

THE INFLUENCE OF EMOTIONAL QUOTIENT ON FORMATIVE ASSESSMENT RESULTS IN GRADE V MATHEMATICS STUDENTS

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Abstract

This study investigates the influence of Emotional Quotient (EQ) on the formative assessment outcomes in mathematics among fifth-grade students at SD Negeri 33 Kota Pagar Alam. Employing a quantitative approach with correlational methods, the study involved all 29 students using a saturated sampling technique. Data were collected through validated EQ questionnaires and mathematics formative test scores, followed by analysis using SPSS version 25. The results showed a significant positive relationship between students' EQ and their learning outcomes, with a t-value of 3.967 and a significance level of 0.000. The coefficient of determination ($R^2 = 0.368$) indicates that 36.8% of the variance in formative scores can be explained by EQ. These findings highlight the crucial role of emotional stability, self-regulation, and social competence in enhancing academic performance, particularly in subjects perceived as challenging like mathematics. The study also supports integrating emotional intelligence strategies into classroom instruction and teacher training. Recommendations include implementing EQ-sensitive teaching approaches and future research involving larger, more diverse student populations to validate these results.

Keywords: Emotional Quotient; Learning Outcomes; Formative Assessment

Abstrak

Penelitian ini mengkaji pengaruh Emotional Quotient (EQ) terhadap hasil assessment formatif dalam pembelajaran matematika pada siswa kelas V di SD Negeri 33 Kota Pagar Alam. Metode yang digunakan adalah pendekatan kuantitatif dengan jenis penelitian korelasional, melibatkan seluruh siswa sebanyak 29 orang dengan teknik sampling jenuh. Data dikumpulkan melalui angket EQ yang telah divalidasi serta nilai tes formatif matematika, dan dianalisis menggunakan SPSS versi 25. Hasil analisis menunjukkan adanya hubungan positif yang signifikan antara EQ siswa dengan hasil belajar, ditunjukkan oleh nilai t-hitung sebesar 3,967 dan tingkat signifikansi 0,000. Koefisien determinasi ($R^2 = 0,368$) mengindikasikan bahwa EQ menyumbang 36,8% terhadap variasi hasil assessment formatif. Temuan ini menegaskan pentingnya stabilitas emosional, kemampuan regulasi diri, dan keterampilan sosial dalam mendukung pencapaian akademik, khususnya pada mata pelajaran yang menantang seperti matematika. Penelitian ini juga merekomendasikan penerapan strategi pengajaran yang responsif secara emosional dan pelatihan guru mengenai pengembangan kecerdasan emosional. Penelitian selanjutnya disarankan melibatkan populasi yang lebih luas dan beragam untuk memperkuat generalisasi temuan ini.

Kata Kunci: Emotional Quotient; Hasil Belajar; Assessment Formatif

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Introduction

Education plays a strategic role in national development, particularly through the holistic development of students' intelligence. In the modern era, teachers are expected not only to master subject matter but also to understand the emotional needs of students as part of holistic learning. In this context, student academic success is influenced not only by intellectual intelligence (Intelligence Quotient/IQ) but also by emotional intelligence (Emotional Quotient/EQ).

Daniel Goleman, as cited in Ghotelma (2022), stated that IQ contributes only about 20% to a person's success, while the remaining 80% is influenced by other factors, including EQ. This indicates that the ability to manage emotions, build positive social relationships, and adapt to stress plays a significant role in learning achievement. In the field of education, students with high Emotional Quotient (EQ) tend to show stronger learning motivation, better collaboration in group work, and greater readiness in facing academic challenges. This is supported by the findings of Putri et al. (2024), who demonstrated that emotional intelligence significantly enhances students' self-efficacy, which positively influences their learning outcomes. Conversely, emotional instability can disrupt concentration, reduce self-confidence, and negatively impact formative assessment outcomes.

