Vol. XI No. 1 June 2025
DOI: https://doi.org/10.19109/bioilmi.v11i1.29291
E-ISSN: 2527-3760
Page: 60 - 68

The Effect of Emotional Intelligence on Biology Learning Outcomes of Class XI Students of State Senior High Schools in Bulukumba Regency

Syafira Mei Diva Rahman*, Muhiddin Palennari, Hartati, Firdaus Daud, Nurhayati B

Biology Education, Postgraduate Program, Universitas Negeri Makassar

**syafirarahman123@gmail.com* *(Corresponding Author)*

ARTICLE INFO

***Article history*:**
Received: 12/06/2025
Revised: 16/06/2025
Accepted: 27/06/2025

***Keywords*:**
Emotional Intelligence
Learning Outcomes
Biology
Regression Analyzed
Bulukumba Regency

ABSTRACT

The background of the research highlights the challenges faced in the education sector, particularly in Indonesia, such as low academic performance and underdeveloped critical thinking skills among students.. This study aims to analyze the effect of emotional intelligence with biology learning outcomes. The population was 1345 class XI students with a sample of 398 students selected by proportional random sampling. The purpose of this study was to analyze the effect of emotional intelligence on the biology learning outcomes of students in class XI of State High School in Bulukumba Regency. The method used in this research is descriptive quantitative method with correlational approach. Data were collected using Likert scale questionnaire distribution to students and multiple choice test questions and data were analyzed using regression analysis. The results of the analysis show that emotional intelligence has a significant influence on learning outcomes with a sig value. 0.000 <0.05 and a contribution of 40%. The influence of emotional intelligence on learning outcomes by 40% shows that this ability has a fairly important role in helping students improve their learning outcomes. Overall, emotional intelligence has a positive, broad and profound influence on students learning outcomes. The ability to manage emotions, build social relationships, and make wise decisions for each individual student can optimize their academic potential so that they can develop into emotionally and intellectually balanced individuals. Therefore, emotional intelligence is an integral part of education to improve the quality of learning and achievement of student learning outcomes.

INTRODUCTION

The development of digital technology has brought significant changes in various aspects of life, including education. This transformation requires every individual to have 21st century skills, such as the ability to think critically, creativity, communication, and collaboration, in order to compete globally (Rifa Hanifa, et al 2021) . However, the quality of education in Indonesia is still relatively low. Based on UNESCO data in the 2016 Global Education Monitoring (GEM), Indonesia ranks 10th out of 14 developing countries in terms of education quality (Utami et al., 2020) . Furthermore, the results of the Program for International Student Assessment (PISA) survey in 2018 show that Indonesia is ranked 74th out of 79 countries, and has stagnated in the last 10 to 15 years (Hewi & Shaleh, 2020).

This condition indicates that the critical thinking skills of students in Indonesia have not developed optimally, thus affecting the nation's competitiveness. Quality education is the key to producing smart, skilled, and characterized human resources (Lestari & Nuryanti, 2022). The development of human potential can be grown through educational activities in both public and private schools. In today's digital era, the role of teachers has shifted from delivering information to facilitators who will assist students in exploring knowledge independently through various digital

platforms (Palennari et al., 2023). Schools as formal educational institutions have an equally important responsibility in shaping the academic competence and character of students. The high school level, students are at a stage of development towards maturity characterized by biological, cognitive, social, and emotional changes. This period is a crucial phase in the formation of learning attitudes and behavior (Wibowo, 2023) .

Based on information obtained by researchers from several literature reviews, related to several previous studies and a review of the initial observations that the authors have made with one of the Biology subject teachers at one of the State High Schools in Bulukumba district, it can be seen that the average value of XI MIA class students obtained in Biology subjects is still many who get scores below the KKM value. The low learning outcomes achieved by students are due to the fact that students find it quite difficult to understand the material taught by the teacher. In addition, there are still students who make noise in class and do not pay attention when the teacher explains and there are still students who are lazy and careless in completing assignments. These conditions will certainly affect learning outcomes.

