Formosa Journal of Science and Technology (FJST)
Vol. 4, No. 4, 2025: 1117-1130

The Influence of Emotional Intelligence and Learning Motivation on Chemistry Learning Outcomes

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A R T I C L E I N F O

Keywords: Emotional Intelligence, Learning Motivation, Learning Outcomes

Received : 27, March
Revised : 10, April
Accepted : 27, April

A B S T R A C T

This research aims to examine the influence of emotional intelligence and learning motivation, both individually and collectively, on the chemistry learning outcomes of class XI students at MAN 2 Sinjai. The study employed a quantitative approach utilizing the ex post facto method. The research population comprised all 27 students of class XI, with the entire population selected as the sample through saturated sampling. Data were collected through the use of questionnaires and learning outcome tests, and were subsequently analyzed using descriptive statistics and inferential statistics, specifically simple and multiple regression techniques. The results revealed that: (1) emotional intelligence has a positive effect on students' chemistry learning outcomes; (2) learning motivation also exerts a positive influence on chemistry learning outcomes; and (3) emotional intelligence and learning motivation simultaneously have a significant impact on the chemistry learning achievements of class XI students at MAN 2 Sinjai.

ISSN-E: 2964-6804
DOI: https://doi.org/10.55927/fjst.v4i4.64
https://traformosapublisher.org/index.php/fjst

INTRODUCTION

Education stands as a crucial pillar in enhancing the quality of human resources. It is not merely a process of knowledge transfer but also plays a vital role in shaping students' character and developing their skills to adapt to the evolving demands of the modern era. With the rapid advancement of technology, education has become an essential necessity for all sectors of society. Schools, as formal educational institutions, are expected to nurture a generation that is both competent and professional, ready to compete on a global stage (Rahayu, 2017). Moreover, schools are instrumental in fostering ethical behavior and responsibility among students.

The success of educational endeavors can be evaluated through students' learning outcomes. Sudjana (2010) defines learning outcomes as the abilities attained by students after undergoing the learning process, encompassing cognitive, affective, and psychomotor domains. Evaluating these outcomes is critical as it serves as an indicator of both the effectiveness of the learning process and the holistic development of the students' potential (Fauziyah & Isnawati, 2017).

However, observations in the field reveal that many students still struggle to achieve optimal learning results. Chemistry is one subject where this issue is particularly evident. Observations at MAN 2 Sinjai during the second semester of the 2023/2024 academic year showed that out of 30 students, only 13 scored above the Minimum Completion Criteria (KKM) of 75, while the remaining 17 fell below this benchmark.

The underperformance in learning outcomes can be attributed to various internal and external factors. Among the internal factors, emotional intelligence holds a significant influence. Goleman (2009) asserted that emotional intelligence contributes approximately 80% to an individual's success, whereas intellectual intelligence (IQ) accounts for only 20%. Emotional intelligence includes the ability to perceive, understand, and regulate emotions — both one's own and those of others — encompassing empathy, self-control, and social skills (Khodijah, 2014). Besides emotional intelligence, low learning motivation is another major factor affecting academic performance, particularly in subjects like chemistry, which are often perceived as challenging and abstract by students.

Motivation in learning acts as an intrinsic force that propels students to actively participate in the educational process. Standford, as cited in Mangkunegara (2017), explains that motivation is a state that drives an individual to achieve specific goals. Sardiman (2018) further highlights that motivation acts as an internal energy that sustains and directs an individual's learning activities consistently.

Given this context, it is reasonable to propose that emotional intelligence and learning motivation are crucial contributors to academic success. Research conducted by Daud (2012) demonstrated a significant positive impact of emotional intelligence and motivation on biology learning outcomes. Consequently, this study seeks to explore the relationship between these two variables and the chemistry learning outcomes of eleventh-grade students at MAN 2 Sinjai, under the title: "The Influence of Emotional Intelligence and

Learning Motivation on Chemistry Learning Outcomes of Eleventh-Grade Students at MAN 2 Sinjai."

THEORETICAL REVIEW

Learning outcomes

Learning outcomes are one of the main indicators to measure the success of the education process. According to Sudjana (2010), learning outcomes are the abilities possessed by students after going through a learning process that includes cognitive, affective, and psychomotor aspects. Assessment of learning outcomes is not only limited to the final grade, but reflects the extent to which students have developed their potential as a whole. Fauziyah and Isnawati (2017) also emphasized that learning outcomes are a benchmark in evaluating students' academic development and the effectiveness of learning activities carried out.