The Merdeka Curriculum emphasizes the importance of understanding students' individual characteristics and the use of formative assessments as tools for monitoring learning progress. These assessments are not only evaluation tools but also provide feedback that helps teachers adjust learning strategies to meet students' needs (Arifin & Mochammad, 2023). Continuous formative assessment reflects both cognitive and affective readiness in receiving instruction.

However, preliminary observations at SD Negeri 33 Kota Pagar Alam revealed that some students experience emotional instability during learning, particularly in mathematics a subject that requires high concentration and logical reasoning. This condition affects students' formative assessment results. Unfortunately, teachers still focus predominantly on cognitive aspects and have not yet optimized the development of students' emotional potential. In fact, emotional stability is a crucial internal factor that significantly influences learning effectiveness.

From an Islamic perspective, intelligence also includes the ability to exercise self-control, as reflected in a hadith of the Prophet Muhammad (peace be upon him), which states that a truly intelligent person is one who can control themselves and prepare for life after death (HR. Tirmidhi). This concept aligns with the essence of EQ, which emphasizes emotional regulation in daily life, including within educational settings.

Based on this background, this study aims to analyze the influence of students' Emotional Quotient (EQ) on their formative assessment outcomes in mathematics among Grade V students at SD Negeri 33 Kota Pagar Alam. This research is expected to contribute to improving learning quality, particularly through strengthening students' emotional intelligence at the elementary school level.

Research Methodology

This research employed a descriptive quantitative approach with a correlational method to investigate the influence of Emotional Quotient (EQ) on students' formative

assessment outcomes in mathematics. A descriptive approach is used to describe phenomena as they are, while correlational methods are commonly applied to examine relationships between variables (Creswell, 2012). The research was conducted at SD Negeri 33 Kota Pagar Alam during the even semester of the 2024/2025 academic year. The research population consisted of all 29 fifth-grade students at SD Negeri 33 Kota Pagar Alam. Due to the small population size, the saturated sampling technique was used, meaning the entire population was included as the sample (Sugiyono, 2019).

Data were collected through questionnaires, interviews, observations, and documentation. The questionnaire was developed based on Daniel Goleman's emotional intelligence indicators, as cited in Ghotelma (2022), including self-awareness, self-regulation, motivation, empathy, and social skills. The indicators of formative learning outcomes included levels of understanding, problem-solving ability, motivation, and skill acquisition (Black & Wiliam, 2009). The questionnaire employed a Likert scale with four response options: Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD) (Sugiyono, 2019).

Data analysis included validity and reliability testing, normality testing using the Kolmogorov–Smirnov test, linearity testing, and hypothesis testing using simple linear regression to determine whether there was a significant relationship between Emotional Quotient (X) and formative assessment outcomes in mathematics (Y). All statistical calculations were performed using SPSS version 25.

Results and Discussion

This study aimed to analyze the influence of Emotional Quotient (EQ) on the formative assessment outcomes of fifth-grade students in mathematics at SD Negeri 33 Kota Pagar Alam. The analysis revealed several key findings that support the research hypothesis. The results of the validity test for the Emotional Quotient (X) and formative assessment (Y) questionnaires showed that all statement items were declared valid. This was indicated by the significance values of each item being less than 0.05 and the calculated correlation coefficients (*r-count*) being greater than the critical value (*r-table*) (Maryanto, 2023; Ftriani., 2024; Shabilla, 2024). The detailed results of the validity test for both the Emotional Quotient (X) and Formative Assessment (Y) variables are presented in Table 1 and Table 2 below. Based on Table 1, it can be seen that of the 10 question items on the Emotional Quotient (X) variable, all are valid with a significance value criterion <0.05 .

