that the RBL learning model improves the critical thinking skills of grade V students of SDN 03 Pekat.

The analytical tool used to measure the effect of the two variables in this study is the simple linear regression analysis. A simple linear regression test is an analysis involving only two variables: the independent variable, Resource-Based Learning, and the dependent variable, critical thinking. Independent variables are the variables that affect the dependent variable. As shown in Table 6 below:

Table 6. Simple Linear Regression Test

Regression Statistics	
Multiple R	0,140
R Square	0,196
Adjusted R Square	-0,035
Standard Error	3,677
Observations	20

Based on table 6. Regression Statistics show that the nominal R square (Determination Coefficient) is 0.196, which means that the contribution of the influence of the independent variable (Resource-Based Learning) to the Dependent Variable (critical thinking) is 19.6%.

Discussion

RBL is a learning approach that emphasizes using various learning resources to support the learning process and provides many benefits for students, especially in developing independent learning and exploration skills. These resources include books, articles, videos, websites, and hands-on experiences. It is expected that with RBL, learners can (1) access and use various sources to understand the topics taught, (2) analyze information from various sources to improve their knowledge, and (3) learn independently without relying entirely on teacher instructions. Several studies have shown that RBL

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improves students' academic performance and equips them with the critical thinking skills needed to face future challenges (Correia et al., 2024; Sadasivan et al., 2021; Zhou et al., 2023).

RBL plays a vital role in developing critical thinking skills among students through active problem identification and solution finding. This teaching methodology will help students sift through a large volume of information, evaluate the validity of various sources, and construct logical arguments based on their findings (Saputra, 2022). Using multiple resources, including digital materials, students will learn to recognize and use relevant information appropriately, which is key in a modern information society (Firmansyah et al., 2024). Furthermore, RBL encourages independence in learners to take ownership of the learning process. It fosters independence that promotes one's ability to analyze and organize information and nurtures an attitude toward inquiry and critical evaluation of information (Sadasivan et al., 2021). In this process of exploration of resources, students learn how to evaluate the credibility of information skills that have become essential in these times of misinformation.

RBL requires several resource accesses. This is based on the idea that increased access will cover a broader approach and a source of information that will assist students in realizing issues with more profound and broader critical ability. Some hallmarks of Resource-Based Learning are Media Diversity, Flexibility, and Resource Quality. Changes in digital resources have given a new dimension to how students can access information. Resources during Resource-Based Learning can be videos, articles, databases, and other activities that suit students' learning styles. Flexibility: Students can learn at their own pace and their convenience. This allows flexibility in schedules and different learning preferences, therefore increasing engagement (Chen & Yang, 2023). This ready availability further means that students can learn at their own pace and comfort. It provides flexibility for different schedules and learning preferences, increasing engagement (Chen & Yang, 2023). Resources should be of a reliable quality. Students search through sources of all kinds, and the ability to assess the reliability of information is an integral part of modern education (Hill, 2007; Latifah et al., 2024).

Based on the description or information researchers get when conducting observations, students' critical thinking skills at SDN 03 Pekat are low. This is because students or teachers still make guides only in textbooks and the surrounding environment. Teachers can take advantage of the sophistication of technology in this era, such as video shows from YouTube or other social media. It can be seen through the research results that the mean or average value before the test is 65.15, and after the test, it is 82.7, with a total sample of 20 samples. From the two-tail significance value of 0.000<0.05, it is obtained that there is an influence on the RBL learning model to enhance the critical thinking skills of the fifth-grade students of SDN 03 Pekat.

To improve critical thinking skills through the RBL model, several steps and strategies can be used: (1) Choice of Learning Resources: The RBL model allows students to use various learning resources individually or in groups. These resources can include books, articles, videos, and other online resources related to the lesson. (2) Development of Creative

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and Critical Thinking Skills: RBL is intended to help students improve their critical and creative thinking skills by helping them solve problems using their learning resources. (3) Problem-based Learning: RBL is often used in problem-based learning, where students are tasked with solving problems related to the subject matter. (4) Use of Active Activities: The RBL model allows students to think critically, communicate, and analyze. Activities such as group discussions, research, and data analysis increase student engagement in the learning process. (5) Evaluation and Reflection: Two essential components of the RBL model are evaluation and reflection. Teachers should track students' progress and provide helpful criticism to improve their critical thinking skills.