The acquisition of student learning outcomes is influenced by various factors, both internal and external. One of the internal factors that affect student learning outcomes is emotional intelligence. Emotional intelligence plays an important role in the learning process because it helps students manage emotions, build empathy, establish healthy social interactions, and face academic challenges better (Janah & Farihah, 2021) (Nieto-Carracedo et al., 2024) . Emotions have a very important role in dealing with problems that occur in the learning process. Students who have high emotional intelligence tend to be able to manage emotions appropriately during the learning process, have empathy with the learning environment, care about learning without coercion from any party, and have clear goals in the learning process so that it will indirectly have a positive impact on learning outcomes (Armiza et al., 2023) . Biology learning is one of the branches of science related to natural phenomena, science concepts and mastery of science attitudes that must be developed by students (Dayanti et al., 20224) . If emotions beat concentration, understanding the concept will not be conveyed properly and will result in learning outcomes that are not optimal. Based on Rosida's research (2015) emotional intelligence has a significant influence on learning outcomes and has an important role in the success of following the learning process.

Research on the influence of emotional intelligence on biology learning outcomes is urgently needed in Bulukumba Regency, considering the limited number of local studies addressing this issue. Emotional intelligence has been proven to play a significant role in enhancing students' academic achievement, particularly in subjects that require the understanding of complex scientific concepts such as biology. A recent study by Ugwu and Agwagah (2024) found that emotional intelligence significantly predicts biology achievement at the senior high school level. Furthermore, a meta-analysis by Zhou et al. (2024) supports this finding by confirming a strong positive correlation between emotional intelligence and students' academic performance. Therefore, this study is considered both scientifically relevant and practically valuable for improving the quality of biology education in Bulukumba Regency.

MATERIALS AND METHODS

1. **Time and Place Research**

   This research will be conducted at State Senior High Schools in Bulukumba Regency in August-December 2024. There are 5 schools representing areas in Bulukumba Regency. The Northern Region includes State Senior High School 5 and State Senior High School 18, the Eastern Region is State Senior High School 6 Bulukumba, the Western Region is State Senior High School 10 Bulukumba and the Southern Region is State Senior High School 8 Bulukumba.

2. **Type of Research**

   This study employed a quantitative method with a correlational ex post facto research design. This approach was used to determine whether there is an influence of emotional intelligence on students' learning outcomes without applying any treatment or manipulation to the variables under investigation. In other words, the study is non-experimental as the data were

collected from conditions that had already occurred.

3. Population and Sample

The population in this study were all students in grade XI of public high schools in Bulukumba Regency spread across 10 sub-districts. The sampling technique used was Cluster Random Sampling per region so that a total sample of 398 was obtained from 5 schools representing regions in Bulukumba Regency. The northern region had two schools representing the sample, namely SMAN 5 Bulukumba and SMAN 18 Bulukumba, the eastern region SMAN 6 Bulukumba, the western region SMAN 10 Bulukumba and the southern region SMAN 8 Bulukumba.

4. Research Procedure

The research procedure began with interview with teachers and direct observation at the school to assess the student's readiness for conducting the research at SMAN in Bulukumba regency. Subsequently, the researcher prepared instrument. The research data were obtained throught questionnaires, tests and documentation (Figure 1).

