



## BIOLOGICAL TEACHERS' MOTIVATION BASED ON SCHOOL LEADERSHIP AND SELF-EFFICACY

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### Abstract:

*Biology teacher needs to have motivation in delivering learning material related to school leadership and self-efficacy. That is why the objective of this research is to analyze the relationship between school leadership, self-efficacy, and motivation of Biology teachers. A survey used by selecting 91 Biology teachers at Jakarta City by using Simple Random Sampling (SRS). There were three instruments developed to measure school leadership (79 items) with reliability of 0.880, self-efficacy (15 items) with reliability 0.984, and motivation (22 items) with reliability 0.885. Data were analyzed by regression-correlation analysis. The result showed that school leadership and self-efficacy has a positive and significant correlation with motivation. These findings mean when motivation would be improved, factors such as school leadership and self-efficacy could be taken into account.*

**Keywords:** Motivation; Self-Efficacy; School Leadership; Regression; Correlation; Survey.

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### 1. Introduction

Quality of country is strongly affected by the quality of human. The development of human resources must be competitive with other country. Science and technology development in 21<sup>st</sup> century is too fast and consequent the tight competition between countries to face the economic global. The enhancement of human resources determines the progress of country and education is the key to build the character of students. The quality of students is affected by teacher's mentoring. Curriculum 2013 is the way how student to be the center of learning process and that's why the teachers as instructor must lead of teaching process.

In reality, teachers have not been professional yet and have weak motivation. That is why most of learning processes felt bored and decrease the productivity of students. The eager to teach is mostly affected by motivation. How teacher apply the variation on delivering knowledge, how to solve the problems, how to recognize the students' characteristics are mainly affected by motivation.

According to Maslow, human being has two drives, drive to growth and survive that affect motivation and it is influenced by needs. Colquitt et al. (2015) stated that motivation is an energetic

force originates both within and outside of individual and it encourages people to reach the goals [7]. Moreover, McShane and Glinow (2015) defines motivation as forces within person that affect direction, intensity, and persistence of voluntary behavior [19]. Ivancevich et al. added that “motivation is made up of at least three distinct components, direction, intensity, and persistence [14].” Bernadin and Russell in Putrawan (2017) clearer stated that motivation is function of employee’s view about the hard working to enhance the quality of job [22].

Besides teacher’s motivation, self-efficacy also determines the learning process. How teachers manage the class depends on belief of teachers on their ability. Self-efficacy controls the resilience or how strong teacher is staying under pressure. Teachers who have high self-efficacy tends to have high motivation. Both of them however could be have relationship with school leadership.

Self-efficacy (SE) is one of personality factors that related to work-attitude in school. Newstrom and Davis defines SE as belief of people to finish the task, fulfill hopes and face the challenges. Colquitt et al. added that SE as the belief of people that they have the capabilities needed to execute behaviors [7]. According to these theories, person who has high self-efficacy able to manage emotion and remain strong in difficulties. McShane and Glinow define that SE refers to a person’s belief that he or she has the ability, motivation, and correct role perceptions to complete task [19]. Luthans (2011) also stated that SE refers to an individual conviction about his or her abilities to mobilize the motivation, cognitive resources, and courses to execute the specific task [18].

Both of motivation either SE however could be had relationship with school leadership. School management is a crucial thing about how school as an organization provide the good quality on delivering education. The direction of school development depends on school leadership (SL). Colquitt et al. stated that SL is an internal influence that affect groups or individual to do what leader want. Leaders must have the ability to affect or coordinate people to work and reach the goals [7]. McShane and Glinow (2015) added that leadership is about influencing, motivating, and enabling others to contribute toward the effectiveness and success of organizations of which they are members [19].

Based on what has been described above, leadership affects many things of organization management such as stress, trust, justice, job satisfaction, and finally affects job performances. Therefore, the productivity of teacher is strongly affected by personality traits such as SE and this trait directly affects motivation.

In conclusion, the purpose of writing this study is to find out (1) does school leadership relate with motivation?; (2) does self-efficacy relate with motivation? ; (3) does school leadership and self-efficacy altogether relate with motivation?

## **2. Materials and Methods**

This research is quantitative research that uses survey method with correlation technique. This study involved 110 Biology teachers of Senior High School in Jakarta City as respondents with a composition of 20 Biology teachers as respondents for instrument testing and 91 Biology teachers selected in research samples using Simple Random Sampling (SRS). There were three instruments used to measure school leadership, self-efficacy, and motivation whose validity has been measured

using Pearson Product Moment and reliability using Cronbach Alpha, calculated by Statistical Package for Social Science (SPSS) 23.

