THE INFLUENCE OF ACHIEVEMENT MOTIVATION AND SELF-REGULATED LEARNING (SRL) ON STUDENTS' MATHEMATICS LEARNING OUTCOMES

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Abstrak

This study explores the significance of influence of achievement motivation and SRL toward students' mathematics learning outcomes. This was an ex post facto research. The population was all tenth-grade students of MAN 2 Samarinda, West Kalimantan, Indonesia in the school year 2013/2014. The sample was selected by cluster sampling, as well as obtained four classes as a sample. The data were collected by questionnaires of achievement motivation and SRL, and math formative test. Furthermore, the data were analyzed by using multiple regression analysis. The results of this study is the assumption of regression equation $\hat{Y} = -21,682 + 0,400X_1 + 0,239X_2$ with F value is 40,043 and the significance is 0,000. Hence, there is a significant combination of achievement motivation and SRL through students' mathematics achievement.

Keywords: Achievement Motivation, Self-Regulated Learning, Mathematics Learning Outcomes

A. Introduction

Mathematics is one of the subjects in school that have an important role in determining the future of a student. NCTM stated that, "In this changing world, reviews those who understand and can do mathematics will have significantly enhanced opportunities and options for shaping reviews their futures. Mathematics competence giving opportunities to productive future" (NCTM, 2000: 5). Mathematics believed giving future competences and skill needed by students. Therefore, it should the learning of mathematics in a school can strive for students to develop their potential, in order to really be able to do and understand correctly that reflected in students learning outcomes.

Nonetheles, In the fact that effective learning process to enhance students' skill optimally influences with various factors, namely motivation (Mappaita, 1994), SRL (Schunk, 2005; Rochma, 2016), parents (Pratt, Green, MacVicar, Bountrogianni, 1992), the qualified of teachers (Kasmayadi, 2016; Parkay dan Stanford, 2011; Darling-Harmond, 2000; Linda & Hammond, 2000; OECD, 2001; Whitehouse, 2011), poor of learning materials and facilities (Odogwu, 1994), students' self-eeficay (Sengul, 2011), students' response and attitude (Tella, 2007), and so on. Various attempts were made to look at the factors that most influence the mathematics achievement of students in the classroom. It can be seen drom cognitive and afective aspect. In afective domain, One of the problem founded related to mathematics achievement is in term of students' motivational domains and learning independence/SRL during the lesson (Tella, 2003; NCTM, 1989).

Accoding to Geodenough (cited in Mappaita, 1994) said that motivation is a very important variable for determining success in learning. A learner who fails in his academic duties due not adequately motivated. Middleton and Spanias (Aida and Wan, 2009: 91) "research indicates that success in mathematics is a powerful influence on the motivation to Achieve". Hence, it can be believed that the motivation to have a close relationship with the success of the students in the learning process of mathematics. Furthermore, Atkinson (cited in Tella, 2007) stated that "[p]eople are more likely to work hard when they perceive a reasonable chance to succeed than when they perceive a goal to be out of reach (Atkinson, 1964).

Besides motivation, mathematics learning outcomes are also influenced by SRL. SRL is affective aspect effecting students in the success of the learning process, which emphasis on students in learning activities that full responsibility for success in mathematics learning. To improve SRL could be fostered by giving the challenging task. SRL shows initiative, trying to catch the achievement, have a sense of confidence and a curiosity that stands out. Hence, the study investigates influencing of achievement motivation and SRL towards students' mathematics learning outcomes.

B. Literature Review

1. Achievement Motivation

Motivation is defined as something that energizes and directs our behavior (Moore, 2009; Omrod, 2003; Santrock, 2014). Woolfollk (2007) adds that motivation is the internal state that generates, directs, and keeps the person's behavior. According to Elliot, et. al (2000), motivation is a state of a person that leads us to action, encouraging us to do something, keeping us involved in cases, motivating reason someone to perform an action. In addition, motivation can identified as process that encourage or lead a person to perform an activity (Schunk, Pintrich, & Meece, 2010). According to Ivor. K Devis (1986: 214) states that motivation as hidden power within us to behave and act in a way.