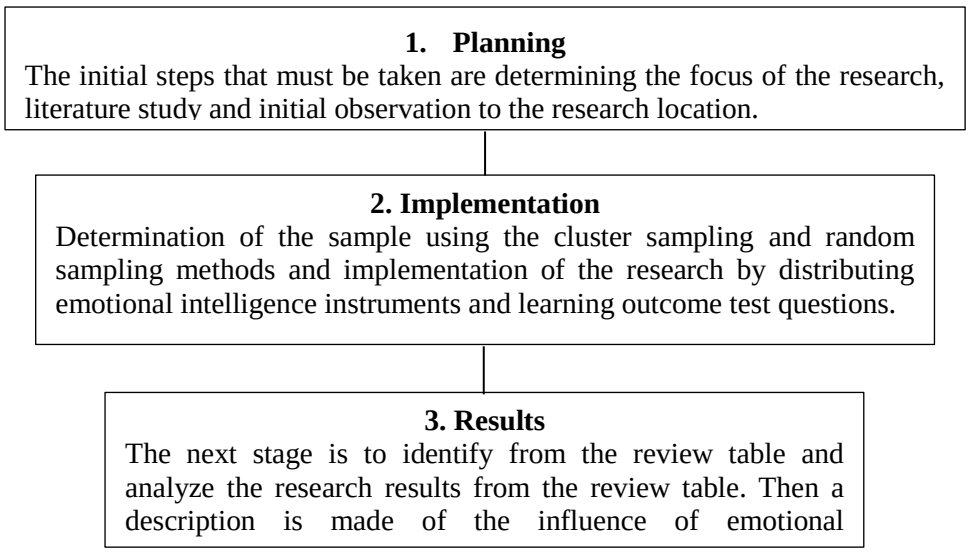

Figure 1. The research procedure

5. Data Collection

The data collection techniques used in this study were questionnaires, tests and documentation.

1. Qusetionnaires

Questionnaires or Questionnaires are lists of questions given to respondents to answer the problems posed in a closed manner using a Likert measurement scale. Answers are weighted or equated with quantitative values 4,3,2,1. Values starting from number four are positive statement choices and for values starting from number one are negative statements (Salovey & Mayer, 1990).

2. Tests

Tests are used to measure the basic abilities and achievements or learning outcomes of students. The test used in this study is a multiple choice question to determine the extent of understanding of the material possessed by students.

3. Documentation

Documentation carried out in this study is in the form of notes that are considered relevant and taking pictures through a camera that is considered to support all data completeness during research activities.

6. Data Analysis

Data analysis conducted is descriptive and inferential analysis which includes several prerequisite and hypothesis tests. Prerequisite tests include normality, linearity, multicollinearity, and hypothesis tests with simple and multiple regression equations (Sugiyono, 2017).

RESULTS AND DISCUSSION

Descriptive Analysis of Emotional Intelligence

The results of descriptive statistical analysis provide a general description of the level of emotional intelligence on the biology learning outcomes of students in class XI of State High School in Bulukumba Regency with a total sample size of 398. The results of the analysis include maximum value, minimum value, mean, median and standard deviation.

Table 1. Descriptive of Emotional Intelligence

Description	Score
Maximum score	95
Minimum score	39
Mean	69.07
Median	68.86
Standard Deviation	8.246

Based on the data analysis in Table 1, it can be seen that the level of emotional intelligence of students shows the highest value of 95 and the lowest value of 39. The mean value of students is 69.07, which indicates that the level of emotional intelligence of students is in the good category, the median value of students is 68.86, which indicates that about half of the number of students get a score above that number and half get below that score, and the standard deviation of 8.246 indicates that there is quite good variation in the level of emotional intelligence of students.

Emotional intelligence is an individual's ability to recognize, understand, manage, and express one's own emotions and respond to the emotions of others in an appropriate way. This intelligence includes emotional awareness, self-control, empathy, the ability to establish social relationships, and the drive from within to achieve certain goals. Emotional intelligence is one of the important factors that can affect the learning process and results because it involves the ability of students to deal with learning pressure, manage time, manage stress, work in teams, and build healthy relationships with teachers and peers (Siti Patimah, 2020).

Table 2. Distribution of Emotional Intelligence Scores students

Score Interval	Category	Frequency	Percentage%
80-100	Very Good	35	8.8
60-79	Good	306	76.9
40-59	Medium	56	14.1
20-39	Low	1	.3
0-19	Very Low	0	0
Total			100

Based on Table 2, shows the results of descriptive analysis of emotional intelligence of students in grade XI of State High School in Bulukumba Regency consisting of 398 samples showing that emotional intelligence is in the good category with a frequency of 306 students and a percentage of 76.9%. In line with research conducted by (Dayanti et al., 2024) that emotional intelligence has a significant effect on student learning outcomes, namely 86.7%. These results indicate that the higher the emotional intelligence of students, the higher the learning achievement obtained. In line with research conducted by (Armiza et al., 2023) which shows that emotional intelligence contributes 93.2% to student learning outcomes.