However, the reality in the field still shows that many students have not achieved satisfactory learning outcomes. One of the subjects that is often an obstacle is chemistry, which is considered difficult because it contains abstract concepts and complex logical reasoning. This condition is exacerbated by low interest and motivation to learn, as well as other internal factors such as less than optimal emotional intelligence.

Emotional Intelligence

Emotional intelligence is a person's ability to recognize, manage, and express emotions appropriately in various situations, especially when interacting with others. Goleman (2009) states that emotional intelligence contributes about 80% to a person's success, while intellectual intelligence only contributes about 20%. This shows that emotional management, empathy, and self-control are determining factors for success in both social and educational life.

According to Khodijah (2014), emotional intelligence includes self-awareness, self-control, personal motivation, empathy, and social skills. In the context of education, students who have high emotional intelligence will be better able to face learning pressure, communicate well, and build internal motivation to achieve better academic achievement. Therefore, emotional intelligence is very relevant to be studied as one of the variables that affect learning outcomes.

Motivation to learn

Learning motivation is an internal or external drive that drives someone to carry out learning activities in order to achieve certain goals. Standford in Mangkunegara (2017) defines motivation as a condition that drives an organism towards a goal. Sardiman (2018) adds that motivation is a force from within an individual that encourages active behavior in achieving learning goals.

Motivation plays an important role in determining learning success. Students who have high motivation will show enthusiasm, perseverance, and mental readiness in facing learning challenges. Conversely, low motivation often causes inactivity in learning, lack of interest, and low academic achievement. In

chemistry learning that requires concentration and perseverance, learning motivation is an important factor that needs to be considered.

The Relationship between Emotional Intelligence, Learning Motivation, and Learning Outcomes

Previous studies have shown that there is a positive relationship between emotional intelligence, learning motivation, and student learning outcomes. Daud (2012) revealed that emotional intelligence and learning motivation significantly influence biology learning outcomes. This finding indicates that students who are able to manage their emotions well and have high learning motivation tend to achieve better learning outcomes.

Theoretically, good emotional intelligence will support learning motivation because individuals are able to build self-awareness, manage academic stress, and build positive relationships with the learning environment. Strong motivation ultimately encourages students to be active, diligent, and focused in participating in learning so that it has a direct impact on improving learning outcomes.

METHODOLOGY

This research adopts an ex post facto design utilizing a quantitative approach through a correlational study. The study was conducted during the odd semester of the 2024/2025 academic year at MAN 2 Sinjai. The target population consisted of all eleventh-grade students at MAN 2 Sinjai, totaling 27 individuals. A saturated sampling technique was employed, thereby involving the entire population of 27 students in the sample.

This study investigates two types of variables: the independent variables and the dependent variable. The independent variables are emotional intelligence and learning motivation, both measured among the class XI students of MAN 2 Sinjai. The dependent variable is the students' chemistry learning outcomes. Data were collected using two instruments: a questionnaire to assess emotional intelligence and learning motivation, and a learning outcome test to measure academic performance. Data analysis involved the use of descriptive and inferential statistical methods. Prior to hypothesis testing, prerequisite tests were conducted, including normality, linearity, and multicollinearity tests.

The analytical techniques employed consisted of simple regression and multiple regression analyses. Multiple regression analysis was utilized to determine the extent to which the independent variables influenced the dependent variable. It evaluated both the individual (partial) and combined (simultaneous) effects of emotional intelligence and learning motivation on students' learning outcomes. The key elements examined in the multiple regression analysis included the coefficient of determination (R^2), t-tests, and F-tests.

RESEARCH RESULTS

Descriptive Statistical Analysis Results

Descriptive Analysis of Emotional Intelligence

Descriptive analysis results Descriptive analysis was conducted with the help of excel. The data obtained were median, mean, mode, maximum value, minimum value, range, and standard deviation. The data obtained can be seen in Table 1.

Table 1. Descriptive Emotional Intelligence.

Statistics	Statistical Values
Median	88
Mean	85.26
Mode	106
Minimum Value	48
Maximum Value	116
Range	68
Standard Deviation	19.56

Table 1 shows that the learning independence of students at MAN 2 Sinjai obtained through the instrument shows that the minimum value is 48 and the maximum value is 116, the average score obtained is 85.26 and the standard deviation is 19.56.

