



**Research Article**

**The learning model of *Resource-Based learning*, *Brain-Based learning*, and a combination of these two models *Resource-Brain-Based learning* is believed to be able to improve cognitive, affective, and psychomotor learning outcomes of the Students of SMP Negeri 20 Maluku Tengah and SMP Negeri 13 Maluku Tengah**

Ravensca Delivia Tehusiarana<sup>1</sup>, Ali Awan<sup>2</sup>, Dominggus Rumahlatu<sup>2\*</sup>

<sup>1</sup> Graduate of Biology Education, Pattimura University, Street. Ir. M. Putuhena, Ambon 97233, Indonesia

<sup>2</sup> Department of Biology Education, Pattimura University, Street. Ir. M. Putuhena, Ambon 97233, Indonesia

\*corresponding author: [dominggus\\_amq@yahoo.co.id](mailto:dominggus_amq@yahoo.co.id)

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**ABSTRACT**

The combination of learning in the 21st century related to soft skills is the Resource-Brain Based Learning model which is a combination of *Resource-Based Learning* and *Brain-Based Learning* models. They are learning strategies adapted to learning resources and brain work systems that are already naturally programmed to learn. This study aims to see the effect of the *Resource-Brain Based Learning* model on students' cognitive, affective, and psychomotor thinking learning outcomes on environmental pollution material for class VII in SMP Negeri 20 Central Maluku and SMP Negeri 13 Central Maluku. Research data were analyzed quantitatively using descriptive and inferential statistics in the form of ANCOVA analysis to see the effect of the *Resource-Brain Based Learning* model on students' cognitive learning outcomes and ANOVA analysis for ANOVA on students' metacognitive outcomes and social attitudes. The results showed that there was an influence of the *Resource-Brain Based Learning* model on cognitive, affective, and psychomotor learning outcomes.

**Keywords:** *resource-brain based learning*, cognitive, affective, psychomotor

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**INTRODUCTION**

Education is one of the crucial sectors in the development of a country. In essence, education is made by a person to develop the potential inside them so that they have intelligence, personality, character, skills, and even spiritual strength as a good member of society and citizens (Maria, 2015). The functions and objectives of education in Indonesia have been regulated in Law no. 20 of 2003 concerning the national education system is to develop capabilities and shape the character and civilization of a dignified nation to educate the nation's life,

this aims to realize the various potentials that exist in humans in the context of the dimensions of diversity, morality, individuality/personality, sociality, and culture. Comprehensive and integrated. In other words, education functions and aims to humanize humans (Sujana, 2019).

Based on the conceptual analysis and conditions of educational learning, it was found that there are still many students who find it difficult to participate in learning because of the selection of models, methods, and even approaches to learning that are not adapted to the material provided by educators. Which resulted in the learning outcomes achieved are not optimal. Models, methods, and learning techniques as one component of education that must be mastered by a teacher, because the teacher is an important element in the success of existing potential. Mastery of curriculum and subject matter, use of learning models, methods, and techniques, use of learning media that has not been or is not appropriate, and the ability to interact with students in teaching and learning activities is still monotonous is the cause of low learning outcomes, thus the learning process is important and must be considered dynamically to achieve learning objectives (Yusuf, 2017).

Learning models that are believed to be able to increase students' motivation and learning outcomes are *Resort Based Learning and Brain-Based Learning* models which are student-centered learning models that confront students directly with several learning resources in groups or individually (Dondlinger, 2003, 2018). *The Resource Based Learning* model is a student-centered learning model that confronts students directly with several learning resources in groups or individually with learning activities related to learning (Nasution 2014). *The Brain-Based Learning* model is a teaching model that considers how the brain works when retrieving, processing, and interpreting information that has been absorbed. (Mustiada and Antari, 2014). The learning model of *Resource-Based learning, Brain-Based learning*, and a combination of these two models *Resource - Brain-Based learning* is believed to be able to improve cognitive, affective, and psychomotor learning outcomes.

## METHODS

This type of research uses a quasi-experimental type of research with a Pretest-Posttest Nonequivalent Control Group Design. The focus of this study is to analyze the effect of the combination of the two learning models on cognitive, affective, and psychomotor learning outcomes of the students of SMP Negeri 20 Maluku Tengah and SMP N 13 Maluku Tengah.