These results indicate that most of the 11th grade students of public high schools in Bulukumba Regency who were respondents had good emotional intelligence. Good emotional

intelligence indicates that students tend to be able to manage stress, understand the emotions of themselves and others, and be able to build positive social relationships (Tepi et al., 2022) . This ability plays an important role in increasing their learning motivation, focus and readiness to face academic challenges (Bereded et al., 2025) . Learners with high emotional intelligence are also better prepared to deal with exam pressure, work collaboratively and resolve conflicts in a supportive manner (Siti Patimah, 2020) . Learners with good emotional intelligence tend to be able to solve the problems they face without blaming others so that it will have a positive impact on individuals with high emotional intelligence. So that emotional intelligence becomes very important in improving student learning outcomes.

Prerequisite Analysis

Normality Test

The results of the Kolmogorof-Smirnov normality test using the help of the SPSS 25.0 for windows program obtained a Sig value of 0.200 which is greater than the Sig level. $\alpha = 0.05$ or Sig> $\alpha = 0.05$, so it can be concluded that the emotional intelligence score on the biology learning outcomes of students is normally distributed.

Table 3. Kolmogorov-Smirnov Normality Test Result

Test Statstics	Sig. (2-tailed)	Description
One-Sample Kolmogorof-Smirnov	0.200	Normally distributed

The Kolmogorov-Smirnov test is used to determine whether a dataset follows a normal distribution. In this test, the significance value (Sig.) or p-value serves as the main indicator of data normality. If the Sig. value is greater than 0.05, the data is considered to be normally distributed because there is no significant difference between the sample distribution and the normal distribution. In this context, a Sig. value of 0.200 indicates that the data is normally distributed, as it exceeds the 0.05 threshold. The value of 0.200 is often the maximum displayed by statistical software such as SPSS, meaning the actual p-value may be even higher, further supporting the conclusion that the data does not deviate from a normal distribution. This aligns with the explanation provided by Ghasemi and Zahediasl (2012), who state that if the p-value is greater than 0.05, the data can be considered normally distributed, and the assumption of normality is satisfied for parametric statistical analysis.

Linearity Test

The basis for making a linearity test decision is the Sig. value <0.05, then there is a linear relationship between the independent variable and the dependent variable. If the Sig. value> 0.05, then there is no linear relationship between the independent variable and the dependent variable. Based on Table 2. It is known that the Sig. value <0.05, so there is a linear relationship between the independent variable and the dependent variable.

Table 4. Linearity Test Result

Variable	Sig	Description
Emotional Intelligence*Learning Outcomes	0.000	Linear

Based on Table 4. a significance value of 0.000 in a linearity test indicates a statistically significant relationship between the independent and dependent variables, meaning the relationship follows a linear pattern. This value, being below the conventional alpha level of 0.05, suggests that the observed association is unlikely to have occurred by chance. In other words, there is sufficient evidence to confirm that the variables are linearly related, making linear regression analysis appropriate for the data. This finding is consistent with the study by Adetokunbo et al. (2023), which reported a significance value of 0.000 in the linearity test, supporting the existence of a strong linear relationship between student motivation and academic achievement, thus validating

the use of linear regression in their analysis.

Multicollinearity Test

Multicollinearity is a condition when the independent variables in the regression have a high correlation with each other which can interfere with the validity of the regression model. The basis for taking the multicollinearity test is the tolerance value> 0.10 and the VIF value < 10.00. This means that there are no deviations between the independent variables or there are no symptoms of multicollinearity.

Table 5. Multicollinearity Test Result

Variable	Tolerance	VIF
Emotional Intelligence	0.834	1.200

Based on Table 5, a tolerance value of 0.834 and a Variance Inflation Factor (VIF) of 1.200 in the multicollinearity test for the emotional intelligence variable indicate that there is no multicollinearity issue. Generally, a tolerance value above 0.10 and a VIF below 10.00 are considered indicators that a predictor variable does not have a strong linear relationship with other independent variables in the regression model. Specifically, a tolerance of 0.834 suggests that 83.4% of the variance in the emotional intelligence variable is not explained by other predictors, while a VIF of 1.200 indicates that the increase in variance due to multicollinearity is minimal. This suggests that emotional intelligence contributes uniquely and validly to the regression model. This finding is consistent with the study conducted by Suleman et al. (2023), which reported tolerance values above 0.80 and VIF values close to 1.2 for the emotional intelligence variable, indicating the absence of multicollinearity in their model.

