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An Investigation of Junior High School Students' Science Self-Efficacy and its Correlation with Their Science Achievement in Different School Systems

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ABSTRACT Based on PISA 2018 result, the science achievement of Indonesian students was below average. Some factors influence students' achievement in learning science, such as motivation, emotion regulation, self-efficacy, and school system. This study investigates students' self-efficacy in learning science in different school systems. The present investigation aims to discover students' self-efficacy levels in public and private schools. By looking at students' self-efficacy levels, this study determines its correlation with science achievement. There were 170 public school students and 107 private school students in Bandung City involved in the study. This study employed a correlational research design to determine the correlation between two variables. The correlation analysis was done in each school. Thus, Spearman-rank correlational analysis was used to investigate the correlation between the two variables in three public schools and two private schools. Also, Person-correlational analysis was used for the other private school. The results show that students' self-efficacy in public and private schools was in the medium levels. Seventy-eight point eight public-school students and 76.6% of private school students were classified at the medium level. However, there was no correlation between students' self-efficacy and their achievement in learning science both in public and private schools.

Keywords Self-Efficacy, Self-efficacy Level, Science Achievement, Public School, Private School

1. INTRODUCTION

Indonesian scores of the last Program for International Student Assessment (PISA) in 2018 were below average (OECD, 2019). Moreover, the Indonesian rank in PISA 2018 result was lower than PISA 2015 result. In PISA 2015 result, Indonesia was in the ninth rank from the bottom, while in PISA 2018 result, the Indonesian rank fell into the fifth rank from the bottom (OECD, 2016; OECD, 2019). Students' science achievement in PISA and their school assessment are influenced by teacher performance, self-efficacy, emotion regulation, school culture, and classroom environment. Students who experienced negative emotions like boredom, anger, and sadness frequently tend to get low on their academic achievement (Kirbulut & Uzuntiryaki-Kondakci, 2019). Besides emotion regulation, students with high self-efficacy also tend to have high achievement than those with lower self-efficacy. It is because self-efficacy influences students' achievement more than self-concept (Ardura & Galán, 2019). Also, students' self-efficacy becomes one-factor influencing students' environmental awareness based on the PISA 2015 result of Indonesian students (Susongko & Afrizal, 2018).

Self-efficacy is defined as people's judgments of their capabilities to organize and execute courses of action required to attain designed types of performances (Bandura, 1986). Four sources influence Self-efficacy; verbal persuasion, emotional arousal, vicarious experience, and mastery experience, which is the most influenced one (Bandura, 1997). Verbal persuasion, like suggestion and encouragement given by parents to the child for their success in science, becomes the most influential factor in students' self-efficacy. The other verbal persuasion is the teacher's feedback, such as giving rewards or punishment. The last most substantial factor in students' self-efficacy was students' thinking about a friend's success in science or called a vicarious experience (Dorfman & Fortus, 2019). Also, shadow education or familiarity as tutoring influences

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students' self-efficacy. Students' who have shadow education possess a higher self-efficacy (Montebon, 2016). Another study found that the school system is also responsible for how students' self-efficacy shaped (Dorfman & Fortus, 2019).

In Indonesia, formal education is held in several systems according to the school culture and curriculum applied. Both public and private schools in Indonesia apply Kurikulum 2013 [2013 Curriculum] or called K13 according to Kementerian Pendidikan dan Kebudayaan [The Ministry of Education and Culture] (MoEC) regulation. However, some private schools combined K13 with an international curriculum or used the international textbook as learning sources. In MoEC regulation of 2014 Number 31 about the partnership program between Indonesian institutions and foreign institutions, education becomes the foundation for some private schools to combine national and international curricula. In some private schools, the K13 and Cambridge curriculum combinations were also combined with the boarding curriculum (Hendajany, 2016). The different curriculum applied and the facilities provided by the school may influence the teaching-learning process.

Several researchers compared the Indonesian public and private schools (e.g., Pamelasari, Nurkhalisa, & Laksmana, 2018; Stern & Smith, 2016). Based on PISA 2009 result, private school students performed well rather than public school students in reading tests, but in contrast science score of public school students was better than private school students (Stern & Smith, 2016). International private school students are also more expert in English than public school students (Pamelasari et al., 2018).

The present study researched the relationship between the school system and students' self-efficacy for the following reasons. Firstly, most parents believe that the most expensive school has a better school system and can create a better qualification for students. A previous study found that some parents predicted that public school was better than private school (Hendajany, 2016). For example, international private school students are more expert in English than public school students (Pamelasari et al., 2018). On the other hand, another study determined that most parents chose Islamic-based primary schools rather than public and private primary schools (Hidayati & Rifa'i, 2020). Secondly, the Indonesian educational system is marked as under-developed compared to other Asian countries, and it has been proved by the score of PISA, which has remained below average (Faisal & Martin, 2019). Thus, Indonesian achievement in PISA may also be influenced by students' self-efficacy.

2. METHOD

This research's main objective was to analyze the correlation between students' science self-efficacy and their science achievement in private and public schools. The correlational research design was used to determine the correlation between two variables. In the correlational research method, there is no treatment given by the research to manipulate individuals, settings, or events in the study (Fraenkel, Wallen, & Hyun, 2012).

