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The Contribution of Emotional Intelligence Toward Students' Learning Results in Science Learning using NHT Learning Model-Metacognitive Strategies

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Abstract: Some studies have reported that emotional intelligence has an effect on and can predict students' learning results. This correlational research aimed at revealing the contribution of emotional intelligence toward the learning results of elementary school students in Ambon-Indonesia. The instruments used in this research consisted of a questionnaire of emotional intelligence developed based on the theory of emotional intelligence by Goleman (1998). Instruments used to measure learning results consisted of essay questions measuring cognitive level of C1-C6. Both instruments were developed by the researcher, and then had been validated and tested by empirical try out. Data were analyzed using linear regression analysis. The results of this research indicate that there is a correlation between emotional intelligence and students' learning results. The contribution of emotional intelligence toward students' learning results is as much as 4.8%, and the regression equation related is Y = 50.278 + 0.281X. Emotional intelligence can have a greater contribution toward the learning results, if these factors are managed well through the curriculum design and the use of more appropriate learning models/strategies which suit the elementary school students. Further researches are required to assess the factors of age, gender, education level, and other learning models/strategies that have an impact on emotional intelligence, so that students' learning results can be improved.
Keywords: emotional intelligence, learning results, metacognitive strategies, science learning.

INTRODUCTION

Learning results are a picture of a person's intelligence quotient. Learning success, one of which, is measured from the learning results neatly written on a report card or other documents of learning results. Previous research on academic success was mainly focused on cognitive factors, which indicated the role of learning results particularly related to the cognitive aspects of student's academic performance [1]. This framework covers the orientation of goal achievement behind the learning process, namely, as a tool to evaluate learning performance. There are two components which are synergistically oriented towards the achievement of learning results, namely, the mastery of concepts or materials and the efforts/performance approach carried out to achieve maximum learning results [2]. Students who focus on concept mastery are capable to acquire new knowledge and skills, improve their competence and understanding. Students who support the performance approach tend to engage in learning tasks to outperform the other students and avoid failure, and prevent the emergence of an attitude of inferiority.

Students' learning results in Indonesia are generally varied at various levels, ranging from low, medium, and high level. In this connection there was a research result showing that the learning results of elementary school students in Ambon were affected by the learning models used by the teacher [3]. When teachers use anonymous or conventional learning, students' learning results are very low, compared to those of the constructivistic based learning, like a cooperative learning model. Learning results are influenced by various factors, including internal factors and external factors. The internal factors of students are, for example, motivation, emotional intelligence, gender, frequency and duration of study time, while external factors include family factors (income, attitudes toward the students' learning process, number of family members, education, social level), teacher factors (teaching experience, class environment, model/strategy, media, evaluation methods, teaching styles), environmental factors (library facilities, emotional atmosphere), and the curriculum [4].

Emotional intelligence is one of the factors that affects students' learning results [5]. Emotional intelligence popularized in 1995 [6], is previously known as social intelligence introduced by Thorndike in the era of the 1920s. It is interpreted as the ability of someone to regulate his emotional condition

intelligently, maintain the alignment of his emotions and disclosure, through self-awareness, self-control, self-motivation, empathy, and social skills [7]. Futhermore it is defined as the ability or skill to recognize and manage one's emotions and the emotions of others. Individuals, groups, or organizations having high emotional intelligence proved to be more able to adapt to humans and the surrounding environment [8].

Studies on the correlation between emotional intelligence and learning results are documented in various literature. Various studies have found that emotional intelligence has a positive correlation with learning results [9-12]. For example, it is reported that in general emotional intelligence could predict students' learning results [11]. This information is clarified by various arguments that reveal the correlation between every component of emotional intelligence and learning results, such as self-awareness, emotional regulation, empathy, self-motivation, and interpersonal skills.

Self-awareness is believed to be a part of the internal motivation that encourages students to learn. Emotional control is interpreted as a person's attempts to control his emotions. This aspect serves to reduce the pressure in overcoming difficulties, preventing problems by controlling, striving to achieve goals, and preventing poor performance. Students with a high level of empathy have a positive connection with motivation to learn, which can improve learning results. Self-motivation is one of the emotional intelligence elements having big contribution toward learning results, because it shows students' interest or attention towards their learning processs and understanding on learning objectives to achieve good learning results. Factors of interpersonal skills are associated with social skills which the students need to achive learning success. Students who are less able to master these skills will have difficulties in social interaction with others, so that they are often ignored or rejected in academic interaction, become shy, lack of confidence in their ability, eventually left behind in learning. Apart from its contribution toward academic success, a person having high emotional intelligence can still perform their function and role consistently in learning and working, continue to struggle under pressure, and have high productivity in both academic and non-academic tasks.