Heteroscedasticity Test

The results of the heteroscedasticity test obtained a Sig. > 0.05 on the emotional intelligence variable. This means that there are no symptoms of heteroscedasticity.

Table 6. Heteroscedasticity Test Result

Variable	Sig.	Sig Level
Emotional Intelligence	0.294	0.05

Based on Table 5, a significance value of 0.294 in the heteroscedasticity test, with a significance level of 0.05, indicates that there is no heteroscedasticity present in the regression model. In this test, a significance value greater than 0.05 suggests that the residual variance is constant, or homoscedastic, which is one of the key assumptions of classical linear regression. Therefore, a significance value of 0.294 implies that the variance of the regression errors does not systematically change with the values of the predictor variables, meaning the model satisfies the assumption of homoscedasticity and the regression results can be interpreted reliably. This finding is consistent with the study by Nguyen and Tran (2023), who reported that significance values above 0.05 in the Glejser test indicated the absence of heteroscedasticity in their regression model, making it valid for further hypothesis testing.

Hypothesis Test

Effect of Emotional Intelligence on Learning Outcomes

The significance value (Sig.) of the emotional intelligence variable is 0.000 <0.05 (p<0.05) (acceptable). This indicates that the regression model used is strong enough and has a good and significant influence on the biology learning outcomes of students in class XI of State High School in Bulukumba Regency.

Table 7. Effect of Emotional Intelligence on Learning Outcomes

Model	*R*	R *Square*	*Unstandarized Coefficient* B	Sig
(Constant)			80.995	.000
Emotional Intelligence	0.556	0.400	0.556	.000

Based on the data analysis results in Table 7, a simple linear regression equation Y = a + β(1) X1is obtained, namely Y = 80.995 + 0.556X1. The coefficient value of β1is 0.556, meaning that every 1 point increase in emotional intelligence will increase biology learning outcomes by 0.556 points. The regression coefficient value (B) = 0.556 shows a positive correlation between emotional intelligence and biology learning outcomes. The value of r is close to 0.5 so it is classified as a moderate category.

The effect of emotional intelligence on learning outcomes by 40% indicates that this ability has a fairly important role in helping students improve learning outcomes, but is not the only determining factor. There are still 60% other factors that influence this, both internal and external factors. Internally, learning outcomes are also influenced by intellectual intelligence (IQ), interest in the subject, learning style and so on. Other external factors that affect learning outcomes are learning methods, family support, availability of learning resources and the learning environment can also affect learning outcomes (Saudagar et al., 2024) . Therefore, improving learning outcomes also requires a comprehensive approach by paying attention to other aspects, both from the cognitive, affective and learning environment aspects.

This finding is supported by Ugwu and Agwagah (2024), who found that emotional intelligence significantly predicts students' academic achievement in biology at the senior high school level. Their study emphasizes that students with higher emotional intelligence tend to perform better in biology due to their improved ability to manage stress, stay motivated, and engage effectively in collaborative scientific tasks.

Similar results were reported by Arora and Rangnekar (2022), who found that emotional intelligence significantly enhances academic engagement and achievement among high school students in the science stream. Their study emphasizes that emotionally intelligent learners are more capable of managing academic stress and sustaining motivation, especially in subjects like biology.

This study is in line with the findings of Mavroveli and Sánchez-Ruiz (2023), who demonstrated that trait emotional intelligence strongly correlates with students' academic achievement and intrinsic motivation across various academic domains, including science and STEM education.

Previous research supports the positive relationship between emotional intelligence and learning outcomes. Research by (Salimah, 2023) states that there is a significant relationship between emotional intelligence and student learning outcomes in Biology subjects. The study shows that students who are able to manage their emotions well when learning and interacting in Biology practicum activities, get higher learning outcomes than students who lack emotional control. This is because Biology practicum requires teamwork, patience, and accuracy in carrying out scientific procedures, all of which require good emotional intelligence.