Critical thinking is one of the most essential cognitive faculties that enables the mind to organize information, analyze arguments, evaluate evidence, and then bring forth logical conclusions. Activities that enhance interpretation yield high gains in overall critical thinking skills (Penggabean et al., 2023). Using problem-solving exercises tends to improve performance on various measures of critical thinking (Oktaviasari & Khotimah, 2023). While the students struggle much with evaluation, their skills can be substantially nurtured through structured learning experiences focusing on critical appraisal techniques (Angraini & Wahyuni, 2021). Students who get strict training in critical thinking can dramatically enhance their ability to conclude and thus improve their academic performances (Riezandi & Nurita, 2022).

In implementing the RBL model, some barriers hinder learning effectiveness. The two common barriers encountered are the students' lack of digital literacy skills and the limited time available for resource exploration. Some students' low digital literacy skills are one of the most significant challenges in RBL (Fitroh et al., 2014; Tanuwijaya & Tambunan, 2021). Another major obstacle in RBL is the limited time available. With formal education, there is very little time to explore and investigate learning resources (Fitroh et al., 2014; Tanuwijaya & Tambunan, 2021).

The critical thinking skills needed to cope with the complexities of the digital age can be achieved using the RBL model. RBL prepares students for academic success and participation in a rapidly changing world by teaching research, collaboration, problem-solving, critical thinking, and metacognition skills. These skills enable students to think creatively, adapt to new challenges, and engage meaningfully in data-rich environments. This aligns with the research that shows that RBL significantly improves students' critical thinking skills compared to traditional teaching methods (Reyk et al., 2022). The results of this study indicate the effect of the Resource-Based Learning Model on students' critical thinking skills.

Resource-Based Learning relies on various resources to increase student involvement and improve learning. It allows for several collaborative instructional strategies, including PBL or Problem-Based Learning. Significant support factors for RBL relate to the availability of varied learning resources and collaborative project-based learning. The availability of a variety of resources enhances the degree of engagement and motivation among student (Evenddy et al., 2023; Paudel, 2024). A benefit of this range is a

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more personalized way of learning, enabling the students to delve deeper and from numerous perspectives. Such incorporation within a curriculum model can support students' improved academic outcomes and enhanced levels of critical thinking. While it has many benefits, some of its limitations in adopting RBL include resource limitations and problems with project management strategies that work best. Professional development of teachers will be necessary in many cases for the successful implementation of these skills in facilitating collaborative projects (McCormack, 2019; Zhao, 2024)

Recent research findings indicate that huge effects are brought out through the RBL model in developing critical thinking skills. The RBL model is flexible and thus may be applied in various educational contexts. It encourages active and self-directed learning, essential in developing critical thinking. PBL in the RBL framework has enhanced students' problem-solving skills in the real world, thereby enhancing their analytical skills (Bandjar et al., 2024; Situmorang et al., 2022). There should be access to learning resources such as digital tools and multimedia content in RBL. Such use of e-modules and interactive learning media can bring significant enhancement in critical thinking in students by displaying them with relevant and contextualized information that promotes a deeper understanding and application thereof (Setiyanika et al., 2023; Sulistiani et al., 2022; Suryani et al., 2024). PBL encourages the collaboration of students in small groups, which also forms part of the RBL model. This collaborative method promotes teamwork and enhances critical thinking among students as students will be discussing, debating ideas, and collectively solving problems (Sutiani et al., 2021). Its efficiency has been proved through research showing a dramatic difference in students' critical thinking skills while working in project teams (Na'imah et al., 2022). The RBL model's effectiveness in improving critical thinking skills: The study has identified that STEM and PBL approaches are far better at bringing substantial improvement in essential thinking skills than traditional lecture-based teaching methods (Bandjar et al., 2024). The local potential-based modules are effective in enhancing critical thinking by integrating community resources into learning activities (Setiyanika et al., 2023).

Successful implementation of the RBL model in education requires several supportive elements, especially regarding teacher training and increased student access to quality learning resources. Educators will need training on integrating digital tools and resources into their pedagogy. This calls for training in creating and using educational resources that enhance learning (Kononets et al., 2021). Teachers must be taught how to curate and manage the wealth of learning materials students can explore, from digital libraries to interactive content (Hill & Greenhow, 2020). Programs that teach students to search for, evaluate, and use information online will significantly help them capitalize on resources. This comfort with trying various digital tools will set the stage for even richer learning experiences.

