Student Responses Based on Emotional Intelligence in Mathematics Learning with A STEM Approach in Class X of Al-Islam High School of Krian-Sidoarjo

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ARTICLE INFO	ABSTRACT
Published Online: **31 July 2024** **Corresponding Author:** **Feny Rita Fiantika**	Quality learning can affect the effectiveness of learning. One measure of learning effectiveness is students' responses in learning. If students have the ability to manage, control, monitor, and regulate their emotions appropriately, they can be said to have good emotional intelligence. Therefore, emotional intelligence can be considered a component that can be taken into account and used as a basis for effective learning. The subjects used in this study were students of class X-04 Al-Islam High School of Krian-Sidoarjo. The method used in this study was descriptive quantitative with a one-shot case study research design. The results showed that students' responses during the learning process identified using the STEM approach with the STAD (Student Team Achievement Division) learning model during two meetings were as follows: Students with high emotional intelligence obtained a positive response percentage of 95.71%. Students with moderate emotional intelligence obtained a positive response percentage of 91.67%. Meanwhile, students with low emotional intelligence obtained a positive response percentage of 58.64%.
KEYWORDS: Student Responses; Emotional Intelligence; STAD; STEM Approach	

INTRODUCTION

One of the determining factors of a country's progress is the quality level of its education. Quality education should not be pursued by the government alone but also requires the contributions from other actors. One way to improve the quality of education is to enhance the learning atmosphere that allows students to be more actively involved in lessons and to acquire intelligence and self-control over what has been learned.

Learning is a process of acquiring knowledge, leading to a two-way interaction between students and teachers (Suardi 2022). Quality learning can influence the effectiveness of learning. On the other hand, during the learning process, teachers should not make students feel afraid; instead, teachers should be able to create a pleasant emotional atmosphere. Positive or pleasant, and even unpleasant emotions can affect the way the human brain's structure works and also influence the learning process and outcomes. During the learning process, students will certainly face problems, and how they handle these problems depends on their emotional skills. Students'

emotional skills in handling problems can be measured through their emotional intelligence (Prajitno &Auliya 2022).

According to Prayitno (2020), emotional intelligence is an individual's ability to adapt to their environment. Therefore, emotional intelligence can be defined as one's ability to manage, monitor, control, and regulate their emotions appropriately. If an individual has this ability, they can be said to have emotional intelligence. Therefore, emotional intelligence can be considered a component that can be taken into account and used as a basis for effective learning. One measure of learning effectiveness is students' responses in learning. According to Kartini and Putra (2020), students' responses are social reactions of students to the influence or stimuli from situations performed by others. Interesting learning makes students happy and makes it easier for them to absorb knowledge, as seen from their responses during the learning process.

Effective learning is necessary in mathematics learning because learning mathematics can equip students with logical, systematic, analytical, creative, and critical

thinking skills. According to Prayitno and Alphareno (2021), mathematics is a fundamental science that studies structures, spaces, quantities, and changes that are important for daily life in various aspects. Mathematics learning (Gusteti and Neviyarni, 2022) is a process of interaction between teachers and students with the aim of improving students' problem-solving skills and enhancing their understanding of previously acquired lesson material.

Current learning should be able to keep up with developments, especially technological advancements in the era of globalization, such as integrating aspects like science, technology, engineering, and mathematics. The suitable learning approach is the STEM approach. According to Putri et al. (2023), the STEM approach is an educational method that integrates components of science and skills, such as science, technology, engineering, and mathematics. Many mathematics teachers still do not implement the STEM approach due to a lack of knowledge about the STEM approach (Rahmawati and Juandi 2022).

According to Ishak et al. (2021), STEM consists of four learning aspects: science, which is natural knowledge collected over time through scientific research that can produce new information; technology, which is applied knowledge or skills used to create necessary items for human survival and facilitate human tasks; engineering, which is the use of science and technology to organize and design ways to solve human problems; and mathematics, which is the science that examines patterns and relationships between space, quantity, numbers, and structure. According to Rahmawati et al. (2022), the application of the STEM approach in mathematics learning is very important for forming quality students with innovative, creative, and critical learning skills, as well as for shaping students with positive emotional intelligence during classroom learning.