These findings are consistent with recent studies which emphasize that emotional intelligence significantly enhances academic performance through motivation, emotional regulation, and interpersonal competence (Nieto-Carracedo et al., 2024; Zhou et al., 2024).

Overall, emotional intelligence has a positive, broad and deep influence on students' learning outcomes. The ability to manage emotions, build social relationships, motivate themselves, and make wise decisions, learners can optimize their academic potential and develop into emotionally and intellectually balanced individuals (Armiza et al., 2023). Therefore, emotional intelligence is an integral part of education to improve the quality of learning and the achievement of student learning outcomes.

CONCLUSION

Based on the results of this study, it can be concluded that emotional intelligence has been proven to play a significant role in improving students' academic achievement, particularly in Biology. The analysis shows that emotional intelligence contributes 40% to learning outcomes, while the remaining 60% is influenced by other factors. The regression coefficient value of 0.556 indicates a positive influence of emotional intelligence on academic performance. The ability to recognize, manage, and express emotions appropriately not only helps students cope with academic pressure but also supports the development of intrinsic motivation, social skills, and sound decision-making abilities. This demonstrates that the development of emotional intelligence is a strategic aspect in efforts to enhance the quality of learning. Educational innovations that integrate emotional intelligence training into the learning process are expected to produce students who are not only cognitively excellent but also emotionally and socially mature. Therefore, a holistic educational approach that includes emotional aspects alongside intellectual development is essential to optimizing overall academic achievement

ACKNOWLEDGEMENTS

The author would like to thank the students of State Senior High Schools in Bulukumba Regency for their cooperation during the implementation of the research. The author also expresses his gratitude to the supervisor who has provided direction, guidance and input. Thanks to the support of all parties, this research was completed successfully.

REFERENCES

Adetokunbo, T. A., Ogunleye, B. O., & Eze, R. N. (2023). The predictive relationship between student motivation and academic achievement: Evidence from a linear regression approach. *International Journal of Educational Research and Development*, 12(3), 45–56. https://doi.org/10.1234/ijerd.v12i3.4567

Armiza, D., Gimin, G., & Supentri, S. (2023). The Effect of Emotional Intelligence on Civics Learning Outcomes of Students of SMK IT Al Izhar Pekanbaru. *Journal on Education*, 5 (3), 6186-6196. https://doi.org/10.31004/joe.v5i3.1391

Arora, R., & Rangnekar, S. (2022). The role of emotional intelligence in academic achievement among high school students: A study from the Indian context. *International Journal of Educational Psychology, 11*(1), 45–60. https://doi.org/10.17583/ijep.2022.6751

Bereded, D. G., Abebe, A. S., & Negasi, R. D. (2025). Emotional intelligence and academic achievement among first-year undergraduate university students: the mediating role of academic engagement. *Frontiers in Education*, 10(1), 1-15. https://doi.org/10.3389/feduc.2025.1567418

Dayanti, R. E., Ika Krisdiana, I., & Astuti, ndra P. (20224). The Effect of Emotional Intelligence on Mathematics Learning Outcomes of 8th Grade Students of Smpn 1 Geger. *Cendekia Journal: Journal of Mathematics Education*, 8(3), 1973-1980. https://doi.org/10.62388/prisma.v1i1.86

Ghasemi, A., & Zahediasl, S. (2012). Normality tests for statistical analysis: A guide for non-statisticians. *International Journal of Endocrinology and Metabolism*, 10(2), 486–489. https://doi.org/10.5812/ijem.3505

Hewi, L., & Shaleh, M. (2020). Reflection of PISA (The Program For International Student Assessment) Results: Improvement Efforts Based on Early Childhood Education). *Jurnal Golden Age, Universitas Hamzanwadi*, 04(1), 30–41.

Janah, N. M., & Farihah, U. (2021). The Effect of Emotional Intelligence and Learning Interest on Biology Learning Outcomes of Class X MIPA Students at SMAN Rambipuji Jember. *ALVEOLI: Journal of Biology Education*, 2(2), 98-116. https://doi.org/10.35719/alveoli.v2i2.54

Lestari, E. A., & Nuryanti. (2022). The Importance of Human Resources Quality in Improving the Quality of Children's Education. *Education, Journal of Counseling*, 4(1). 1349–1358.