Schunk (2012: 58) revealed that "Motivation is defined as the process where by goal-directed activities are investigated and sustained". It has been suggested that the motivation is a process where the purpose is directed to a continuous activity. According to Slavin (2006: 317), "as an internal motivation that process activities, guides, and maintains behavior ever time. In plain language, motivation is what gets you going, keeps you going, and determines where you're trying to go ". It has been suggested that the motivation as an internal process that activates, guides and maintains behavior themselves over time.

Cohen & Swedlik (2005) explain that motivation can be conceptualized comes from a good incentive particularly come from internal or external, so that students' motivation it can be classified into two, namely intrinsic motivation and extrinsic motivation. Hamalik (2001) stated that intrinsic motivation is motivation that is included in a learning situation that comes from the needs and goals of the students themselves. Meanwhile, extrinsic motivation is the impulse that comes from outside or motivation arising from outside influences. Extrinsic motivation is motivation that arouse one's desire to do something because of the encouragement from the outside, this impulse often called extrinsic incentives such as rewards, reward, or punishment (Santrock, 2011).

Furthermore, achievement motivation concept was first introduced by Mc. Celland. Mc. Celland (cited in Djaali, 2013: p. 103) describes the human needs, there are three kinds of needs, namely the need for achievement, need to affiliate, and the need for food. Achievement motivation become one of the important need for humans to be of good quality in life and actualize themselves. Meanwhile, related to achievement motivation, Sukmadinata (2005) revelaed that achievement motivation is an effort to better compete with themselves or with others in achieving the highest. Achievement motivation is an impulse that exist in a person in connection with the achievements (Gagne & Barliner, 1975; Lindgren, 1976), relating with activities/efforts to work with high quality.

According to the expextancy-value theory, Atkinson (1960, 56), achievement motivation is based on two things, namely the tendency for success and a tendency to avoid failure. In addition, Johnson and Schwitzgebel & Kalb (cited in Djaali, 2013, p. 109), suggests

that individuals who have high achievement motivation have characteristics or indicators as follows:

    a.   Liking situations or tasks that demand personal responsibility for results and not on the basis of chance, fate, or chance.

    b.   Have realistic but challenging goals from goals that are too easily attained or too much risk.

    c.   Looking for a situation or job to gain immediate feedback and real to determine whether or not the results of its work.

    d.   Glad to work and compete to surpass others.

    e.   Able to defer gratification of desires for the sake of a better future.

    f.   Do not bother to simply earn money, status, or other benefits, it will seek if halhal is the epitome of achievement, a measure of success.

Achievement motivation is a form of self effort to achieve the quality of achievement that are superior. In mathematics learning, achievement motivation can be related to the student to complete the math problems correctly.

2. Self Regulated Learning (SRL)

Several studies have revealed that the SRL is one of important factors that influence student learning outcomes (Schunk, 2005; Rochma, 2016). Carroll (Jossberger, 2011) states that the ability of SRL can determine the results of student learning achievement. This is also supported by a statement Pintrich and De Groot (1990), a student who has SRL tends to be more successful in academic ability than those who did not.

SRL as a process in which students cover plan, monitor, and regulate their own learning. Students have autonomy and control of the individual to achieve the learning objectives, related to the acquisition of information, how to solve problems, and so on. (Zimmermann, 2000; Paris & Paris, 2001). Meanwhile, Friedman (2006), suggests that the SRL be interpreted as a form of control over the behavior of the learning process as a result of the internal process of purposing, planning, and respecting on the achievements that have been achieved.

Zimmermann (1989) identified SRL students that are students can improve metacognition, motivation, and behavior and provide ideas and direction to gain the knowledge and skills without relying on teachers, parents, or other learning agencies. This can mean that students SRL in learning process, to gain knowledge and skills, they do not just rely on teachers, parents or teaching agent, but independently actively seek out and discover new ideas.