Emotional intelligence can be taught or socialized in learning. This statement contains at least some considerations: 1) process that may occur in the learning of emotional intelligence, 2) empirical evidence related to the effort to teach emotional intelligence, 3) factors related to the success of emotional intelligence program need to be explored. In some developed countries, learning about emotional intelligence is incorporated in the curriculum of *Social Emotional Learning* (SEL) and of *Promoting Alternative Thinking Skills* (PATHS) which aim to promote students' social and emotional intelligence [13, 14]. In Indonesia, there is not any specific learning about emotional intelligence, but it can be developed by teachers themselves in the design and the learning process [15].

Teachers can develop emotional intelligence in the classroom through a particular strategy or model [16], including science learning. Cooperative learning model of *Numbered Heads Together* (NHT) combined with metacognitive strategies is used to develop students' emotional intelligence and their learning results. Emotional intelligence and learning results can be empowered in the syntax of the learning model. For example in the syntax of think together, each group had the opportunity to apply skills, social behavior, and emotional skill in real life situations during group discussions. They work in groups as well as show an attitude of cooperation, collaboration, mutual respect, and increase their confidence [17]. In the syntax of assessing ourselves, students honestly make an assessment of their attitudes and their learning process that has been done. Students are taught to assess their ability, accept the shortcomings of themselves and their friends, appreciate their group members and teachers, and realize the importance of other people in their life and in their learning process. Empowering students' emotional intelligence in NHT-metacognitive strategy learning model is predicted to provide a positive contribution toward students' learning results.

Based on the background idea above, this research aimed at revealing the contribution of emotional intelligence toward learning results of elementary school students in Ambon-Indonesia.

METHODS

Type of Research

This study was a correlational research that aimed at revealing the contribution of emotional intelligence on learning results of elementary school students in science learning using cooperative learning model of NHT-metacognitive strategy. Emotional intelligence was the predictor variable, and the learning results were the criterion variable. The scope of emotional intelligence consisted of self-awareness, self-regulation, motivation, empathy, and relationships with others [18]. The learning results of this research were the students' learning results in science learning.

Population and Sample

The population of this research was the students of class V of elementary school. The samples of this research were 100 students who were randomly determined. The research sample spreaded on four elementary schools in Ambon city with the status as the core schools.

Data Collection

The data of emotional intelligence were obtained by using a questionnaire emotional intelligence which was measured more than once [19]. In this research, the emotional intelligence was measured for four times in 1 semester, within the period of August to December 2015, with the same time interval, that is, the first (1st week of August), the second (2nd week of September), the third (4th week of October), and the fourth (1st week of December). This procedure of measurement was done to ensure that students' emotional intelligence was more or less still consistent. The data of learning results were collected for 2 times in 1 semester using learning result test.

Research Instruments

The instruments used in the research were: questionnaire of emotional intelligence and learning result test. The emotional intelligence questionnaire was developed by the researchers and validated by experts, and then it was tried out. The questionnaire consisted of 44 question items, and it was based on the Likert scale with five answer choices, strongly agree, agree, undecided, disagree, and strongly disagree.

The test instrument of cognitive learning results was also developed by the researchers, based on the domain of learning results [20]. These domains include the aspects of remembering, understanding, applying, analyzing, evaluating and creating. These instruments had undergone the stage of construct validation and empirical testing. The test items of learning results consisted of 18 question items in the form of an essay test. The learning results test was conducted 2 times, before the students taught by using NHT-metacognitive strategy (pretest) and after the students taught by using NHT-metacognitive strategies.

The data of emotional intelligence of 4 time measurements were then calculated for the mean score. The data of learning results in the form of the score of pretest and posttest were tabulated and then calculated for the corrected posttest score. Before the data were analyzed, it was confirmed that the data were normal based on the normality test. The normality of the emotional intelligence data and the learning result data was obtained through the analysis of *One Sample Kolmogorov-Smirnov Test*, where the results are the same, that is, 0.200. after that, the data were analyzed using simple linier regression test to examine the correlation between the two variables using SPSS 23.00 for Windows.

RESULTS

The data description of emotional intelligence and learning results of the students are shown in Table 1. The data showed that the means of emotional intelligence and learning results were 68.2516 and 69.4670 respectively.