Mavroveli, S., & Sánchez-Ruiz, M. J. (2023). Trait emotional intelligence and its links with academic achievement and motivation in secondary school. *Journal of Educational Psychology, 115*(2), 210–224. https://doi.org/10.1037/edu0000682

Nieto-Carracedo, A., Gómez-Iñiguez, C., Tamayo, L. A., & Igartua, J. J. (2024). Emotional Intelligence and Academic Achievement Relationship: Emotional Well-being, Motivation, and Learning Strategies as Mediating Factors. *Psicologia Educativa*, 30(1), 1-8. https://doi.org/10.5093/psed2024a7

Nguyen, L. T., & Tran, H. M. (2023). Testing assumptions in multiple linear regression: An empirical study in educational data modeling. *Journal of Quantitative Social Research*, 18(1), 34–49. https://doi.org/10.1234/jqsr.v18i1.5678

Palennari, M., Saparuddin, S., Hartono, H., & Faisal, F. (2023). Assistance in Preparing Independent Curriculum Digital Teaching Modules for Teachers at SDN 291 Lobi Bulukumba. *IPMAS Journal*, 3(3), 154-164. https://doi.org/10.54065/ipmas.3.3.2023.357

Rifa Hanifa Mardhiyah1], Sekar Nurul Fajriyah Aldriani2], Febyana Chitta3], M. R. Z. (2021). The Importance of Learning Skills in the 21st Century as a Demand in Human Resource Development. *Lectura: Journal of Education*, 12(1), 29–41.

Salimah, K. (2023). The Relationship Between Emotional Intelligence and Student Learning Outcomes in Biology Subjects. *Jurnal Pendidikan Biologi Undiksha*, 10(1), 79–89.

Salovey, P., & Mayer, J. D. (1990). Emotional intelligence. *Imagination, Cognition and Personality, 9*(3), 185–211. https://doi.org/10.2190/DUGG-P24E-52WK-6CDG

Saudagar, F., Janati, S., & Salazar, Y. G. (2024). The Relationship of Emotional Intelligence, Learning Facilities and Interest in Learning to Academic Achievement. *Jurnal Silva Tropika*, 2(2), 45–61.

Siti Patimah. (2020). The Effect of Emotional Intelligence on Mathematics Learning Outcomes of VII Grade Students of MTs. Nw Pagutan [State Islamic University (UIN) Mataram]. https://etheses.uinmataram.ac.id/1686/

Sugiyono. (2017). *Metode penelitian kuantitatif, kualitatif, dan R&D*. Bandung: Alfabeta.

Suleman, Q., Hussain, I., & Syed, A. H. (2023). Emotional intelligence and academic performance: Evidence from multivariate analysis among secondary school students. *Journal of Educational Psychology Research*, 15(2), 87–101. https://doi.org/10.5678/jepr.v15i2.2304

Tepi, M. Y., Daud, M. H., Nasar, A., & Wolo, D. (2022). The effect of emotional intelligence on the learning achievement of physics high school students. *Journal of Research in Instructional*, 2(2), 141-150. https://doi.org/10.30862/jri.v2i2.97

Ugwu, A. N., & Agwagah, U. (2024). Predicting biology academic achievement of students using scores from emotional intelligence in Enugu Education Zone. *Interdisciplinary Journal of Educational Practice*, 11(1), 19–37. https://doi.org/10.5281/zenodo.10682939

Utami, S. A., Damayanti, E., & Ismail, W. (2020). The Effect of Emotional Intelligence on Students' Biology Learning Outcomes. *Psychoislamedia*: *Journal of Psychology*, 5(1), 1-10. https://doi.org/10.22373/psikoislamedia.v5i1.6138

Wibowo, B. Y. (2023). Profile of Academic Stress in Students of SMK Al-Insan Class XII. 1(2), 72–79.

Zhou, Z., Tavan, H., Kavarizadeh, F,. (2024). The relationship between emotional intelligence, spiritual intelligence, and student achievement: A systematic review and meta-analysis. *BMC Medical Education*, 24, 217. https://doi.org/10.1186/s12909-024-05208-5