This research aims to determine student responses based on emotional intelligence in mathematics learning with the STEM approach in class X on quadratic function materials. According to Noormandiri (2021), a quadratic function is a function in the form of $f(x) = ax^2 + bx + c$, where a, b, and c are real numbers with $a \neq 0$. The discriminant of the quadratic equation is denoted by $D = b^2 - 4ac$. Quadratic functions are related to quadratic equations, where a quadratic function with a zero value is called a quadratic equation. There are several ways to determine quadratic equations, such as factoring, completing the square, and using the *abc* formula.

Based on the problems and explanations related to student responses based on emotional intelligence with the STEM approach, this study was related to the application of the STEM approach to mathematics learning. The STEM approach was chosen because it can determine student responses based on emotional intelligence in mathematics learning, especially on quadratic function material in class X. Therefore, the researchers were interested in conducting further study related to "Student Responses Based on Emotional Intelligence in Mathematics Learning with a STEM Approach in Class X Al-Islam High School of Krian Sidoarjo".

METHOD

This study was descriptive quantitative. The research design used was pre-experimental with a one-shot case study design, where the experiment was conducted in one class with a single treatment that was considered influential to student activity in learning. The subjects used in this study were students of class X-04. The instrument used to obtain data related to student responses was a student response questionnaire, while the instrument used to obtain emotional intelligence was an emotional intelligence test sheet. The data in this study were collected through questionnaires and tests. The data analysis technique used to determine the percentage of student responses is as follows:

$$PRs = \frac{\sum \text{students who respond positively for each indicator}}{\sum \text{students who respond}} \times 100\%$$

(Zaahirah & Kusrini, 2014)

The following is the data analysis technique used to determine the category of students' emotional intelligence:

1. High Emotional Intelligence Category
   $X \geq M + SD$
2. Medium Emotional Intelligence Category
   $M - SD \leq X < M + SD$
3. Low Emotional Intelligence Category
   $X < M - SD$
   Explanation:
   M = Mean
   SD = Standard Deviation

RESULTS AND DISCUSSION

From the emotional intelligence test results, the highest score obtained was 72, derived from the formula $X \geq M + SD$, indicating that high emotional intelligence scores range from 65 to 72. Medium emotional intelligence test scores were obtained from the formula $M - SD \leq X < M + SD$, indicating that medium emotional intelligence scores range from 58 to 62. The lowest score obtained was 41, derived from the formula $X < M - SD$, indicating that low emotional intelligence scores range from 41 to 55 (Explanation: M = mean, SD = standard deviation). The results are summarized in the following table:

Table 1. Emotional Intelligence Test Results of Students

No.	Emotional Intelligence	Frequency
1.	HIGH	14
2.	MEDIUM	12
3.	LOW	11

From the student response questionnaire results, based on the formula to determine the percentage of student responses, the results are summarized in the following table:

Table 2. Student Response Questionnaire Results

No.	Emotional Intelligence	Percentage of Student Responses	
		Positive Response	**Negative Response**
1.	HIGH	95.71%	4.29%
2.	MEDIUM	91.67%	8.33%
3.	LOW	58.64%	41.36%
		82%	**18%**
		100%	

Based on the Table 2 above, it was found that students with high emotional intelligence obtained a positive response percentage of 95.71%. Students with moderate emotional intelligence obtained a positive response percentage of 91.67%. Meanwhile, students with low emotional intelligence obtained a positive response percentage of 58.64%.

From the data on student responses after participating in the mathematics learning process with the application of the STEM approach and the application of the STAD (Student Team Achievement Division) learning model during two meetings, it was found that students with high emotional intelligence also had high positive responses. This was driven by a condition that students with high emotional intelligence can understand the material properly after being given the learning material with the STEM approach. Despite the obstacles during the learning process, students can still learn well and were not affected by changes in the learning situation. Students with low emotional intelligence also have low positive responses because, due to the obstacles and changes in the learning situation, they cannot learn properly. These research findings align with the study by Prayitno (2020), which found that students with high emotional intelligence find it easier to follow learning using the STEM approach.

CONCLUSION

Based on the above description, it can be concluded that students' responses during the learning process based on emotional intelligence using the STEM approach with the STAD (Student Team Achievement Division) learning model during two meetings resulted in the following: students with high emotional intelligence had a high positive response of 95.71%. Students with moderate emotional intelligence had a moderate positive response of 91.67%. Meanwhile, students with low emotional intelligence had a low positive response of 58.64%.