For the RBL model to be successful, it must be backed by solid teacher training and access to better learning materials. This approach would ensure that all learning institutions support resource-based learning by developing critical thinking among their students.

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Developing digital literacy in the student will allow them to effectively use all the knowledge within their reach for their learning process.

D. Conclusion

This research is expected to determine the effectiveness of the application of the Resource Based Learning model in the learning process, especially in terms of developing students' critical thinking skills in individual and group processes in learning activities. In addition, this research also intends to reveal the supporting and inhibiting factors in implementing the Resource Based Learning model and provide relevant recommendations to optimize the use of this model as one of the innovative strategies in improving the quality of learning, especially in improving critical thinking skills.

The result of this research is expected to enrich scientific studies related to the application of resource-based learning as an innovative approach to enhance students' critical thinking skills. It also helps in the development of a theoretical framework for resource-based learning that is relevant to 21st-century demands. The practical value of this study is that its results can be one reference for teachers in choosing and implementing appropriate learning strategies to develop critical thinking skills in students. The Resource Based Learning model can be one approach that encourages students to become more active, independent, and necessary in using various learning resources.

Further research can be done by integrating the Resource Learning model with cultural context or local wisdom so that students can use local resources to understand learning materials more relevantly and contextually, likewise, by linking the ability to think into the context of culture or local wisdom. This can enrich the understanding of teachers and students about the importance of culture or local wisdom for the development of education in the future. Education in the 21st century focuses on its output and emphasizes the process by paying attention to cultural factors or local wisdom as the basis of science.

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References

Ahdika, A. (2021). Improvement of Quality, Interest, Critical, and Analytical Thinking Ability of Students through the Application of Research-Based Learning (RBL) in Introduction to Stochastic Processes Subject. *International Electronic Journal of Mathematics Education, 12*(2), 167–191. https://doi.org/10.29333/iejme/608.

Ahmed, S. A. E., & Ibrahim, M. E. E. (2023). The Impact of Critical Thinking in Improving Students' Learning: A case study of students in the English Department, College of Science and Arts, Tanumah, King Khalid University. *European Journal of English*

https://doi.org/10.51276/edu.v6i1.1081

Language and Literature Studies, 11(1), 10–16. https://doi.org/10.37745/ejells.2013/vol11n11016.

Albanna, A. R. (2024). Optimising Lecture Methods and Learning Motivation to Improve Islamic Cultural History Outcomes : A Case Study at MTs Nurul Qur ' an Pakunden Ponorogo Introduction Curriculum , 1 Aiming to Shape a Faithful Generation with a Noble Character and a Deep. *HEUTAGOGIA Jurnal Islamic of Education, 1*(1), 135–146. https://doi.org/10.5688/ajpe7044.9.

Angraini, L. M., & Wahyuni, A. (2021). The Effect of Concept Attainment Model on Mathematical Critical Thinking Ability. *International Journal of Instruction, 14*(1), 727–742.

Bandjar, B. S., Rindarjono, M. G., & Prihadi, S. (2024). Effectiveness of STEM Learning Model and Project-Based Learning to Enhance Critical Thinking Skills in Senior High School. *Jurnal Pendidikan Geo Jambura, 5*(September), 127–139. https://doi.org/10.37095/jgej.v5i2.26532.

Chen, W., & Yang, T. (2023). A Recommendation System of Personalized Resource Reliability for Online Teaching System Under Large-Scale User Access. *Mobile Networks and Applications*, 1-12. https://doi.org/10.1007/s11036-023-02194-8.

Correia, F. P., Pinto-Pinho, P., Silva, R., Helguero, L., Pereira, M. L., Neves, B., & Fardilha, M. (2024). Enhancing Learning in Biomedicine through Research-based Learning: Empowering Students for Future Success. *International Conference on Higher Education Advances*, 281–288. https://doi.org/10.4995/HEAd24.2024.17308.

Edelbroek, H., Mijnders, M., & Post, G. (2021). 4 Interdisciplinary Learning Activities (ILAs). *Interdisciplinary Learning Activities*, 15–19. https://doi.org/10.1515/9789048540129-004.

Ennis. (2011). *The Nature of Critical Thinking: An Outline of Critical Thinking Dispositions and Abilities*. University of Illinois.

Evenddy, S. S., Gailea, N., & Syafrizal, S. (2023). Exploring the Benefits and Challenges of Project-Based Learning in Higher Education. *PPSDP International Journal of Education, 2*(2), 458–469. https://doi.org/10.59175/pijed.v2i2.148.