Table 1. Validity Test of Emotional Quotient Questionnaire (X)

No.	Statement	r-count	Sig	Decision
X.1	Statement 1	0,658	0,000	Valid
X.2	Statement 2	0,779	0,000	Valid
X.3	Statement 3	0,627	0,000	Valid
X.4	Statement 4	0,702	0,000	Valid
X.5	Statement 5	0,687	0,000	Valid
X.6	Statement 6	0,674	0,000	Valid
X.7	Statement 7	0,705	0,000	Valid
X.8	Statement 8	0,772	0,000	Valid
X.9	Statement 9	0,702	0,000	Valid
X.10	Statement 10	0,886	0,000	Valid

Source: Primary Data Processed, (2025)

Table 2. Validity Test of Questionnaire of Formative Assessment Results (Y)

No.	Statement	r-count	Sig	Decision
Y.1	Statement 1	0,867	0,000	Valid
Y.2	Statement 2	0,687	0,000	Valid
Y.3	Statement 3	0,848	0,000	Valid
Y.4	Statement 4	0,894	0,000	Valid
Y.5	Statement 5	0,742	0,000	Valid
Y.6	Statement 6	0,585	0,001	Valid
Y.7	Statement 7	0,680	0,000	Valid
Y.8	Statement 8	0,884	0,000	Valid
Y.9	Statement 9	0,597	0,000	Valid
Y.10	Statement 10	0,597	0,000	Valid

Source: Primary Data Processed, (2025)

Based on Table 2, showing the significance value of each statement item <0.05 , this shows that all question items on the formative assessment results variable (Y) are declared valid. The reliability test using the Cronbach's Alpha formula also shows that both instruments are classified as reliable, with an alpha value of 0.832 for the EQ variable and 0.851 for the formative assessment results variable. This shows that the instrument used can be trusted to measure the variable in question (Arikunto, 2014). For more details can be seen in Table 3 below.

Table 3. Reliability Test Results of Emotional Quotient and Formative Assessment Results

Variables	Cronbach's Alpha	Category
Emotional Quotient (X)	0,832	Reliable
Formative Assessment Result (Y)	0,851	Reliable

Source: Primary Data Processed, (2025)

Furthermore, the normality test results in Table 4 using the Kolmogorov-Smirnov test resulted in a significance value of 0.098 which is greater than 0.05. This means that the data used in this study are normally distributed ($\text{Sig} > 0.05$).

Table 4. Normality Test (Kolmogorov-Smirnov Test)

Statistics	Value
N	29
Mean	0,0000000
Std. Deviation	1,5369
Test Statistic	0,149
Sig. (2-tailed)	0,098

Source: Primary Data Processed, (2025)

The linearity test in Table 5 shows that the relationship between EQ and formative assessment results is linear, with a significance value of 0.056 (> 0.05). These results fulfill the prerequisites for simple linear regression analysis (Ghozali, 2018).

Table 5. Linearity Test (ANOVA Table)

Source of Variation	Sig.
Deviation from Linearity	0,056

Source: Primary Data Processed, (2025)

Based on the results of the simple linear regression test, the t-count value of 3.967 is greater than the t-table of 1.725, and the significance value is 0.000 (< 0.05). This shows that there is a significant influence between Emotional Quotient on students' formative assessment results. This means that students who have high emotional intelligence tend to get better formative learning outcomes. Figure 1. Scatter plot showing the relationship between students' Emotional Quotient (EQ) and formative assessment results in mathematics. The red regression line illustrates a positive linear relationship ($R^2 = 0.368$).