## RESULTS AND DISCUSSION.

**Table 1.** The result of the normality data analyses

Variables	School	Results	Resource Based Learning			Brain Based Learning			Resource-Brain Based Learning		
			Shapiro Value	Sig	Description	Shapiro Value	Sig	Description	Shapiro Value	Sig	Description
Cognitive Learning Outcomes	SMP N 20 Maluku Tengah	Pre Test	.964	.630	Normal	.950	.364	Normal	.930	.154	Normal
		Post Test	.950	.375	Normal	.924	.121	Normal	.907	.056	Normal
	SMP N 13 Maluku Tengah	Pre Test	.924	.120	Normal	.955	.454	Normal	.929	.150	Normal
		Post Test	.926	.130	Normal	.912	.069	Normal	.922	.107	Normal
Affective Learning Outcomes	SMP N 20 Maluku Tengah	Observation	.922	.108	Normal	.939	.228	Normal	.922	.110	Normal
	SMP N 13 Maluku Tengah		.946	.310	Normal	.916	.082	Normal	.920	.097	Normal
Psychomotor Learning Outcomes	SMP N 20 Maluku Tengah	Observation	.916	.085	Normal	.946	.314	Normal	.909	.062	Normal
	SMP N 13 Maluku Tengah		.917	.087	Normal	.912	.069	Normal	.925	.122	Normal

**Table 2.** The result of the homogeneity data analyses

Variable	Resource Based Learning			Brain Based Learning			Resource-Brain Based Learning			
	School	Levene Value	Sig	Description	Levene Value	Sig	Description	Levene Value	Sig	Description
Cognitive Learning Outcomes	SMP N 20 Maluku Tengah	3.810	.058	Homogen	2.818	.101	Homogen	12.940	.001	Homogen
	SMP N 13 Maluku Tengah	3.849	.057	Homogen	.155	.696	Homogen	1.790	.189	Homogen
Variable	School	Levene Value		Sig		Description				
Affective Learning Outcomes	SMP N 20 Maluku Tengah	.778		.464		Homogen				
	SMP N 13 Maluku Tengah	2.411		.310		Homogen				
Psychomotor Learning Outcomes	SMP N 20 Maluku Tengah	.820		.445		Homogen				
	SMP N 13 Maluku Tengah	2.577		.085		Homogen				

**Table 3.** The Results of Ancova Analysis on the Effect of Learning Models on Students Cognitive Learning Results

Tests of Between-Subjects Effects						
SMP Negeri 20 Maluku Tengah						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	
Corrected Model	571.900 <sup>a</sup>	2	285.950	9.162	.000	
Intercept	432990.150	1	432990.150	13873.599	.000	
Kelas	571.900	2	285.950	9.162	.000	
Error	1778.950	57	31.210			
Total	435341.000	60				
Corrected Total	2350.850	59				
SMP Negeri 13 Maluku Tengah						
	571.900 <sup>a</sup>	2	285.950	9.162	.000	
	432990.150	1	432990.150	13873.599	.000	
	571.900	2	285.950	9.162	.000	
	1778.950	57	31.210			
	435341.000	60				
	2350.850	59				

**Tabel 4.** Results of LSD test models on students' cognitive learning results

Multiple Comparisons						
SMP Negeri 20 Maluku Tengah						
Class	Class	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
PEMB. RBL	PEMB. BBL	-6.85*	1.767	.000	-10.39	-3.31
	PEMB. R-BBL	-6.20*	1.767	.001	-9.74	-2.66
PEMB. BBL	PEMB. RBL	6.85*	1.767	.000	3.31	10.39
	PEMB. R-BBL	.65	1.767	.714	-2.89	4.19
PEMB. R-BBL	PEMB. RBL	6.20*	1.767	.001	2.66	9.74
	PEMB. BBL	-.65	1.767	.714	-4.19	2.89
SMP Negeri 13 Maluku Tengah						
PEMB. RBL	PEMB. BBL	-5.00*	2.380	.040	-9.77	-.23
	PEMB. R-BBL	-.05	2.380	.983	-4.82	4.72
PEMB. BBL	PEMB. RBL	5.00*	2.380	.040	.23	9.77
	PEMB. R-BBL	4.95*	2.380	.042	.18	9.72
PEMB. R-BBL	PEMB. RBL	.05	2.380	.983	-4.72	4.82
	PEMB. BBL	-4.95*	2.380	.042	-9.72	-.18

