

# The Influences of Intrapersonal Intelligence and Interpersonal Intelligence towards Students' Mathematics Learning Outcomes

Usman Mulbar

*Mathematics Education Department  
Universitas Negeri Makassar  
Makassar, Indonesia*

Fajar Arwadi

*Mathematics Education Department  
Universitas Negeri Makassar  
Makassar, Indonesia*

Said Fachry Assagaf

*Mathematics Education Department  
Universitas Negeri Makassar  
Makassar, Indonesia*

**Abstract**—This study was a kind of ex-post facto research, which aimed to know whether intrapersonal intelligence and interpersonal intelligence affect students' mathematics learning achievement. The subjects of this study were grade eleven students majoring at natural science in one of Indonesia's senior high school, SMAN 1 Kalukku. The data were collected by an intrapersonal questionnaire, an interpersonal questionnaire, and learning achievement test. The data were analyzed using descriptive and inferential statistics. Based on the descriptive analysis, it suggests that students' mathematics learning achievement are at the very high category, and their intrapersonal intelligence and interpersonal intelligence are consecutively at the high category. Meanwhile, based on the inferential analysis it can be suggested that (1) there is influence of intrapersonal intelligence together with interpersonal intelligence towards students' mathematics learning achievement, (2) there is influence of intrapersonal intelligence towards students' mathematics learning achievement by observing interpersonal intelligence, and (3) conversely, there is no influence of interpersonal intelligence towards students' mathematics learning achievement by observing intrapersonal intelligence.

**Keywords**—*intrapersonal intelligence, interpersonal intelligence, mathematics*

## I. INTRODUCTION

A good education is an education that is able to explore all the potential of students. However, most schools cannot explore this potential. Regarding academic issues, the potential that is most often seen according to [1] is the potential that counts on a person's Intelligence Quotient (IQ) level which simply optimizes three categories, namely verbal ability, numerical ability, and visual-spatial ability. Whereas according to [2], children's intelligence is not only based on standard scores (IQ tests), but also the ability in solving problems that occur in an individual's life including novel problems, and creating something or give appreciation in one's culture. In addition, there are many schools that still apply to prioritize IQ as the main factor in qualifying for certain classes. This certainly leads to the assumption that IQ levels greatly determine one's success.

It should also be noted that besides IQ, there are many types of intelligence, known as Multiple Intelligences [3]. Moreover, [2] explained that there are many types of intelligence that can represent a person's characteristics. According to [2], the intelligence included in multiple intelligence is linguistic intelligence, logical-mathematical

intelligence, spatial intelligence, musical intelligence, kinesthetic intelligence, interpersonal intelligence, intrapersonal intelligence and naturalist intelligence. The intelligence which represents IQ is mathematical, logical intelligence. It can be summarized that IQ is a small part of all intelligence. Howard Gardner, in the theory of Multiple Intelligence, hinted at the importance of intrapersonal intelligence and interpersonal intelligence. Both types of intelligence are as important as IQ. Intrapersonal intelligence and interpersonal intelligence play an important role in learning mathematics [4].

Intrapersonal intelligence is an intelligence that describes an individual's ability to understand himself [5]. He has a high sensitivity in understanding their moods, emotions that emerge within themselves and realizing changes that occur within himself both physically and psychologically [6]. This ability is sometimes called self-knowledge. It involves self-awareness or identity and thought processes; sometimes it involves objectivity and the ability to remain silent for a moment and see different points of view. According to psychiatrist James Masterson in [7], the ability of true self has a number of components namely the ability of experiencing various feelings deeply with passion, enthusiasm, and spontaneity, being assertive, acknowledging self-esteem, relieving feelings of pain, having everything needed to maintain intentions in work and relationships, creating and connecting closely, and being alone.

Interpersonal intelligence is an intelligence that describes an individual's ability to connect with other people [4]. An individual with high interpersonal intelligence is able to establish effective communication with others, empathize well, and develop harmonious relationships with others. They can quickly understand the temperament, nature, and personality of others, understand the moods, the motives, and the intentions of people [8]. All of these abilities will make them more successful in interacting with others. Interpersonal intelligence or commonly referred to as social intelligence is defined as the ability and skill of a person in creating relationships, building relationships, and maintaining social relations so that both parties are in a mutually beneficial situation. Moreover, social intelligence has three main dimensions, namely social insight, social sensitivity, and social communication. Social Insight is the ability of children to understand and seek effective problem-solving in social interaction. Social Sensitivity is the ability of an individual to feel and observe reactions or changes in

others that are shown both verbally and non-verbally. In addition, social communication skills are the abilities of an individual to use the communication process in establishing and building healthy interpersonal relationships.

Seeing the importance of intrapersonal intelligence and interpersonal intelligence of an individual to achieve success in mathematics learning outcomes, the authors feel interested in identifying whether there is the influence of Intrapersonal Intelligence and Interpersonal Intelligence towards mathematics learning outcomes.