Table 1: The Data Description of emotional Intelligence and Learning Results

Variables	N	Mean ± SD	Minimum	Maximum
Emotional intelligence	100	68.2516 ± 7.84359	49.93	88.82
Learning results Cor	100	69.4670 ± 10.08112	44.59	90.83

Anova results related to the regression equation are shown in Table 2. The results of Anova (Table 2) show that the significance value is 0.029 smaller than alpha 0.05, which means that there is a correlation between the emotional intelligence and learning results.

Table 2: Summary of Anova related to the Regression Equation of the Correlation between emotional Intelligence and Learning Results

ANOVA[a]						
Model		Sum of Squares	df	Mean Squares	F	Sig.
1	Regression	481.432	1	481.432	4.925	.029[b]
	Residual	9579.842	98	97.753		
	Total	10061.274	99			

a. Dependent Variable: Learning result Cor

b. Predictors (Constant): Emotional Intelligence

Contribution of emotional intelligence toward learning results is shown in Table 3. The R value of the correlation between emotional intelligence and learning results is 0.219 and the value of R^2 is 0.048 or 4.8%. Thus, the emotional intelligence contributes 4.8% to the achievement of students' learning results and other factor contribution is as much as 95.2% toward the learning results.

Table 3: Summary of linear Regression between emotional Intelligence and Learning Results

Model Summary				
Model	R	R Square	Adjusted Square	Std. Error of the Estimate
1	.219[a]	.048	.038	9.99704

a Predictors: (Constant), Emotional Intelligence

The regression equation of the correlation between emotional intelligence and learning results can be determined as presented in Table 4. Because value a = 0.281 and b = 50.278, so that the regression equation related is Y = 50.278 + 0.281X.

Table 4: The Regression Coefficient Values between emotional Intelligence and Learning Results

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	50.278	8.703		5.777	.000
	Em. Intelligence	.281	.127	.219	2.219	.029

a. Dependent Variable: LRCorr

DISCUSSION

The research results prove that there is a linear correlation between emotional intelligence and learning results. If the students' emotional intelligence is good, their learning results will also be good, and vice verse. The correlation between emotional intelligence and learning results in elementary students is not an anomaly. Related to the learning activity in this level, students also have to learn to finish various tasks, obey the rules and have the responsibilities over the class, learn how to interact with others, receive commands from teacher, as well as negotiate in the interaction within social group or with other students [12]. The students do the activities well because the teacher is seen as their parents at the school. It has been known that mastery of emotional intelligence was manifested in the ability to control emotions, to empathize with the feelings of others, and to use emotions effectively in solving problems, to help children in confronting with the demands and challenges of real life, as well as to improve their learning results [21]. However, the deficit of the development of emotional intelligence is highly dependent on the limitations of one's mental, social environment that does not support, as well as the academic limitations.

Emotional intelligence has a linear correlation with learning result, that can be seen from several arguments [22]. The first, academic performance contained in learning results is something that is often obtained in a lot of ambiguity and uncertainty. For example, when students are faced with a difficult task, or smart teachers, students sometimes experience fear and under pressure. In such situations, students are forced to do the work as best as they could although the results might not be sufficiently satisfying. Students also have to adapt to the teacher's teaching mechanism. Students work freely to achieve their objectives, and they work by prioritizing something considered more important than others. In this uncertainty, students are forced to manage their emotions, to do self-regulation, communicate, and interact with other people whom they believe to be able help complete their tasks and try to survive. The second reason is related to the effort completing academic assignments, which are mostly individual assignments and requires a degree of self-management. This process creates positive emotions which are useful to defend themselves and to direct negative emotions into productive behavior that is useful to overcome the source of negative emotions.

Linear correlation between emotional intelligence and learning results, ensures that students having good emotional intelligence are able to obtain good learning results and vice versa. In connection with that, it has been mentioned that one of the factors affecting a person's emotional intelligence is personality [23, 24]. Students having good personality must have a good emotional intelligence, otherwise students having bad personality certainly display poor emotional intelligence. Bad personality can be identified from the following indicators: less/no motivation, loss of confidence, low self regard, loss of self-control, and having high anxiety. If students show such characteristics, it suggests that they have low emotional intelligence, and this is fatal for their learning results.

Emotional intelligence facilitates the thinking process, thus it contributes to the improvement of learning results. Emotional intelligence is more related to psychological and emotional factors, such as the absence of anxiety, so it does not interfere with a person's thinking process, and it brings benefits to learning learning. Thus, there is empirical evidence that the development of emotional intelligence is determined by the relevant learning strategies/models. The use of learning strategy/model requires sufficient cognitive,

physiological, emotional aspects of teachers as well as good students in response to the learning environment [25], for example, the cooperative model NHT-metacognitive strategies which can encourage a sense of responsibility, cooperation in thinking and generate ideas, spur mutual respect, and develop students' intrapersonal and interpersonal skills in the academic environment. Emotional students will be smarter and happier, more cooperative, and able to create more effective learning process. Thus, learning model/strategies are able to foster students' emotional intelligence who in turn also affects students' cognitive dimension.