Instrument to measure school leadership consisted of 79 items statement were measured by scale 5-4-3-2-1, from those what is always done until it has never been done, with validity around 0.451 to 0.897 and reliability 0.880. Instrument to measure self-efficacy consisted of 15 items statement were measured by scale 5-4-3-2-1, from strongly agree to strongly disagree, with validity around 0.444 to 0.81, with reliability 0.984. Instrument to measure motivation consisted of 22 items statement were measured by scale 5-4-3-2-1, from strongly agree to strongly disagree, with validity around 0.453 till 0.826, reliability 0.885. Data analyzed by regression and correlation analysis.

### 3. Results and Discussions

The data which used in this research was the result of the instrument filling data that had been filled by 91 Biology teachers of Public Senior High School in Jakarta center. Data which presented included minimum scores, maximum scores, average, mode, median, standard deviation, and variance from school leadership ( $X_1$ ), self-efficacy ( $X_2$ ), and motivation ( $Y$ ). Motivation variable data obtained based on the charging instrument consisting of 22 items. Data on motivation had an empirical score range between 65 and 110, range of scores, average score, median, mode, standard deviation, variance. School leadership data obtained based on the charging instrument consisting of 79 items. School leadership data had a range of empirical scores between 252 and 395, range of scores of 143, an average score of 347.92, median 99, mode 99, standard deviation 7.79, variance 60.65. The self-efficacy data obtained based on the charging instrument consisting of 15 items. Self-efficacy data had a range of empirical scores between 49 and 75, range of scores of 26, an average score of 62.40, median 344, mode 344, standard deviation 35.52, variance 1057.282.

Table 1: ANAVA Table for Regression Model of  $\hat{Y} = 60.885 + 0.101X_1$

Model	Unstandardized Coefficients		Standardized Coefficients	$t_{cal}$	$t_{tab}$	Correlations		
	B	Std. Error	Beta			Zero-order	Partial	Part
1 (Constant)	60.885	8.039		7.573				
School Leadership	.101	.023	.423	4.400**	2.632	.423	.423	.423

\*\* :  $p < 0.01$

Table 2: ANAVA Table for Regression Model of  $\hat{Y} = 59.016 + 0.594X_2$

Model	Unstandardized Coefficients		Standardized Coefficients	$t_{cal}$	$t_{tab}$	Correlations		
	B	Std. Error	Beta			Zero-order	Partial	Part
1 (Constant)	59.016	8.137		7.253				
Self-efficacy	.594	.130	.437	4.578**	2.632	.437	.437	.437

\*\* :  $p < 0.01$

Table 3: ANAVA Table for Regression Model of  $\hat{Y} = 52.612 + 0.057X_1 + 0.380X_2$

Model	Unstandardized Coefficients		Standardized Coefficients	t <sub>cal</sub>	t <sub>tab</sub>	Correlations		
	B	Std. Error	Beta			Zero-order	Partial	Part
1 (Constant)	52.612	8.707		6.043				
School Leadership	.057	.030	.238	1.891 <sup>ns</sup>		.423	.198	.178
Self-efficacy	.380	.171	.279	2.219*	1.99	.437	.230	.209

ns: non-significant

\*: p<0.05

Table 4: Correlation Coefficient School Leadership and Self-Efficacy with Motivation

R <sub>y12</sub>	df	F <sub>cal</sub>	F <sub>tab</sub>	
			0.05	0.01
0.471	88	12.570**	3.10	4.85

\*\* : p < 0.01

Requirements test analysis carried out was a simple regression error estimation normality test using the Kolmogorov-Smirnov test and homogeneity test using Bartlett test. Based on the result of normality and homogeneity test, it is concluded that data were normally distributed at significant level of  $\alpha=0.001$  and different groups of dependent variable scores based on groups of independent variable score were equally homogeneous at significant level of  $\alpha=0.05$ . Before using the regression equation in order to draw conclusions in testing hypotheses, the regression models obtained were tested for significance and linearity using the F test and ANAVA. Based on the result of significance and linearity test, the regression equations of  $\hat{Y} = 60.885 + 0.101X_1$ ,  $\hat{Y} = 59.016 + 0.594X_2$ , and  $\hat{Y} = 52.612 + 0.057X_1 + 0.380X_2$  were significant and linear.