SRL learning method believed to provide meaningful learning experiences, where students are given space to search for information related learning problems. SRL in the learning process is the key to the mastery of knowledge and skills of learners (Labuhn, Zimmermann, and Hasselhorn, 2010). Zimmermann (2000) revealed that the SRL is the

interaction of three elements namely, personal, behavioral and environmental triadic processes which form mutually influence on learning achievement are described as follows.
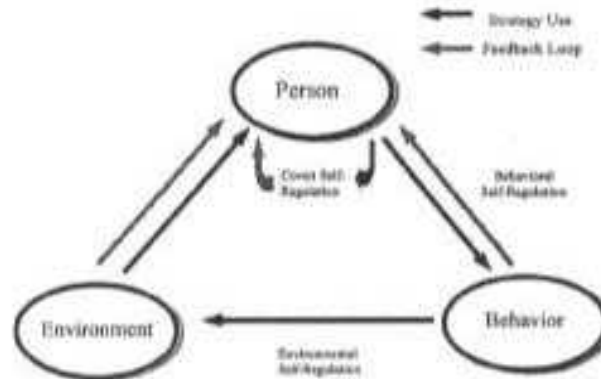

Figure 1. Relationship among Triadic Personal, Behavioral, and Environmental (Zimmermann, 2000: 15)

According Corno, Snow, and Jackson (2009), each individual SRL personally able to protect themselves from interference originating from the self or the environment that may interfere with the learning process. SRL becomes a way of students to refrain from interference that can impair concentration in achieving objectives.

SRL has three components, namely, cognition, metacognition and motivation. Components of cognition includes membership to encode, store, and recall as well as critical thinking skill. Meanwhile, metacognition domain related to the skills of learners to set personal cognitive processes. Related motivation goal orientation, self-efficacy, perceptions of difficulty and ease of learning, task value, and interest in what is learned (Schunk, 2005) as illustrated below.

Each learner is deemed able to be self-regulated learner. According to Moos and Ringdal (2012), there are four underlying assumption that learners can do SRL namely, a) every learner is assumed to regulate and monitor cognition, behavior, and motivations themselves, depending on each individual; b) Each learners actively construct new knowledge by integrating themselves with the knowledge that has been acquired. Every individual has the prerogative, specify the desired learning objectives taking into account the knowledge once gained; c) Each learner is actively involved in the process of constructing knowledge; and d) Behaviour independence of mediating the relationship between the actions of learners, contextual factors and individual characteristics.

Each learner has the differences of SRL. Based on the results of Paris and Paris (2001) obtained that students at the primary school level has SRL lower than the higher level (high or high school). This indicates that the student SRL is influenced by several factors including, age, cognitive development of students, the activity level of internal control, motivation.

Zimmerman and Martinez-Pons (1986) declared that it has proven that it is a student's academic SRL will be much more successful than his colleagues who did not have the SRL.

SRL will combine academic learning skills and self-control which makes learning so much easier, so that students are more motivated (Glynn, Aultman, & Owens (150-170)), which will have an impact on improving student learning outcomes.

3. Mathematics Learning Outcomes

In every process of learning achievement of learning objectives are always expected from changes in students' behavior after the experience of learning known as learning achievement. The results can not be separated from the learning process. According to Gagne, learning is a complex activity, which resulted in the capability. After the learning process, a person experiences enhancing proficiency, skills, knowledge, attitudes, and values.

However, this is disputed by Johnson and Johnson (2002), which explains that student achievement is also related to aspects of behavior and attitudes. Achievement evolve according to three relationships, namely, a) behavior associated with achievement associated with communication, cooperation, problem-solving activity and seek solutions to complex problems; b) the results related to achievement (write themes or report); c) attitude and characteristics associated with achievement, for example, be proud of the work, honor to improve specific competence in a sustainable manner, committe to quality, control is inside, as well as a sense of pride.

Mundilarto (2012) share the results of learning into two groups of competence, namely 'behavioral objectives' and 'non-behavioral objectives'. Competence relating to behavioral outcomes related to behavior that must be presented by the students that there has been a learning process both in the cognitive, psychomotor, and affective. Meanwhile, instead of behavioral competencies related in softskill acquired as a result of the students' learning experiences that have happened.