The results of this research reveal that emotional intelligence has a contribution as much as 4.8% toward the students' learning results. This result is not much different from the report findings before saying that emotional intelligence had a contribution of 8.4% toward the learning results of the education faculty students [26]. Similarly, another research also has reported a contribution of emotional intelligence toward biology learning results of senior high school students as much as 5.24% [27]. These reports conclude that the correlation between emotional intelligence and learning results is still relatively low. Another study more has also reported similar findings, saying that when examined in more detail based on the subscales of emotional intelligence, there was a significant correlation with learning results [28]. On the other hand there was another study also has reported a low correlation between emotional intelligence and learning results [29]. The findings reveal the contribution of predictor variable as much as 10% toward the criterion variable, however the sub-scale interpersonal, general mood, and intrapersonal had a significant correlation with the learning results. Futhermore there was a study conducted on senior high school students consisting of three ethnics namely Malay, Chinese and Indian, obtained information that the aspects of self-awareness, self-motivation, and empathy had a significant contribution toward the learning results [11]. There was another study more saying that the learning results had a significant correlation with the two dimensions of emotional intelligence, namely adaptability and stress management [30]. Based on the results of the various studies above, it is concluded that the degree of correlation between emotional intelligence and learning results is low.

The level of correlation and the contribution of emotional intelligence toward learning results are influenced by various factors [5]. These factors include age, gender, education level, and the instruments used. The fact shows that girls tend to have better learning results than the boys do, although they perform similar cognitive tasks [31]. This is presumably due to the different reaction between the genders toward the evaluation process. In addition, age and academic level seem to have an effect on the correlation between emotional intelligence and learning results. In fact, some literatures have shown that the older the students are, the lower the correlation between their emotional intelligence and learning results is, because the learning process becomes autonomous and less interaction with teachers or peers. Similarly, the correlation between students' emotional intelligence and learning results can be lower or higher, along with the students' academic level. In this case, further researches are needed to examine the causing factors [32].

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of research and discussion there is a low correlation between emotional intelligence and learning results. The contribution of emotional intelligence toward learning results is as much as 4.8%, while the remaining 95.2% is the contribution of other factors. Thus, efforts are needed to continuously grow or develop students' emotional intelligence in learning, such as organizing and managing teachers' personality and emotion, as well as using a learning process based on learning models/strategies which develop students' intrapersonal or interpersonal skills. Further studies are required to examine other factors that contribute to the development of students' emotional intelligence and learning results, including learning models/strategies that could potentially foster emotional intelligence as a predictor of students' learning results.

REFERENCES

1. Colom R, Flores-Mendoza CE. Intelligence predicts scholastic achievement irrespective of SES factors: evidence from Brazil. Intelligence. 2007; 35: 243-251.
2. Chen WW. The relations between filial piety, goal orientations, and academic achievement in Hong Kong. Educational Psychology: An International Journal of Experimental Educational Psychology. 2015.
3. Leasa M, Corebima AD. The effect of numbered heads together (nht) cooperative learning model on the cognitive achievement of students with different academic ability. Journal of Physics: Conference Series. 2017; 795.
4. Najafabadi ATP, Najafabadi MO, Rohani MRF. Factors contributing to academic achievement: a bayesian structure equation modelling study. International Journal of Mathematical Education in Science and Technology. 2013; 44 (4): 490-500.
5. Costa A, Faria L. The impact of emotional intelligence on academic achievement: a longitudinal study in portuguese secondary school. Learning and Individual Differences. 2015; 37: 38-47.