Fayanto, S., Ulfa, S., Praherdhiono, H., Shinta, N. D., Takda, A., Sahara, L., & Balulu, N. (2023). Design of Exophysics: Book-Based Mobile Application for Literacy Learning in the Remote Access Areas of Indonesia. *Journal of Learning for Development, 10*(3), 411–426. https://doi.org/10.56059/jl4d.v10i3.846.

https://doi.org/10.51276/edu.v6i1.1081

Firmansyah, E., Siama, Kamaluddin, & AP, R. (2024). Pengembangan LKPD Siswa Model Resource Based Learning untuk Meningkatkan Hasil Belajar dan Penguatan Profil Pelajar Pancasila Siswa. *Jurnal PIPA: Pendidikan Ilmu Pengetahuan Alam, 05*(02), 1–23.

Fitroh, I., Ngainin, N., & Supriyanto. (2014). Pembelajaran Tatap Muka Terbatas : Analisis Hambatan Guru dan Siswa pada Hasil Belajar Tematik. *El-Fata: Jurnal Ilmu Tarbiyah, 03*(01), 13–23.

Hill & Greenhow. (2020). Problems of Implementation of the System of Resource-Based Learning of Future Teachers. *Balneo Research Journal, 11*(3), 1–14. http://dx.doi.org/10.12680/balneo.2020.nnn.

Hill, J. R. (2007). Reflections on Resource-Based Learning Environments: Continuing the Exploration of Opportunities and Obstacles. *International Journal of Knowledge and Learning*, *3*(1), 12-29.

Indrašienė, V., Jegelevičienė, V., Merfeldaitė, O., Penkauskienė, D., Pivorienė, J., Railienė, A., Sadauskas, J., & Valavičienė, N. (2021). The Value of Critical Thinking in Higher Education and the Labour Market: The Voice of Stakeholders. *Social Sciences, 10*(8), 286. https://doi.org/10.3390/socsci10080286.

José Pinto Casquilho, Feliza Sinaga, Neni Septiani, Sri Wina Oktavia, Nikma Nur Qoidah, & Endah Febri Setiya Rini. (2023). Pengaruh Kemampuan Berpikir Kritis terhadap Hasil Belajar IPA Siswa. *Edufisika: Jurnal Pendidikan Fisika, 8*(2).

Jumanto, Sa'Ud, U. S., & Sopandi, W. (2024). Profile of Critical Thinking Skills of Elementary School Students in Surakarta City Based on Elements Curriculum Merdeka. *SHS Web of Conferences, 182*, 01007. https://doi.org/10.1051/shsconf/202418201007.

Kononets, N., Ilchenko, O., Zhamardiy, V., Shkola, O., Broslavska, H., Kolhan, O., Padalka, R., & Kolgan, T. (2021). Software Tools for Creating Electronic Educational Resources in the Resource-Based Learning Process. *Journal for Educators, Teachers, and Trainers, 12*(3), 165–175. https://doi.org/10.47750/jett.2021.12.03.016.

Kumala, F. N., Dwi Yasa, A., & Dandy Samudra, R. (2022). Elementary Clarification Analysis (Critical Thinking Skill) Elementary School Students Based on Grade and Learning Method. *Jurnal Ilmiah Sekolah Dasar, 6*(3), 459–467. https://doi.org/10.23887/jisd.v6i3.47366.

Latifah, R. D., Sufiyana, A. Z., & Budiya, B. (2024). Implementasi Pembelajaran Berbasis Sumber (Resource Based Learning) untuk Meningkatkan Kemampuan Berpikir

https://doi.org/10.51276/edu.v6i1.1081

Kritis Peserta Didik pada Mata Pelajaran Pendidikan Agama Islam di SMAN 9 Malang. *Vicratina: Jurnal Ilmiah Keagamaan*, *9*(8), 207-217.

Maghfiroh, A. M., Astutik, S., Suratno, S., Kurnianto, F. A., & Nurdin, E. A. (2024). Pengaruh Model Pembelajaran Resource Based Learning (RBL) Berbasis Geoliteracy terhadap Kemampuan Berpikir Spasial Siswa SMA. *Majalah Pembelajaran Geografi, 7*(1), 30. https://doi.org/10.19184/pgeo.v7i1.46857.