Algarabel and Desi (2001) explains that learning achievement is the competence of a person associated with the realm of knowledge (cognitive), the measurement of learning achievement tends on students' cognitive domain. According Eggen & Kauchak (Wahono, 2012), the cognitive domain is the domain of learning that focuses on developing students' knowledge in the field of intellectual expertise related to the student's knowledge domain. As we all know that, Anderson et al. (2001) revised the dimensions of Bloom's taxonomy of knowledge, better known as 'cognitive dimension'. Dimensions of knowledge according to Anderson divides knowledge into four categories, namely a) factual knowledge; b) conceptual knowledge; c) procedural knowledge; and d) knowledge of metacognition.

Furthermore, Winkel (1996) reported the results of learning as a proof of the success of students in learning activities according to standards that have been set. The learning achievement is increasing insights, skills, and abilities that have developed as a result of learning students based on the duration (Nitko and Brookhart, 2011; Linn, 2009). To find the required student achievement using evaluation assessment. Evaluation can be utilizing a test.

Ebel and Frisbie (1991) states that the tests provide the best information for teachers and students to be able to get information about the success of their efforts after teaching and

learning. The test was the instrument that is used to observe or describe student achievement with one or more characteristics of the students using a numerical scale. The results of mathematical learning is emphasized in this research is test students' knowledge of the material that has been learned in the learning process of mathematics.

C. Methods

This study is a ex post facto research. In this design research, the researcher does not have direct control over independent variables because their manifestations have already occurred or because they are inherently not manipulable.

Research was conducted in MAN 2 Samarinda, West Kalimantan, Indonesia. The population on this research were 294 students of tenth-grade students, then obtained 142 students of four classess as samples.

The instrument to collect the data consisted of a set of questioners of achivement motivation and SLR, and test of mathematics learning achievement. Achivement motivation questionnaire was used to students' achievement motivation in math class. Meanwhile, SRL questinnaire described the category of students' SRL in mathematics learning. Each of the questinnaire consisted of 25 questions. Its scale inventory questionnaire was shaped by using Likert scale model of a modified were consisted of 4 answer choices, where each answer has been determined score. Furthermore, to measure mathematics learning outcomes was used test in quadratics function. There were consisted four essays questions.

In this study, there are two hyphotheses were tested for significance level at 0.05 margin of error. The hyphothese to investigates there is a significant influence in the impact of achievement motivation and SRL to students' mathematics learning outcomes. Other hyphotheses, to investigates how far that each of variables influences achievement motivation.

D. Findings

Data collected in this study were analyzed using descriptive and inferential statistics which includes, normality, homogenity, linierity, and multikolinierity test and multiple linear regression. The analysis below:

Tabel 1. Results of General Description of Statistical Data of Students' Learning Outcomes of Achievement Motivation and SRL in Mathematics

Descriptive Statistic	Achievement Motivation	SRL	Mathematics Learning Outcomes
Lowest score	40	38	2
Highest score	78	87	40
M	60,25	63,56	17,60

SD	7,391	8,455	7,646
Variation	54,627	71,483	58,455

Results of Normality Test

The hypotheses are:

H_0: $F(x) = F * (x)$ for all x value (Normal distribution)

H_1: $F(x) \neq F * (x)$ at least one x value

Tabel 2. Normality Test

Data	Sig. (2-tailed)	Criteria
Achievement Motivation	0,942	Normal distribution
SRL	0,463	Normal distribution
Mathematics Learning Outcome	0,374	Normal distribution

Results of Homogenity

The hypotheses:

$H_0 : \sigma^2_1 = \sigma^2_2 = \ldots = \sigma^2_{326}$ (*Homoscedasticity of variance*)

$H_1 : \text{ada } \sigma^2_i \neq \sigma^2_j$ (*Heteroscedascity of variance*)

Obtained $\chi^2_{\text{hitung}} = 0,102$ dan $\chi^2_{\text{tabel}} = 3,841$, $\chi^2_{\text{hitung}} < \chi^2_{\text{tabel}}$. Hence, varians of population is homogeny.