The result of regression equation correlation coefficient analysis  $\hat{Y} = 60.885 + 0.101X_1$  showed that correlation coefficient ( $r_{y1}$ ) is 0.423 while  $t_{cal} = 0.404$  was greater than  $t_{tab} = 1.99$ , then the correlation was very significant at  $\alpha=0.01$ . Result of school leadership partial correlation coefficient with motivation if self-efficacy controlled was 0.198. Determination coefficient ( $r_{y1}$ )<sup>2</sup> was 0.179 which means that 17.9% variation school leadership contributes to the variation of motivation (Table 1). This result means there was a positive and very significant correlation between school leadership and motivation of teachers. The better school leadership applied the stronger motivation of Biology teachers.

The results of regression equation correlation coefficient analysis  $\hat{Y} = 59,016 + 0,594X_2$  showed that correlation coefficient ( $r_{y2}$ ) is 0.437 and  $t_{cal} = 4.578$  is greater than  $t_{tab} = 2.63$  thus the correlation coefficient was very significant at  $\alpha=0.01$ . Result of self-efficacy partial correlation coefficient with motivation if school leadership controlled was 0.198 (Table 2). The coefficient of determination ( $r_{y2}$ )<sup>2</sup> was 0.191 which means 19.1% of variation of self-efficacy contributes to the variation of teacher motivation. These results mean that there was a positive and very significant correlation between self-efficacy and teacher motivation. The higher self-efficacy, the stronger teachers' motivation.

The results of multiple correlation coefficient regression analysis of equation  $\hat{Y} = 52.612 + 0.057X_1 + 0.380X_2$  showed that correlation coefficient regression was 0.471 while  $F_{cal} = 12.57$  was greater than  $F_{tab} = 4.85$  thus the correlation between school leadership and self-efficacy with motivation was very significant at  $\alpha=0.01$  (Table 4). The coefficient of determination  $(r_{y12})^2 = (0.471)^2 = 0.222$  which indicates that 22.2% of motivation variation is determined by school leadership and self-efficacy through the multiple linear correlation models  $\hat{Y} = 52.612 + 0.057X_1 + 0.380X_2$ .

Based on the results of calculations and testing of hypotheses it is known that the results of testing the first hypothesis prove that there was a positive and significant correlation between school leadership and motivation so that the better the leadership of the principal, the stronger the teacher's motivation. The relationship between school leadership and motivation can be demonstrated in the Organizational Behavior model by Colquitt et al. (2019) which shows that leadership styles in group mechanisms can influence individual mechanisms, one of which is motivation and ultimately affect individual behavior such as work performance and organizational commitment [7]. The mechanism that occurs in groups is strongly influenced by group leadership because the leader directs activities within the group until the goals are set.

Research conducted by Abdulla et al. (2017) also conveyed the same thing that the principal's transformational leadership was related to teacher motivation [1]. According to Ling et al. (2015) that schools are run under the leadership of the principal, so the direction of school development is determined by the leadership of the school principal and the situation between teaching staff who work [17]. Therefore, principals play an important role in determining school development through the delivery of the vision and mission and plans and policies that appreciate the work of the teacher so that the teacher's self-efficacy and motivation increase.

These results differ from the results of the study by Eres F (2011) which states that there is no relationship between teacher motivation and the characteristics of the principal's transformational leadership [8]. Based on the analysis, teacher motivation that arises is less strong due to the lack of strong culture (Cheng, 1993) [6] and the school climate (Ladyong, 2014) [16]. Another reason is that teachers are not satisfied with the communication that occurs in the school environment. The level of leadership quality of the principal does not show transformational leadership behavior so the school culture is not supportive. While another studies by Park and Rainey (2008) states an increase in employee motivation with transformational leadership styles [21]. It is different with Caldwell and Spink (1992) which explains that the sub dimensions of transformational leadership are cultural, educational, strategic, and responsive [4]. Transformational leadership can influence the achievement of organizational goals while not influencing employee motivation (Gallmeier, 1992) [10]. Lack of supporting the school environment such as the enforcement of the centralized principle has caused the principal's transformational leadership training to not work. The teacher must also be able to have clear goals in teaching the lesson to encourage the formation of motivation.

Increasing teacher motivation is related to teacher performance. This result is stated by Yani A et al. (2017) shows that transformational leadership, teacher motivation, and organizational climate are positively related to teacher performance [30]. Teacher's performance improvement is influenced by the motivation of the teacher because with strong motivation, the teacher will always be able to do various variations in teaching and try to form the students' thinking and character

well. Principal leadership is able to improve teacher performance indirectly through increasing teacher motivation. According to Schermerhorn that transformational leadership can expand and increase followers' interest in doing what they love for the good of others [24]. Positive relationships that are formed in transformational leadership are encouraging members to become more potential and efficient for organizations to produce efficient organizations.