Mahardini, T., Khaerunisa, F., Wijayanti, I. W., & Salimi, M. (2019). Research-Based Learning (Rbl) to Improve Critical Thinking Skills.

Social, Humanities, and Educational Studies (SHEs): Conference Series, 1(2), 466. https://doi.org/10.20961/shes.v1i2.26816.

Marwanto, M. (2021). The Role of the Teacher as a Facilitator in the Use of Indonesian in Elementary School. *As-Sibyan, 4*(1), 1–10. https://doi.org/10.52484/AS_SIBYAN.V4I1.198.

McCormack, V. (2019). *Creating Sustainable Project-Based Learning Through Teacher Professional Development*. Handbook of Research on Educator Preparation and Professional Learning. https://doi.org/10.4018/978-1-5225-8583-1.ch021.

Na'imah, N. N., Widiyaningrum, P., & Martuti, N. K. T. (2022). Effectiveness of Local Potential-Based Biodiversity E-booklets on Students' Critical Thinking Skills. *Journal of Innovative Science Education, 11*(3), 250–260. https://doi.org/10.15294/jise.v10i1.54086.

Nugraha, M. (2018). Penerapan Model Pembelajaran Resource Based Learning (RBL) Dalam Upaya Meningkatkan Kemampuan Penguasaan Konsep IPA. *MENDIDIK: Jurnal Kajian Pendidikan Dan Pengajaran, 4*(1), 71–76. https://doi.org/10.30653/003.201841.45.

Nurkanti, M., Santiago, P. V. da S., Yasundari, Y., & Rohimah, S. M. (2023). Developing Students' Critical Thinking Abilities Using the English Literacy Comprehension Journal: A Case Study in Biology Education. *AMCA Journal of Science and Technology, 3*(2), 43–46. https://doi.org/10.51773/ajst.v3i2.295.

OECD. (2019). PISA 2018 Results What Students Know And Can Do (Volume I).

Oktaviasari, A. N. A., & Khotimah, R. P. (2023). A Nalysis of Student ' S Critical Thinking Ability in Solving. *Prima: Jurnal Pendidikan Matematika Vol.*, 7(2), 143–156.

Paudel, S. P. (2024). The Impact of Project-Based Learning on 21st Century Skills in Teaching. *Dhaulagiri Journal of Contemporary, 2*(1), 134–140.

https://doi.org/10.51276/edu.v6i1.1081

Penggabean, M. S., Cendana, W., & Ani, Y. (2023). The Influence of Reflective Journals on Critical Thinking Ability of Students. *DIDAKTIKA TAUHIDI: Jurnal Pendidikan Guru Sekolah Dasar, 10*(1), 15–28. https://doi.org/10.30997/dt.v10i1.5569.

Poondej, C., & Lerdpornkulrat, T. (2015). The Reliability and Construct Validity of the Critical Thinking Disposition Scale. *Journal of Psychological and Educational Research, 23*(1), 23–36.

Pulungan, H., Maharani, T., Sulistyani, S., Lubis, I. H., Harahap, H., Studi, P., Indonesia, S., Medan, U. N., & Utara, P. S. (2024). Analisis Dampak Implementasi Kurikulum Merdeka pada Pengembangan Berpikir Kritis Peserta Didik. *Aurelia: Jurnal Penelitian dan Pengabdian Masyarakat Indonesia, 3*(2), 2962–2965.

Purwanto. (2018). *Metodologi Penelitian Kuantitatif, Kualitatif, dan R&D*. Pustaka Pelajar.

Qodarsih, F. Y., Sunarso, A., & Utanto, Y. (2023). Analisis Kemampuan Berpikir Kritis dan Keterampilan Komunikasi Siswa Kelas IV dengan Model Pembelajaran Talking Stick Berbantu Media Poster. *Dharmas Education Journal (DE_Journal), 4*(1), 413–425. https://doi.org/10.56667/dejournal.v4i1.1191.

Reyk, J. V., Leasa, M., Talakua, M., & Batlolona, J. R. (2022). Research-Based Learning: Added Value in Students' Science Critical Thinking Skills. *Jurnal Penelitian Pendidikan IPA, 8*(1), 230–238. https://doi.org/10.29303/jppipa.v8i1.1121.

Riezandi, M. T. R., & Nurita, T. (2022). Analysis of Critical Thinking Skills of Junior High School Students on Vibration and Wave Materials. *Jurnal Pijar Mipa, 17*(5), 630–637. https://doi.org/10.29303/jpm.v17i5.3778.