**Table 5.** The results of anova analysis othe effect of learning models on students affective learning results

SMP Negeri 20 Maluku Tengah					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	360.933	2	180.467	79.741	.000
Within Groups	129.000	57	2.263		
Total	489.933	59			
SMP Negeri 13 Maluku Tengah					
Between Groups	663.433	2	331.717	106.523	.000
Within Groups	177.500	57	3.114		
Total	840.933	59			

**Table 6.** Results of LSD test on students' affective learning results

SMP Negeri 20 Maluku Tengah						
(I) LEARNING MODEL	(J) LEARNING MODEL	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
RBL	BBL	.200	.476	.676	-.75	1.15
	R-BBL	-5.100*	.476	.000	-6.05	-4.15
BBL	RBL	-.200	.476	.676	-1.15	.75
	R-BBL	-5.300*	.476	.000	-6.25	-4.35
R-BBL	RBL	5.100*	.476	.000	4.15	6.05
	BBL	5.300*	.476	.000	4.35	6.25
SMP Negeri 13 Maluku Tengah						
RBL	BBL	-2.950*	.558	.000	-4.07	-1.83
	R-BBL	-8.050*	.558	.000	-9.17	-6.93
BBL	RBL	2.950*	.558	.000	1.83	4.07

	R-BBL	-5.100*	.558	.000	-6.22	-3.98
R-BBL	RBL	8.050*	.558	.000	6.93	9.17
	BBL	5.100*	.558	.000	3.98	6.22

**Table 7.** The results of anova analysis on the effect of learning models on students psychomotor learning results

<b>SMP Negeri 20 Maluku Tengah</b>					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	411.100	2	205.550	97.231	.000
Within Groups	120.500	57	2.114		
Total	531.600	59			
<b>SMP Negeri 13 Maluku Tengah</b>					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	318.900	2	159.450	50.917	.000
Within Groups	178.500	57	3.132		
Total	497.400	59			

**Table 8.** Results of LSD Test on Students' Psychomotor Learning Results

<b>SMP Negeri 20 Maluku Tengah</b>						
(I) Learning Model	(J) Learning Model	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
RBL	BBL	-.200	.460	.665	-1.12	.72
	R-BBL	-5.650*	.460	.000	-6.57	-4.73
BBL	RBL	.200	.460	.665	-.72	1.12
	R-BBL	-5.450*	.460	.000	-6.37	-4.53
R-BBL	RBL	5.650*	.460	.000	4.73	6.57
	BBL	5.450*	.460	.000	4.53	6.37
<b>SMP Negeri 13 Maluku Tengah</b>						
(I) Learning Model	(J) Learning Model	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
RBL	BBL	.450	.560	.425	-.67	1.57
	R-BBL	-4.650*	.560	.000	-5.77	-3.53
BBL	RBL	-.450	.560	.425	-1.57	.67
	R-BBL	-5.100*	.560	.000	-6.22	-3.98
R-BBL	RBL	4.650*	.560	.000	3.53	5.77
	BBL	5.100*	.560	.000	3.98	6.22

Learning outcomes are abilities obtained by students after going through and carrying out learning activities, so there is a need for research on factors related to learning outcomes that are useful for improving the quality of education in the school environment. Cognitive learning outcomes are assessments carried out on the initial and final tests of students in learning. In the affective and psychomotor assessment, the students were divided into 3 large groups. Each group consisted of 6-7 students at SMP N 20 Central Maluku and SMP N 13 Central Maluku to work on worksheets containing questions on each learning indicator and then present it. Inferential analysis using the ANCOVA test showed that there was an influence of the learning model on cognitive learning outcomes and the LSD further test showed that the applied *Resource-Brain Based Learning* model was able to improve students' cognitive learning outcomes compared to using *Resource Based Learning* and *Brain-Based Learning* models. Inferential analysis using the ANCOVA test shows that there are differences in learning models on affective and psychomotor learning outcomes, the results show that the *Resource-Brain Based Learning* model that is applied can improve students' affective and psychomotor learning outcomes compared to using *Resource Based Learning* and *Brain-Based Learning* models.

*Resource-Brain Based Learning* that is applied affects student learning outcomes on environmental pollution material, in the application of this learning model, the role of the teacher reduced. The teacher acts as a facilitator so that students are involved in the learning process. Through this learning model, students have direct contact with one or several learning resources, either individually or in groups. This learning model involves students finding various information needed in learning, thus making it easier for students to interpret and understand the material given to them. Each student can interact with various learning resources in a meaningful way and the learning process tends to be more flexible. Students find the information they need so that meaningful learning occurs. With such a learning process, students will understand well what they are learning it will have an impact on the learning outcomes that students will get (Sudrajat, 2021).