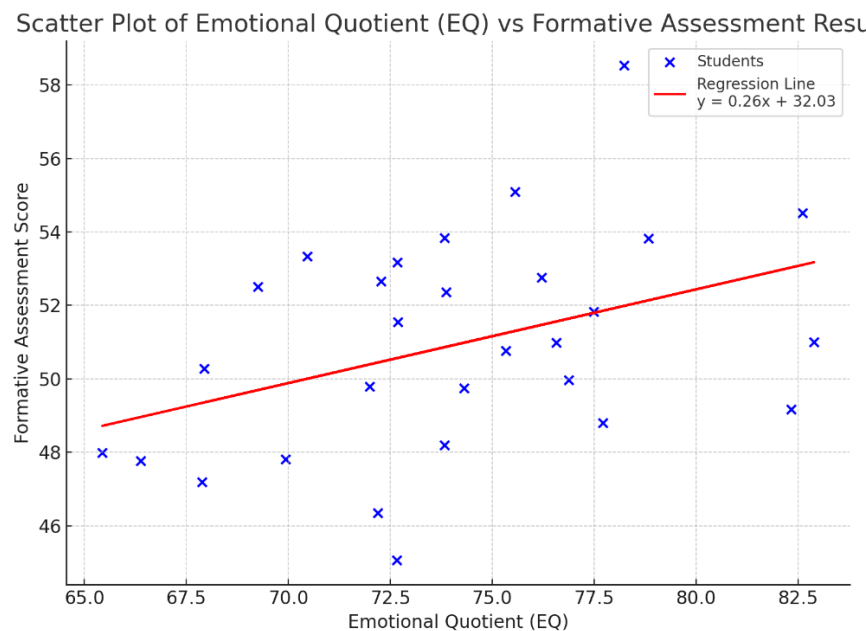


Figure 1. Relationship between students' Emotional Quotient (EQ) and formative assessment results in mathematics

Furthermore, the coefficient of determination (R^2) of 0.368 indicates that EQ contributes 36.8% to the formative assessment results, while the remaining 63.2% is influenced by other factors not examined in this study, such as teaching methods, learning environment, and student learning styles (Sugiyono, 2019). For more details, it can be seen in Table 6.

Table 6. Test t (Simple Linear Regression) and Coefficient of determination (R^2)

Variables	B	t	Sig.
(Constant)	24,650	7,950	0,000
Emotional Quotient	0,362	3,967	0,000
R = 0,607			
R Square = 0.368			
Adjusted R Square = 0.345			

Source: Primary Data Processed, (2025)

The results of this analysis indicate a significant influence of Emotional Quotient on students' formative assessment results. Students with high EQ tend to have good self-control, internal motivation, and the ability to manage academic pressure, so they are able to complete tasks more effectively. These results are in line with Goleman's theory (as cited in Ghotelma, 2022) which states that a person's success is not only determined by intellectual intelligence (IQ), but also by emotional intelligence (EQ). Students with high EQ have the ability to manage emotions, build internal motivation, and establish healthy social relationships, all of which contribute to achieving better learning outcomes.

The results of Kariyanto's (2020) research show that emotional intelligence directly influences student academic achievement. Even when compared to factors such as motivation and discipline, EQ remains a strong predictor in supporting academic achievement. In his book, Kariyanto (2021) also emphasizes the importance of EQ development in educational settings to enable students to manage their emotions, maintain motivation, and build healthy social relationships during the learning process.

A stable emotional state allows students to concentrate, absorb material optimally, and interact positively with teachers and peers. In the context of the Merdeka Curriculum, formative assessment has an important role in monitoring students' learning processes on an ongoing basis and providing constructive feedback. Therefore, teachers' understanding of students' emotional conditions is very important to design learning strategies that are responsive to students' individual needs (Arifin & Mochammad, 2023).

High Emotional Quotient helps students in managing academic pressure, motivating themselves, building positive social relationships, and overcoming feelings of frustration when facing learning difficulties, especially in subjects such as Mathematics which are often considered difficult and frightening by most students. Students who can recognize and control their emotions, such as test anxiety or laziness in learning, are better able to concentrate and focus on understanding the material. This is in accordance with Goleman's view as cited in Ghotelma (2022), that EQ plays a greater role than IQ in determining a person's success, including in the academic context.

The balance-based learning approach between cognitive and affective as implemented in the Merdeka Curriculum also reinforces this finding. The Merdeka Curriculum emphasizes the importance of formative assessment to monitor students' learning processes on an ongoing basis and adapt teaching strategies to individual needs. In this context, teachers' understanding of students' emotional conditions is very important so that the learning strategies applied can optimize students' learning potential as a whole, not only in cognitive, but also affective and social aspects.