Risti, D. (2021). Pengembangan Komik Interaktif Soal Cerita Matematika Berbasis Tpack untuk Meningkatkan Keterampilan Berpikir Kritis Siswa Kelas IV SD. *Symmetry: Pasundan Journal of Research in Mathematics Learning and Education, 6*(6), 204–220. https://doi.org/10.23969/symmetry.v6i2.4788.

Sadasivan, U., Balachander, B., & Vijayalakshmi, S. (2021). Examining Resource-Based Learning and Individual Learning Capabilities in Today's Scenario. *Journal of Physics: Conference Series, 1783*(1), 012118. https://doi.org/10.1088/1742-6596/1783/1/012118.

Saputra, H. (2022). The Effectiveness of Resource-Based Learning Model in English for Islamic Studies Course Enhancing Critical Thinking Skill. *IDEAS: Journal on English Language Teaching and Learning, Linguistics and Literature, 10*(2), 1394–1407. https://doi.org/10.24256/ideas.v10i2.3182.

https://doi.org/10.51276/edu.v6i1.1081

Sara Lowe, M., Booth, C., Stone, S., & Tagge, N. (2015). Impacting Information Literacy Learning in First-Year Seminars: A Rubric-Based Evaluation. *Portal, 15*(3), 489–512. https://doi.org/10.1353/pla.2015.0030.

Sarip, N., Kaharuddin, K., & Palloan, P. (2022). Analisis Keterampilan Berpikir Kritis Peserta Didik Kelas X di SMAN 10 Makassar. *Jurnal Sains dan Pendidikan Fisika, 18*(3), 291. https://doi.org/10.35580/jspf.v18i3.31668.

Setiyanika, N., Sri Ngabekti, S., & Parmin, P. (2023). Development of Local Potential-Based Ecosystem Modules in Grobogan Regency to Improve Students' Critical Thinking Ability. *Journal of Innovative Science Education, 12*(2), 254–261. https://doi.org/10.15294/jise.v12i2.72482.

Shefira, A., Dewi, N. R., & Octaviani, R. (2024). Inovasi Pembelajaran PKN di Era Digital dengan Pemanfaatan Teknologi dalam Meningkatkan Pemahaman Siswa. *Jurnal Pendidikan Guru Sekolah Dasar, 1*(3), 10. https://doi.org/10.47134/pgsd.v1i3.447.

Situmorang, M., Sinaga, M., Sitorus, M., & Sudrajat, A. (2022). Implementation of Project-based Learning Innovation to Develop Students' Critical Thinking Skills as a Strategy to Achieve Analytical Chemistry Competencies. *Indian Journal of Pharmaceutical Education and Research, 56*(1), S41–S51. https://doi.org/10.5530/ijper.56.1s.41.

Sudarsana, I. K., Putra, I. P. A. W., Anam, F., Istianti, T., Pandin, M. G. R., Bhawika, G. W., Listiawan, T., Saddhono, K., Abdullah, D., Cathrin, S., Hadjri, M. I., & Laili, N. R. (2019). The Function of Technology and Device Laptop for Education Purposes. *Journal of Physics: Conference Series, 1363*(1). https://doi.org/10.1088/1742-6596/1363/1/012062.

Sugiyono. (2019). *Metode Penelitian dan Pengembangan (Research and Development/R&D) (Cetakan ke-4*). Bandung: CV. Alfabeta.

Sulistiani, S., Kartimi, K., & Sahrir, D. C. (2022). E-modules with Android Appy Pie Based on Socio-Scientific Issues to Improve Students' Critical Thinking Skills. *Journal of Education Technology, 6*(2), 372–379. https://doi.org/10.23887/jet.v6i2.44817.

Sulistiyawati, D. Y. R. (2024). Peran Teknologi Informasi dalam Perkembangan Literasi Numerasi Peserta Didik Jenjang Sekolah Dasar Di Era Digital. *Social, Humanities, and Educational Studies (SHES): Conference Series, 7*(3), 451–459. https://doi.org/10.20961/shes.v7i3.91608.

Susanti, E., Septiana, S., Meilinda, S., & Rosa, I. M. (2023). Effectiveness of Using Google Sites-Based E-Modules to Optimize Critical Thinking Skills: Student Perceptions

https://doi.org/10.51276/edu.v6i1.1081

Analysis. *Jurnal Penelitian Pendidikan IPA, 9*(12), 10555–10561. https://doi.org/10.29303/jppipa.v9i12.5887.