Table 2. Distribution of emotional intelligence scores

No	interval	Frequency	Percent
1	X ≤56	4	14.81
2	56<X≤75	3	11.11
3	75<X≤ 95	10	37.03
4	95<X≤ 115	9	33.33
5	115<X	1	3.7
amount		27	100

Table 2 shows that the percentage of emotional intelligence in the interval 75<X≤ 95 is 37.03, which is in the high category.

Descriptive Analysis of Learning Motivation

Table 3. Descriptive learning motivation

Statistics	Statistical Values
Median	90
Mean	84.70
Mode	88
Minimum Value	39
Maximum Value	112
Range	73
Standard Deviation	17.22

Table 3 shows that the self-regulation of students at MAN 2 Sinjai obtained through the instrument shows that the minimum value is 39 and the maximum value is 112, the average score obtained is 84.70 and the standard deviation is 17.22.

Table 4. Distribution of Learning Motivation Scores

No	interval	Frequency	Percent
1	X ≤59	3	11.11
2	59<X≤76	5	18.51
3	76<X≤ 94	16	59.25
4	94<X≤ 112	9	33.33
5	112<X	0	0
amount		27	100

Table 4 shows that the percentage of self-regulation in the interval 76<X≤ 94 is 59.25, which is in the high category.

Descriptive Analysis of Learning Outcomes

Table 5. Descriptive Learning Outcomes

Statistics	Statistical Values
Median	16
Mean	13.81
Mode	4
Minimum Value	4
Maximum Value	22
Range	18
Standard Deviation	6.47

Table 6. Distribution of Learning Outcome Scores

No	interval	Frequency	Percentage
1	X ≤4	4	14.81
2	4<X≤11	6	22.22
3	11<X≤ 17	8	29.62
4	17<X≤ 24	9	33.33
5	24<X	0	0
amount		27	100

Table 6 shows that the percentage of learning outcomes in the interval 17<X≤ 24 is 29.62, which is in the good category.

Inferential Statistical Analysis Results

Before conducting the hypothesis test, several prerequisite analysis tests were carried out, namely the Normality test, Linearity test, Multicollinearity test. And heteroscodedity test. The results of the prerequisite tests for analyzing this research data are:

Normality Test

Table 7. Normality Test

variable	Std.Deviation	Significance
Emotional Intelligence (X1)	8,068	0.55
Motivation to Learn (X2)		0.017
Learning Outcome (Y)		0.007

From the results of the data normality test above, information was obtained that the emotional intelligence variable was normally distributed with a sig value of 0.055 > 0.05, while the learning motivation and learning outcome variables were not normally distributed with sig values of 0.017 < 0.05 and 0.007 < 0.05.

Linearity Test

Table 8. Linearity Test

variable	Deviaton linearity	Significance
Emotional Intelligence Motivation to learn Learning outcomes	0.306	0.009

In Table 7, based on the results of the linearity test above, it can be seen that the Deviation from linearity value is 0.306. This means that the deviation from linearity value is greater than 0.05. It can be concluded that there is a linear relationship between the independent variable and the dependent variable. This means that emotional intelligence, learning motivation and learning outcomes have a linear relationship. So it can be said that the linear assumption in this study is met.

Multicollinearity Test

Table 9. Multicollinearity Test

variable	Tolerance Value	VIF Value
Learning independence Self-regulation	2,010	0.497

Table 8 shows that the Tolerance value is greater than 0.1 and the VIF value is less than 10.00. From Table 4.12, it can be seen that both independent variables have a Tolerance value of 0.497 which is above 0.1 and a VIF value of 2.010 which is far below 10. This shows that this model data does not experience multicollinearity.

Heteroscodedity Test

There is no heteroscedasticity problem

1. **First Hypothesis Test: The Effect of Emotional Intelligence (X1) on Learning Outcomes (Y).**

Table 10. Simple Regression Equation

variable	coefficient	R
constant	30,485	
X1	0.196	0.590

R2	T-value	Significance
0.323	3,658	0.001

Table 9 presents the regression analysis results, showing that the regression coefficient for emotional intelligence is positive at 0.196. This implies that for every one-unit increase in emotional intelligence, chemistry learning outcomes are expected to improve by 0.196 units, as described by the regression equation $Y = 30.485 + 0.196X_1$. The correlation coefficient is reported at 0.590, indicating a positive and moderate relationship between emotional intelligence and learning outcomes; thus, enhancements in emotional intelligence are associated with better academic achievement in chemistry. The coefficient of determination (R^2), which is the square of the correlation coefficient, is 0.323. This means that 32.3% of the variability in chemistry learning outcomes can be attributed to students' emotional intelligence, while the remaining 67.7% is influenced by other factors outside the scope of this study. The significance of the relationship was tested using a t-test, yielding a t-count of 3.658, which exceeds the t-table value of 2.06. Additionally, the p-value was found to be 0.001, well below the 0.05 significance level. Based on these findings, it can be concluded that emotional intelligence has a significant positive effect on the chemistry learning outcomes of class XI students at MAN 2 Sinjai.