Results of Linierity

H_0: $\gamma = 0$ (Regresion linier model)

H_1: $\gamma \neq 0$

Tabel 3. Linierity Test

Data	Sig.	Criteria
Mathematics Learning Outcomes * Achievement Motivation	0,907	Regresion linier model
Mathematics Learning Outcomes * SLR	0,366	Regresion linier model

Results of Multicolinearity

VIF (*variance inflation factor)* of achievement motivation and SRL is 2,051. Because the VIF value less than 10, thus there was no multicolonerity among independent variabels.

Tabel 4. Results of Multiple Linear Regression Analysis Students' Learning Outcomes of Achievement Motivation and SRL in Mathematics

Constant Variabel	Regression Coefficient	T_{cal}	Sig	Partial regression coefficient (r^2)
	-21,682	-4,905	0,000	-
X_1	0,400	3,993	0,000	0,104
X_2	0,239	2,734	0,007	0,052
R		0,605		
R^2		0,366		
$F_{calculation}$		40,043		
Sig.		0,000		

Table 1 showed that the lowest and highest scores, mean, standard deviation, and variation of three variabels results may be found in table 1. The average student achievement motivation score is 60. 25 with the lowest score 40 and the highest score 78. While the average students' SLR is 63. 56 with the lowest score of 38 with the highest score 87. For the test results learning mathematics, the average score obtained by students in class X MAN 2 Samarinda is 17.60 with the lowest score 2 and a highest score of 40.

Table 4 presented the equation model alleged achievement motivation, SLR, and students' mathematics learning outcomes was Y = -21.682 + 0,400X1 + 0,239X2. The coefficient of determination (R2) of 0.366 was obtained. The achievement motivation and SRL 36.6% were able to predict the outcome variable studied mathematics. Furthermore, through the F test, obtained F calculation 40.043 with a significance of 0.000. In the distribution table F, obtained Ftabel = 3.06. Thus, based on the value of the coefficient of determination and the regression equation significance test is concluded that there are significant achievement motivation and SRL simultaneously on students' mathematics learning outcomes.

Then, from the table, it can be seen that each of the variabels contributed to students' mathematics outcomes, which are 1) based on the calculation of partial determination coefficient obtained = 0.052, which means that 5.2% Math student learning outcomes explained by achievement motivation after considering the other variables in the model. Furthermore, in Table 4 multiple linear regression analysis, regression coefficient X1 (achievement motivation) amounted to 0,400 and t count equal to 3.993 with 0.000 significance. While on the t distribution table, obtained t table of 1.65589. Because tcalcution> t table. This shows that there is significant influence of achievement motivation on learning outcomes in mathematics; 2) based on the calculation of the coefficient of determination of

partial obtained = 0.104, meaning that 10.4% of learning outcomes of mathematics student explained by SRL after considering the other variables in the model. Then, in table 2, multiple linear regression analysis, regression coefficient obtained SRL of 0.239 and t count equal to 2.734 with 0.007 significance. While on the t distribution table, obtained t table of 1.65589. Because t calculation> t table. This shows that there is significant influence on students' mathematics learning outcomes and SRL.

E. Discussion

Based on the analysis of data, the conclusion is achievement motivation and SRL contributed to students' mathematics outcomes togetherness and partially. Bank and Finlapson's (1980) stressed that successful performance of students contirbuted significant by students' higher motivation for achievement than other students. It corroborates Middleton dan Spanias (cited in Aida dan Wan, 2009) statement that "success in mathematics is a powerful influence on the motivation to achieve". Thus, it can be believed that motivation strongly related to students' mathematics achievement. It is not about motivation generally, but also achievement motivation, motivation related effort to increase and better performance in mathematics class. It is related to one of research result about achievement motivation in 2007 (Tella, 2007) that found, " that highly motivated students perform better academically than the lowly motivated students". Furthermore, based on the results shows SRL will combine academic learning skills and self-control which makes learning so much easier, so that students are more motivated (Glynn, Aultman, & Owens (150-170)), which will have an impact on improving student learning outcomes. Achievement motivation and SRL contributed to students' achievement. It presents that afective domain has innormous impact to students' cognitive domains.

F. Conclusion

The conclusion is there is a significant effect of achievement motivation and SRL through students' mathematics achievement. Thus, achievement motivation and SRL contributed to students' achievement.

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