Based on the results of the study on the application of the STEM approach in mathematics learning for class X-04 students at Al-Islam High School of Krian-Sidoarjo, the researchers provide several suggestions, namely: Schools can use the STEM approach in learning to improve the quality of the teaching and learning process so that learning can be effectively implemented; During the learning process, mathematics teachers can be more creative in teaching students by implementing the STEM approach as a learning approach to achieve the expected effective learning objectives; Teachers can apply the STEM approach with the STAD (Student Team Achievement Division) model to understand students' responses based on emotional intelligence and ensure students' learning outcomes are achieved.

REFERENCES

1. Gusteti, M. U., & Neviyarni, N. (2022). Pembelajaran Berdiferensiasi Pada Pembelajaran Matematika Di Kurikulum Merdeka. Jurnal Lebesgue : Jurnal Ilmiah Pendidikan Matematika, Matematika dan Statistika, 3(3), 636–646. https://doi.org/10.46306/lb.v3i3.180
2. Ishak, A. M. F., Israwaty, I., & Halik, A. (2021). Penerapan Pendekatan STEM untuk Meningkatkan Hasil Belajar Siswa Sekolah Dasar Kelas Lima di Kabupaten Baru. *Pinisi Journal Of Education*, *1*(1), 38–58. https://ojs.unm.ac.id/PJE/article/view/26603
3. Kartini, K. S., & Putra, I. N. T. A. (2020). Respon

Siswa Terhadap Pengembangan Media Pembelajaran Interaktif Berbasis Android. Jurnal Pendidikan Kimia Indonesia, 4(1), 12. https://doi.org/10.23887/jpk.v4i1.24981

4. Noormandiri, B. . (2021). *Matematika untuk SMA/MA Kelas X*, Jakarta, Penerbit Erlangga.

5. Prayitno, S. H. (2020). Pengaruh Kecerdasan Emosional Dalam Pembelajaran Matematika Abad 21. 171(November 2017), 8557.

6. Prayitno, S. H., & Alphareno, O. J. (2021). Efektivitas Model Pembelajaran Anchored Instruction dalam Pembelajaran Matematika Terhadap Kemampuan Berpikir Kritis Siswa. *Jurnal Cendekia : Jurnal Pendidikan Matematika*, *5*(2), 1842–1853. https://doi.org/10.31004/cendekia.v5i2.565

7. Prajitno, S. H., & Auliya, A. F. (2022). The Effect of Visual Learning Style and Problem Based Learning towards Mathematics Learning Outcomes Viewed from Emotional Intelligence. Jurnal Pendidikan MIPA, 23(2), 392–399. https://doi.org/10.23960/jpmipa/v23i2.pp392-399

8. Putri, D. M., Mulyani, L., & Husna, M. (2023). Penerapan Pendekatan STEM (Science, Teknology, Engineering, and Math) dalam Meningkatkan Hasil Belajar dan Sikap Ilmiah Siswa pada Pembelajaran Biologi. *Prosiding SEMNAS BIO*, *2023*, 1129–1138. https://semnas.biologi.fmipa.unp.ac.id/index.php/prosiding/article/view/684

9. Rahmawati, L., & Juandi, D. (2022). Pembelajaran Matematika Dengan Pendekatan Stem: Systematic Literature Review. *Teorema: Teori dan Riset Matematika*, *7*(1), 149. https://doi.org/10.25157/teorema.v7i1.6914

10. Rahmawati, L., Juandi, D., & Nurlaelah, E. (2022). Implementasi Stem Dalam Meningkatkan Kemampuan Berpikir Kritis Dan Kreatif Matematis. *AKSIOMA: Jurnal Program Studi Pendidikan Matematika*, *11*(3), 2002. https://doi.org/10.24127/ajpm.v11i3.5490

11. Suardi, M. (2022). Belajar Dan Pembelajaran Tujuan Belajar Dan Pembelajaran. In *Uwais Inspirasi Indonesia* (Nomor March). https://www.coursehero.com/file/52663366/Belajar-dan-Pembelajaran1-

12. Zaahirah, W., & Kusrini. (2014). Penerapan model pembelajaran kooperatif tipe two stay two stray pada materi luas permukaan balok. MATHEdunesa, 3(3), 252–258. https://jurnalmahasiswa.unesa.ac.id/index.php/mathedunesa/article/view/12953