2. **Second Hypothesis Test: The Influence of Learning Motivation (X2) on Learning Outcomes (Y)**

Table 11. Simple Regression Equation

variable	coefficient	R
Constant	21,234	
X2	0.088	0.233

R2	T-value	Significance
0.106	2,978	0.024

Table 10 presents the regression coefficient for learning motivation, which is positive at 0.088. This indicates that for every one-unit increase in learning motivation, chemistry learning outcomes are expected to increase by 0.088 units, as expressed by the regression equation $Y = 21.234 + 0.088X_2$. The table also

shows a correlation coefficient of 0.233, suggesting a positive relationship between learning motivation and learning outcomes; thus, an improvement in learning motivation is associated with better chemistry achievement. Furthermore, the coefficient of determination (R^2), which is the square of the correlation coefficient, is 0.106. This result implies that 10.6% of the variance in chemistry learning outcomes can be explained by students' learning motivation, while the remaining 89.4% is influenced by other factors not addressed in this study. The significance of this relationship was tested using the t-test method. The t-count value was 2.978, exceeding the t-table value of 2.06, and the p-value was 0.024, which is lower than the 0.05 threshold. Therefore, it can be concluded that learning motivation has a significant positive effect on the chemistry learning outcomes of class XI students at MAN 2 Sinjai.

3. **Third Hypothesis Test: The Influence of Emotional Intelligence (X1) and Learning Motivation (X2) on Learning Outcomes (Y).**

Table 12. Multiple Regression Equation

variable	F-value calculation	Significance
Independence Learn (X!) Regulation Self (X2)	8,614	0.002

Table 11 obtained a significance value of 0.005, this shows that 0.005 < 0.05, Thus, the emotional intelligence and motivation to learn chemistry of class XI students at MAN 2 Sinjai.

DISCUSSION

The Influence of Emotional Intelligence on Chemistry Learning Outcomes of Class XI Students of MAN 2 Sinjai.

The effect of emotional intelligence on learning outcomes revealed a t-value of 3.658 with a significance level of 0.001, indicating a significant impact of emotional intelligence on learning achievement (Y). Consequently, it can be concluded that the null hypothesis (Ho) is rejected, and the alternative hypothesis (H1) is accepted, thereby affirming the proposed hypothesis that emotional intelligence significantly influences the learning outcomes of class XI students at MAN 2 Sinjai.

Analysis of the respondents' answers regarding emotional intelligence, which predominantly fell into the moderate category, suggests that students' emotional intelligence (EI) encompasses their ability to comprehend, regulate, and appropriately respond to their own emotions as well as those of others. The cultivation of emotional intelligence in students is crucial, as it not only enhances academic performance but also promotes emotional well-being. Key components of students' emotional intelligence include: recognizing one's own emotions, regulating emotional responses, self-motivation, empathizing with others, and building effective interpersonal relationships.

Students exhibiting strong emotional intelligence typically demonstrate traits such as self-confidence, effective communication skills, emotional self-regulation, consideration of consequences before acting impulsively, and empathy toward others' feelings. One approach to nurturing emotional intelligence among students, particularly class XI students at MAN 2 Sinjai, is through the integration of character education initiatives.

This finding aligns with the emotional intelligence theory described by I. Goller et al. (2020), which builds upon the foundational framework proposed by Daniel Goleman and Salovey & Mayer. According to this theory, emotional intelligence comprises five primary elements: self-awareness, self-regulation, motivation, empathy, and social skills.

The Influence of Learning Motivation on Chemistry Learning Outcomes of Class XI Students at MAN 2 Sinjai

The influence of learning motivation on students' academic outcomes showed a t-value of 2.978 with a significance level of 0.024, indicating that learning motivation has a positive and significant impact on learning performance (Y). Based on these results, it can be concluded that the null hypothesis (Ho) is rejected and the alternative hypothesis (H1) is accepted, confirming the hypothesis that a positive and significant relationship exists between learning motivation and the learning outcomes of class XI students at MAN 2 Sinjai. The analysis of the respondents' answers revealed that students' learning motivation generally falls within the moderate category, suggesting that there is still room for improvement to help students achieve higher academic success. Motivation is crucial in the educational process, acting as an internal drive that encourages students to persist in learning activities without external pressure. It significantly contributes to students' engagement, performance, and perseverance toward academic goals.