The increase in learning outcomes in classes taught with the *Resource-Brain Based Learning* model is triggered using the model used by the teacher so that it can affect learning outcomes and good learning outcomes can be obtained as well. Learning activities in this class use several learning resources. The model applied, namely the *Resource Based Learning (RBL)* model and uses three main strategies in the *Brain-Based Learning (BBL)* model, namely creating a learning environment that can stimulate thinking skills, creating a fun learning environment and creating an active learning situation, this can increase student enthusiasm in learning biology (Mufidah, 2014). Application of this learning model can also encourage the creation of interesting, fun, and flexible learning so that students are enthusiastic about the learning process. Through the application of this learning model, students are invited to learn based on real experience and learning resources obtained to increase student interest in learning. The model can encourage students to be diligent and to achieve learning success as evidence that learning is going well and able to achieve the learning objectives that have been formulated (Surhawati., Sumarmi., & Ruja, 2016).

Combination of the two learning models can motivate students to learn more and to produce good and improved learning outcomes. This statement is supported by an expert opinion which states that learning outcomes are changes in behavior that occur in the lives of individuals that take place on an ongoing basis. A change in behavior that occurs will cause changes and be useful for life or other learning processes. Changes because of the teaching and learning process can be shown in various forms such as knowledge, experience, and attitudes. One of the factors that exist outside the individual is the availability of teaching materials that make it easy for individuals to learn them to produce better learning (Febriani, 2015). *Resource-Brain Based Learning* model that has been applied to class VII-4 affects student learning outcomes compared to the application of the *Resource Based Learning* model in class VII-1 and the application of the *Brain-Based Learning* model in class VII-2. Data from all sources in this study confirms that interactions have occurred between students and students, students and educators, as well as students and content during the learning process in the classroom. Thus, this allows students to play an active role in the learning process. Process of teaching and learning activities that will affect students' cognitive, affective, and psychomotor learning outcomes (Puspitasari, 2022).

## CONCLUSION

There are effect of applying the *Resource-Brain Based Learning* model in each class VII-1, VII-2, and VII-4 at SMP N 20 Maluku Tengah and SMP N 13 Maluku Tengah on students' cognitive, affective and psychomotor learning outcomes. The LSD test shows that classes taught using the *Resource-Brain Based Learning* model have better cognitive, affective, and psychomotor learning outcomes than students taught using the *Resource-Based Learning and Brain-Based Learning* models.

## REFERENCES

- Dondlinger, D. J. 2018. Using brain-based learning to help struggling online high school english students (*Doctoral dissertation, University of Wisconsin-Stevens Point*).
- Febriani, R., Suratno, S., & Fikri, K. 2015. The effect of resource based learning (RBL) learning model combined with snowball throwing on metacognition and biology learning outcomes. *Journal of Education*, 2(2), 26-32. Law No. 20 of 2003 concerning the National Education System.
- Maria Anita Titu. 2015. Application of project based learning (PjBL) learning model to increase student creativity in economic problem concept material. *Proceedings of the National Seminar*. Surabaya State University.

- Mufidah, L. L. N. 2014. Brain Based Teaching and Learning.
- Nasution, M. F. 2014. The effect of content mastery services on interest in using various learning resources for XI IPA at Al-Fityan Private High School Medan in the 2014/2015. *Academic Year* (Doctoral Dissertation, UNIMED).
- Puspitasari, I. 2022. The effectiveness of using student worksheets (LKPD) in ABA kauman kindergarten during home learning assistance. In *Proceedings of the National Seminar on the Implementation Results of the School Field Introduction Program*. 2 (1): 746-753.
- Sudrajat, A., Lovienica, M., & Isha, V. 2021. Influence of resource based learning model on learning outcomes of social sciences (IPS) grade IV elementary school students. *Buana Education: Journal of the Faculty of Teacher Training and Education, Unipa Surabaya*, 17(1): 70-75.
- Suharwati, I.R., Sumarmi., Ruja, N.I. 2016. The influence of *resource based learning* model on Students interests and learning outcomes of geography. *Journal of Education*. 1(2): 74-79.
- Sujana Cong, Wayan. 2019. Functions and objectives of Indonesian education. *Journal of Basic Education*. 4 (1): 2527-5445.
- Yusuf, B. B. 2017. Effective learning concepts and indicators. *Journal of learning and scientific studies*, 1(2): 13-20.