## II. METHOD

The type of this research is ex-post facto research. The variables of the research in this study are divided into two types, namely independent variables, and dependent variable. The independent variables are intrapersonal intelligence ( $X_1$ ) and interpersonal intelligence ( $X_2$ ). While the dependent variable is the mathematics learning outcomes ( $Y$ ). The population in this study are all students of grade eleven majoring at natural science in SMA 1 Kalukku, one of the schools in Indonesia located in rural area. The research Instruments used in this study are intrapersonal intelligence questionnaire, Interpersonal Intelligence Questionnaire, and test of mathematics learning outcomes which comprehends of 30 multiple choice items in the topic of polynomial and circle. The data are analyzed using descriptive statistics and inferential statistics technique. The latter technique takes advantage of multiple linear regression analysis of which several assumptions should be analyzed, i.e., normality test, linearity test, multicollinearity test, and auto-correlation test [9]. The hypotheses formulated in this study are as follows:

1. Intrapersonal intelligence and interpersonal intelligence have a joint influence on mathematics learning outcomes which is symbolically stated as:

$$H_0: \beta_1 = \beta_2 = 0 \text{ vs } H_1: \beta_i \neq 0, \exists i = 1, 2$$

2. Intrapersonal intelligence has an influence on students' mathematics learning outcomes by paying attention to interpersonal intelligence which is stated as:

$$H_0: \beta_1 = 0 \text{ vs } H_1: \beta_1 > 0$$

3. Interpersonal intelligence has an influence on students' mathematics learning outcomes by paying attention to intrapersonal intelligence stated as:

$$H_0: \beta_2 = 0 \text{ vs } H_1: \beta_2 > 0$$

Where  $\beta_1$  is the parameter coefficient of intrapersonal intelligence after taking into account the interpersonal intelligence and  $\beta_2$  is the parameter coefficient of interpersonal intelligence after taking into account the intrapersonal intelligence?

## III. RESULTS AND DISCUSSION

### A. The Descriptive Statistics Analysis Results

Several findings which are based on the descriptive statistics are as follows:

- the mathematics learning achievement of the students is on very high category with a percentage of 53.2% namely 48 respondents out of 90 respondents.
- the average score of intrapersonal intelligence of the students is 71.88 with the standard deviation of 6.58.
- the average score of the students' interpersonal intelligence is 79.25 with the standard deviation of 8.59.

### B. The Inferential Statistics Analysis Results

- The First Hypothesis Testing 1

The equation of the linear regression  $Y$  (Mathematics Learning Achievement) from  $X_1$  and  $X_2$  is:

$$\hat{y} = -0.120 + 1.083X_1 - 0.019X_2$$

which suggests that each increase of one unit of the  $X_1$  will result in a 1.083 to increase the student's mathematics learning achievement. Every increase of one unit of the  $X_2$  will result -0,019 unit decline in students mathematics learning achievement. The value of the coefficient of determination ( $R^2$ ) is 0.299 which means that the influence or contribution of intrapersonal intelligence and interpersonal intelligence towards students mathematics learning achievement is 29.9%.

- The Second and the Third Hypothesis Testing

Based on the results of the analysis, the probability value  $\rho$  is 0.000 which is smaller than  $\alpha = 0.05$ . Thus  $H_0$  is rejected meaning that there is an influence of intrapersonal intelligence towards the mathematics learning outcomes. Moreover, it is found that there is an effect of intrapersonal intelligence on students' mathematics learning outcomes by taking into account of interpersonal intelligence, as many as 1.083. The value of the standardization coefficient (Beta) is 0.546. meaning that the influence or the contribution of intrapersonal intelligence towards students' mathematics learning outcomes by taking into account of the interpersonal intelligence as many as 54.6%

- Furthermore, it is retrieved that the value probability  $\rho=0.888$  which is greater than  $\alpha=0.05$ , and then  $H_0$  is accepted, i.e. there is no influence of interpersonal intelligence towards students' mathematics learning achievement after taking into account intrapersonal intelligence.

## IV. CONCLUSION

Based on the findings, it can be drawn some conclusions, i.e., intrapersonal intelligence together with interpersonal intelligence affect students mathematics learning outcomes. Moreover, intrapersonal intelligence affects mathematics learning outcomes by taking into account of interpersonal intelligence and, vice versa, interpersonal intelligence affects mathematics learning outcomes by taking into account of intrapersonal intelligence.

## REFERENCES

- [1] N. S. Schutte *et al.*, "Emotional intelligence and interpersonal relations," *J. Soc. Psychol.*, vol. 141, no. 4, pp. 523–536, 2001.

- [2] H. Gardner, *The development and education of the mind: The selected works of Howard Gardner*. Routledge, 2006.
- [3] A. Kaukiainen *et al.*, "The relationships between social intelligence, empathy, and three types of aggression," *Aggress. Behav. Off. J. Int. Soc. Res. Aggress.*, vol. 25, no. 2, pp. 81–89, 1999.
- [4] L. Campbell, B. Campbell, and D. Dickinson, *Teaching & Learning through Multiple Intelligences*. ERIC, 1996.
- [5] M. M. Piechowski, "Emotional giftedness: The measure of intrapersonal intelligence," *Handb. Gift. Educ.*, vol. 2, pp. 366–381, 1997.
- [6] J. D. Mayer and P. Salovey, "The intelligence of emotional intelligence." JAI, 1993.
- [7] D. Goleman, "Kecerdasan Emosional alih Bahasa T," *Hermaya. Jakarta PT Gramedia Pustaka Utama*, 2002.
- [8] K. V Petrides, "Ability and trait emotional intelligence," 2011.
- [9] R. H. Myers and R. H. Myers, *Classical and modern regression with applications*, vol. 2. Duxbury Press Belmont, CA, 1990.