The results of testing the second hypothesis concluded that there was a significant positive relationship between self-efficacy and motivation. The weak strength of teacher motivation can be determined by the high and low self-efficacy although the contribution of the variable self-efficacy to motivation is low. The result of the study by Hoxha & Hyseni-Duraku states that there is a significant relationship between the leadership of the principal and teacher efficacy [12]. The four dimensions of transformational leadership, consist of Idealized influence, inspirational motivation, intellectual stimulation, and individual consideration and two dimensions of transactional leadership, consist of contingent reward and management by exception, have a significant relationship with motivation.

The positive relationship between self-efficacy and achievement motivation was also stated by Ju Zhang et al. (2015) [15]. Research conducted involves students and shows the low motivation of students. Self-efficacy can be improved if achievement motivation is also increased. Caprara said that self-efficacy became an important predictor of achievement motivation [5]. The current school situation is faced with the lack of recognition or appreciation of various teachers' efforts at work. Determination of awards for achievements is also rarely done consequently teachers are not eager to improve their quality. Recognition of the achievements can also influence the enthusiasm of the teacher to continue working. Self-motivation can also be influenced by the environment so that appreciation from the school is also needed.

According to Atkinson's theory that the higher the self-efficacy, the stronger the motivation formed. Based on Bandura, there are four sources of influence on self-efficacy, consist of past accomplishment, vicarious experience, verbal persuasion, and emotional states [2]. Principals can improve teacher self-efficacy through recognition of achievements, and self-efficacy can also increase due to various awards that have been achieved by the school. However, self-efficacy is not affected by the level of education (Ju Zhang et al., 2015) [14].

The same thing was also conveyed by Husain UK. (2014) [13], Taheri-Karamah Z. (2018) [25], Harahsheh (2017) [11], and Mojavezi A. (2012) that there was a positive correlation that occurs between self-efficacy and student motivation [20]. In addition, Husain also added that there was no difference in the level of motivation and self-efficacy based on gender [13]. The research by Taheri-Karamah conveyed the same thing that students with high self-efficacy would be more successful in doing assignments and getting awards [24]. The results of the study regarding the existence of a significant relationship between student motivation and teacher self-efficacy were also delivered by Tshannen-Moran & Hoy (2001) [28], Tournaki&Podell (2005) [27], Wolters & Daugherty (2007) [29]. According to Bandura's observation that teachers who have high self-efficacy are able to motivate their students to develop their cognitive level [3]. Teachers with high self-efficacy will try to teach students to be motivated and utilize their own potential to develop. However, teachers with low self-efficacy will tend to surrender to the situation so that students' self-development does not work properly.

The contribution of the principal's leadership and self-efficacy to teacher motivation is fairly low. However, both are quite contributing to the formation of motivation. According to Tastanet al, high teachers' self-efficacy is able to construct student behavior in science programs to be positive, innovative, high motivation, and improve achievement [26]. School leadership directly influence the teacher's self-efficacy and finally influence motivation. Eyal& Roth (2011) states that teaching motivation of a teacher is significantly influenced by the school leadership [9]. School leadership style applied influences the way of working, teacher self-development, and student learning adaptation.

The results of testing the third hypothesis concluded that there was a relationship between school leadership and self-efficacy together with motivation. The results of this study are in line with the results of research by Rodriguez et al. (2014) states that there is a relationship between teacher efficacy and affective and student motivation [23]. Self-efficacy and school leadership altogether influences teacher motivation. High self-efficacy affects the motivation of teacher because of belief of their own capabilities. However, self-efficacy and motivation are influenced by school leadership. Charismatic leader is able to coordinate teachers effects the higher self-efficacy and motivation. Based on the analysis of the study, it was found that Biology teachers with self-efficacy were quite capable of managing because trust in their abilities could influence the teacher's strategy in teaching.

#### **4. Conclusions and Recommendations**

Based on these findings, the conclusions from this study are that the two independent variables are well related to motivation. School leadership has a positive and significant relationship with Biology teachers' motivation as well as between self-efficacy and motivation. To improve motivation, school leadership and self-efficacy need to be considered. The better school leadership style and the higher self-efficacy, the stronger motivation of Biology teacher would be.

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