Interviews with fifth grade math teachers also illustrate that teachers who apply emotional approaches such as providing initial motivation, guiding students who appear anxious, and creating a comfortable learning atmosphere can improve student focus and learning outcomes. The teacher also observed that when students feel emotionally calm, they are more confident in participating in learning and solving math problems, even complex ones.

This finding is also in line with the theory of learning motivation, where positive emotional conditions encourage students to be more active, enthusiastic and resilient in learning. Good EQ allows students to build self-discipline, refrain from negative behavior, and maintain social relationships that support the learning process. Thus, improving EQ not only has an impact on individual learning outcomes, but also on overall classroom dynamics. An emotionally healthy learning environment allows for harmonious interactions between students and teachers, as well as between fellow students.

Overall, this research confirms that Emotional Quotient is an important factor that must be considered in learning strategies. Teachers need to be trained to be more sensitive to the emotional aspects of students and be able to develop learning that not only emphasizes cognitive achievement, but also character development and emotional stability. Improving EQ in the school environment, especially in Mathematics lessons that demand high concentration and logic, can be one of the strategic solutions in improving the overall quality of education.

The results of this study are also in line with Hendrilia's (2024) opinion that emotional intelligence (EQ) plays a vital role in education by influencing various aspects of the teaching and learning process. EQ, which includes the ability to recognize, understand, and manage one's own emotions and those of others, has been proven to be closely related to students' academic achievement, social interaction, and stress management.

These findings are also in line with those of Putri et al. (2024), who found that students with higher emotional intelligence tend to be more confident, emotionally stable, and able to maintain motivation in the learning process—factors that directly improve their academic performance.

Based on these findings, several practical implications can be drawn to enhance classroom implementation. Grade V teachers, especially mathematics instructors, are encouraged to adopt emotionally responsive teaching strategies. For instance, they can initiate lessons with brief emotional check-ins, provide consistent positive reinforcement, and build a classroom atmosphere that promotes empathy, trust, and psychological safety. Offering individual emotional support for students who appear anxious or disengaged may also improve learning focus and assessment performance.

As a practical example, teachers may begin math lessons with an "emotional check-in" activity, such as showing visual cards with different facial expressions (happy, anxious, neutral) or using color-coded mood indicators to quickly assess students' emotional states. They can also provide positive affirmations like "You can do it" or "It's okay to make mistakes—what matters is trying" when students encounter challenging problems. During assessment sessions, brief relaxation exercises or breathing techniques can be introduced to help students calm down before completing formative tasks. These simple yet intentional strategies can significantly contribute to creating an emotionally safe classroom environment that supports focus, motivation, and academic confidence.

At the institutional level, schools should consider facilitating teacher training programs or workshops on emotional intelligence to help educators better recognize and respond to students' affective needs. Over the long term, incorporating EQ-based approaches into lesson planning and instructional design can serve as a strategic foundation for holistic education improvement, especially within the framework of the Merdeka Curriculum which emphasizes differentiated and student-centered learning. For sustainable impact, such efforts must be supported by strong leadership commitment and relevant school policies.

Conclusion

Based on the results of this study, it can be concluded that Emotional Quotient (EQ) has a significant influence on the formative assessment outcomes in mathematics learning among Grade V students at SD Negeri 33 Kota Pagar Alam. Students with a high level of EQ demonstrate better abilities in managing emotions, regulating themselves, maintaining motivation, and engaging in positive social interactions. These emotional competencies contribute to improved concentration and readiness to face learning processes and formative assessments. Statistical analysis revealed that EQ accounts for 36.8% of the variation in formative assessment results, indicating that emotional development is a crucial factor in supporting students' academic performance. However, this study is limited by its small sample size, involving only 29 students from a single elementary school. Therefore, caution should be exercised in generalizing the findings. Future research is encouraged to use larger and more diverse samples to validate and broaden the applicability of these results in different educational contexts. This study is expected to serve as a foundation for further research in exploring other factors that holistically influence student learning outcomes, including cognitive, emotional, social, and environmental dimensions.

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