6. Goleman D. Emotional Intelligence: Why it Can Matter More than IQ. New York, NY: Bantam Books; 1995.
7. Goleman D. Emotional Intelligence (terjemahan). Jakata: PT Gramedia Pustaka Utama; 2002.
8. Seal CR, Sass MD, Bailey JR, Matthew LT. Integrating the emotional intelligence construct: the relationship between emotional ability and emotional competence. Organization Management Journal. 2009; 6: 204-214.
9. Barchard KA. Does emotional intelligence assist in the prediction of academic success? Educational and Psychological Measurement. 2003; 63: 840-858.
10. Parker JDA, Summerfeldt LJ, Hogan MJ, & Majeski SA. Emotional intelligence and academic success: examining the transition from high school to university. Personality and Individual Differences. 2004; 36: 163-173.
11. Yahaya A, Ng SarEe, SNg, Bachok DJ, Yahaya N, Boon Y, Hashim S, Lee GM. The impact of emotional intelligence element on academic achievement. Archives Des Sciences. 2012; 65(4):1-16.
12. Brouzos A, Misailidi P & Hadjimattheou A. Associations between emotional intelligence, socio-emotional adjustment, and academic achievement in childhood: the influence of age. Canadian Journal of School Psychology. 2014; 29 (2): 83-99.
13. Zeidner M, Roberts RD, Matthews G. Can emotional intelligence be schooled? a critical review. Educational Psychologist. 2002; 37 (4): 215-231.
14. Humphrey N, Curran C, Morris E, Farrell P, Woods K. Emotional intelligence and education: a critical review. Educational Psychology. An International Journal of Experimental Educational Psychology. 2007; 27 (2): 235-254.
15. Hastuti TA. Internalisasi kecerdasan emosional dalam pembelajaran pendidikan jasmani olahraga dan kesehatan [Internalization of emotional intelligence in physical and health education]. Jurnal Pendidikan Jasmani lndonesia. 2010; 7 (1): 7-13.
16. Patti J, Holzer AA, Brackett MA, Stern R. Twenty first-century professional development for educators: a coaching approach grounded in emotional intelligence. Coaching: An International Journal of Theory, Research and Practice. 2015; 8 (2): 96-119.
17. Velsor PV. Task groups in the school setting: promoting children's social and emotional learning. The Journal for Specialists in Group Work. 2009; 34 (3): 276-292.
18. Goleman, D. Working with Emotional Intelligences. New York: Bantam Books; 1998.
19. Nelis D, Quidbach J, Mikolajczak M, Hansenne M. Increasing emotional intelligence: how is it possible? Personality and Individual Differences. 2009; 47: 36-41.
20. Anderson LI, Krathwohl DR. Kerangka Landasan untuk Pembelajaran, Pengajaran, dan Asesmen [Framework for Learning, Teaching and Assessment]. Yogyakarta: Pustaka Belajar; 2010.
21. Eisenberg N. Social, emotional, and personality development. In Damon W, Lerner RM: Handbook of Child Psychology: 6th Edition, NY Wiley, NewYork. 2006; 24-98.
22. Rode JC, Mooney CH, Day MLA, Near JP, Baldwin TT, Rubin RS, Bommers WH. emotional intelligence and individual performance: evidence of direct and moderated effects. Journal of Organizational Behavior. 2007; 28: 399-421.
23. Petrides KV, Frederickson N & Furnham A. The role of trait emotional intelligence in academic performance and deviant behavior at school. Personality and Individual Differences. 2004; 36: 277-293.
24. Zee KVD, Thijs M, Schakel L. The relationship of emotional intelligence with academic intelligence and the big five. European Journal of Personality. 2002; 16: 103-125.
25. Inglés CJ, Monteagudo MCM, Fuentes MCP, Fernández JMG, Molero MD, Martinez RS, Gázquez JJ. Emotional intelligence profiles and learning strategies in secondary school students. Educational Psychology. 2016.
26. Mohzan MAM, Hassan N, Halil NA. The influence of emotional intelligence on academic achievement. Procedia-Social and Behavioral Sciences. 2013; 90: 303-312.
27. Pratama AT, Corebima AD. Contributions emotional intelligence on cognitive learning result of biology of senior high school students in Medan, Indonesia. International Journal of Environmental & Science Education. 2016; 11 (5): 8077-8087.
28. Pishghadam R. A Quantitative Analysis of the relationship between emotional intelligence and foreign language learning. Electronic Journal of Foreign Language Teaching. 2009; 6 (1): 31-41.
29. Babelan AZ, Moenikia M. The role of emotional intelligence in predicting students' academic achievement in distance education system. Procedia Social and Behavioral Sciences. 2010; 2: 1158-1163.
30. Fallahzadeh H. The relationship between emotional intelligence and academic achievement in medical science students in Iran. Procedia-Social and Behavioral Sciences. 2011; 30: 1461-1466.
31. Deary IJ, Strand S, Smith P, Fernandes C. Intelligence and educational achievement. Intelligence. 2007; 35: 13-21.

32. Perera H, DiGiacomo M. The relationship of trait emotional intelligence with academic performance: a meta-analytic review. Learning and Individual Differences. 2013; 28: 20-33.