Sutiani, A., Situmorang, M., & Silalahi, A. (2021). Implementing an Inquiry Learning Model with Science Literacy to Improve Student Critical Thinking Skills. *International Journal of Instruction, 14*(2), 117–138. https://doi.org/10.29333/iji.2021.1428a.

Tanuwijaya, N. S., & Tambunan, W. (2021). Alternatif Solusi Model Pembelajaran untuk Mengatasi Resiko Penurunan Capaian Belajar dalam Pembelajaran Tatap Muka Terbatas di Masa Pandemic Covid 19 (Studi Kasus Analisis Kebijakan Pendidikan). *Jurnal Manajemen Pendidikan, 10*(02), 80–90.

Tjakradidjaja, F. A., Prabandari, Y. S., Prihatiningsih, T. S., & Harsono, H. (2016). The Role of Teacher in Medical Student Self-Directed Learning Process. *Journal of Education and Learning (EduLearn), 10*(1), 78–84.

Torres, T., Montoya, B. C., & Posada, K. V. (2024). Contribution of Inquiry-Based Physics Teaching and Learning in Initial Teacher Training. In *Physics Education Today: Innovative Methodologies, Tools and Evaluation* (pp. 139-147). Cham: Springer Nature Switzerland.

Tuminah, T., Selong, Y., & Nur Cahyoko, K. (2022). The Impact Of Online Learning For Teachers In Remote Areas. *JETL (Journal of Education, Teaching and Learning), 7*(1), 60. https://doi.org/10.26737/jetl.v7i1.2733.

Varachotisate, P., Siritaweechai, N., Kositanurit, W., Thanprasertsuk, S., Chayanupatkul, M., Thongsricome, T., Bumphenkiatikul, T., Chuleerarux, N., Watanatada, P., Werawatganon, D., Somboonwong, J., Siriviriyakul, P., Sanguanrungsirikul, S., Bongsebandhu-Phubhakdi, S., Ratanasirisawad, V., Jaroenlapnopparat, A., Burana, C., Somsirivattana, P., Kulaputana, O., & Kaikaew, K. (2023). Student Academic Performance in Non-Lecture Physiology Topics Following the Abrupt Change from Traditional On-Site Teaching to Online Teaching during the COVID-19 Pandemic. *Medical Education Online, 28*(1). https://doi.org/10.1080/10872981.2022.2149292.

Ws, Y. I., Hidayati, D., & Martaningsih, S. T. (2024). Addressing Challenges in Management : Planning for Better Learning and Resource Management. *Journal of Education and Teaching (JET), 5*(3), 247–263. https://doi.org/10.51454/jet.v5i3.443.

Suryani, Y., Nurfitriani, F. N., Pratiwi, R. T., Hasan, M., Arisah, N., Aeni, N., & Dzhelilov, A. A. (2024). Developing E-Module Accounting Cycle based on Problem-Based Learning (PBL): Can it Improve Students' Critical Thinking Abilities?. *Jurnal Iqra': Kajian Ilmu Pendidikan*, *9*(1), 82-96. https://doi.org/10.25217/ji.v9i1.4535.

https://doi.org/10.51276/edu.v6i1.1081

Young, S., Young, H., & Cartwright, A. (2020). Does Lecture Format Matter? Exploring Student Preferences in Higher Education. *Journal of Perspectives in Applied Academic Practice, 8*(1), 30–40. https://doi.org/10.14297/jpaap.v8i1.406.

Yurt, E. (2023). 21st-century Skills as Predictors of Pre-Service Teachers' Professional Qualifications: A Cross-Sectional Study. *International Journal of Education in Mathematics, Science and Technology, 11*(5), 1328–1345. https://doi.org/10.46328/ijemst.3291.

Zhao, K. (2024). Project-based Learning and Students ' Performance. *Frontiers in Business, Economics and Management, 16*(1).

Zhou, P., Sang, X., Cheng, Y., Hong, J., Tang, Y., Li, Y., Yu, Y., & Liu, M. (2023). Exploring the Impact of Online Peer Assessment on Critical Thinking in Student Teachers: Insights from an Epistemic Network Analysis. Proceedings - 2023 International Symposium on Educational Technology, ISET 2023, 18–22. https://doi.org/10.1109/ISET58841.2023.00013.