To foster higher levels of motivation, madrasahs can implement a variety of programs. These include the school literacy movement, which promotes regular reading habits and library visits, and extracurricular activities, which enhance social competencies such as teamwork, communication, and leadership skills. Additionally, innovative learning models like Problem-Based Learning (PBL), which centers on real-world problem-solving, and the Take and Give Learning Model, incorporating interactive methods like quizzes, icebreakers, and demonstrations, can further stimulate students' enthusiasm for learning. Beyond classroom strategies, madrasahs can also enhance motivation by creating positive and inspiring learning environments, encouraging active student participation, tailoring teaching methods to diverse learning styles, providing continuous positive feedback, engaging parents in the educational process, and recognizing and celebrating student efforts. Through these multifaceted strategies, it is hoped that the learning motivation of class XI students at MAN 2 Sinjai will improve, ultimately leading to better academic achievement.

The Influence of Emotional Intelligence and Learning Motivation on Chemistry Learning Outcomes of Class XI Students of MAN 2 Sinjai.

The results of the simultaneous testing demonstrate that the independent variables, namely emotional intelligence and learning motivation, collectively

exert a significant influence on the dependent variable, which is learning outcomes. This conclusion is supported by the statistical analysis, where an F-value of 8.614 was obtained with a significance level of 0.002, which is less than the 0.05 threshold. Therefore, it can be concluded that there is a statistically significant simultaneous effect of emotional intelligence and learning motivation on students' learning outcomes. Additionally, the study reported a coefficient of determination (R^2) of 0.369, indicating that 36.9% of the variance in learning outcomes can be explained by emotional intelligence and learning motivation combined. The remaining 63.1% of the variance is attributed to other factors not included in the research model.

CONCLUSION

The findings of this study indicate that, when examined individually, emotional intelligence has a significant influence on the chemistry learning outcomes of class XI students at MAN 2 Sinjai. Similarly, when assessed separately, learning motivation also exerts a significant impact on the students' performance in chemistry. Furthermore, the results of the simultaneous analysis reveal that both emotional intelligence (X_1) and learning motivation (X_2) together have a significant and positive influence on the chemistry learning outcomes (Y) of class XI students at MAN 2 Sinjai. These findings highlight the importance of developing both emotional competencies and motivational factors to enhance students' academic achievement, particularly in challenging subjects such as chemistry.

RECOMMENDATION

Based on the findings, it is recommended that the State Islamic Senior High School 2 Sinjai (MAN 2 Sinjai) and its subject teachers continually strive to enhance students' emotional intelligence and learning motivation in an adaptive manner to support improved academic performance. Additionally, MAN 2 Sinjai should provide consistent educational support by organizing Basic Leadership Training (LDK) programs aimed at fostering the development of emotional intelligence and sustaining learning motivation, particularly to enhance students' achievements in chemistry. Furthermore, future research is encouraged to explore additional factors and interventions that could positively and significantly influence the chemistry learning outcomes of class XI students at MAN 2 Sinjai, thereby contributing to a broader understanding of educational strategies that optimize student success.

FURTHER STUDY

This study has limitations in the relatively small number of samples and the scope of material is limited to one subject and one grade level in one educational unit. In addition, the independent variables studied only include emotional intelligence and learning motivation, while there are still many other factors that have the potential to influence student learning outcomes. Therefore,

it is recommended that further research involve a wider sample, across levels or schools, and consider other variables such as learning styles, self-efficacy, and learning environment. The use of mixed methods is also recommended in order to explore quantitative and qualitative aspects more comprehensively.

ACKNOWLEDGMENT

The author would like to express his deepest gratitude to all parties who have helped in the process of compiling and implementing this research. Special gratitude is addressed to the Principal of MAN 2 Sinjai, the chemistry subject teacher, and the students of class XI who have provided support, participation, and cooperation during the research activities. The author would also like to thank the supervising lecturer for his guidance, input, and direction which were very meaningful in compiling this scientific work. Not to forget, appreciation is also conveyed to the family and colleagues who have provided encouragement and moral support. Hopefully this research can provide benefits for the world of education and become a basis for further research.

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