2.1 Participants

This study's population was eighth-grade students from both public and private schools around Bandung City. This research sample was the eighth-grade junior high school students from three public schools and three private schools. The sampling technique was convenience sampling. Convenience sampling includes people who can easily be reached to participate in the study. (Fraenkel et al., 2012).

Students' self-efficacy in this study was limited to five indicators in the questionnaire such as (1) Conceptual understanding, (2) Higher-order Cognitive Skills, (3) Practical Work, (4) Everyday Application, (5) Science Communication. Students' science achievement was limited to the secondary data or the available science scores

Table 1 Normality test of public and private school's general data

School		Kolmogorov-Smirnov			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	Df	Sig.
Public School	Self-Efficacy	.096	170	.001	.967	170	.000
	Science Achievement	.183	170	.000	.854	170	.000
Private School	Self-Efficacy	.121	107	.001	.968	107	.101
	Science Achievement	.097	107	.016	.967	107	.010

Table 2 Normality test of public school's data

Public School		Kolmogorov-Smirnov			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	Df	Sig.
A	Self-Efficacy	.136	61	.007	.964	61	.067
	Science Achievement	.134	61	.008	.916	61	.000
B	Self-Efficacy	.117	58	.047	.948	58	.015
	Science Achievement	.155	58	.001	.959	58	.046
C	Self-Efficacy	.127	51	.039	.960	51	0.81
	Science Achievement	.287	51	.000	.797	51	.000

Table 3 Normality test of private school's data

Private School		Kolmogorov-Smirnov			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	Df	Sig.
A	Self-Efficacy	.128	32	.195	.983	32	.881
	Science Achievement	.074	32	.200	.976	32	.678
B	Self-Efficacy	.122	52	.053	.966	52	.141
	Science Achievement	.161	52	.002	.940	52	.012
C	Self-Efficacy	.152	23	.179	.943	23	.206
	Science Achievement	.144	23	.200	.936	23	.146

based on science teacher assessment of the first semester in 2019/2020. On the other hand, the school systems were limited to the science teaching-learning process culture in each school.

2.2 Instrument and Data Collection

There were two types of instruments used in this research—first, students' science self-efficacy questionnaire adopted from Lin, Tan, & Tsai (2013). The questionnaire consists of 28 statements that spread into five indicators. Second, an observation-questions guideline was used to observe the science teaching-learning process through interviews with the science teacher. The observation-question guideline consists of 52 questions which spread into 13 indicators.

Students' self-efficacy questionnaire adapted from Lin et al. (2013) was translated into the Indonesian language for gathering data in two different private schools. Meanwhile, one private school titled bilingual school used the English version of the questionnaire since English was the first language in their teaching-learning process. The questionnaire was given to 8th-grade students in three different private schools in Bandung. Total participants from private school were 107 students which 32 students from private school A, 52 students from private school B, and the last 23 students from private school C.

According to the normality test of public and private school's general data (Tables 1-3), spearman-rank correlational analys is was used to analyze the correlation between two variables. In contrast, two different correlational analyses were used to analyze the correlation between students' science self-efficacy and their science achievement in public and private schools, according to each school's normality test in public and private schools' data. Spearman-rank correlational analysis was used to investigate the correlation between the two variables in three public schools and two private schools. For the other one, the private school used Pearson-correlational analysis.

The data from private schools A and C both in self-efficacy scores and science achievement were usually distributed. Thus, Pearson-correlation analysis was chosen to statistically determine the correlation between students' science self-efficacy and their science achievement. Meanwhile, since the data of science achievement in private school B was not normally distributed, the correlation analysis in private school B was done with Spearman-Rank analysis. Although self-efficacy data in private school B was shown as normally distributed, it did not fulfill the requirements of person correlation analysis.

3. RESULTS AND DISCUSSION

3.1 Students' Science Self-efficacy

The five levels of students' science self-efficacy in public and private schools were determined using ordinal category formula. The five levels were; very high self-efficacy, high self-efficacy, medium self-efficacy, low self-efficacy, and very low self-efficacy.

Statistical analysis showed that students' self-efficacy levels in public and private schools were mainly at the medium level in similar value. This means that both public and private school students think they cannot complete the task well and tend to refuse the teacher's task (Bandura, 1995). In public schools, 79% of students from 170 participants were at the medium level. Furthermore, from a total of 107 participants in private schools, there were 76.6% of students who are categorized as medium level. The other 21% of participants in public schools were separated into different levels. 11.8% at a high level, then 4.1% at a low level, 2.9% at a very high level, and the last 2.4% at a very low level. The other 23.4% of private school participants separated into 5.6% at a high level, followed by 11.2% at a low level, then 2.8% at a very low level, and the last 3.7% at a very high level.

Students' self-efficacy is influenced by four sources: vicarious experience, verbal persuasion, emotion arousal, and the most influenced source, mastery experience (Bandura, 1997). One of the self-efficacy sources, verbal persuasion, could be from social persuasion like parents' thoughts, teacher feedback, whether punishment or reward, friends thought, and school culture influenced students' self-efficacy (Dorfman & Fortus, 2019). In this study, the way students answered the third indicator of the questionnaire was influenced by school culture in science activity and mastery experience since students' experience in doing practical work was very limited.

The similarity of students' self-efficacy levels in public and private schools was influenced by science education allocation time. In public and private schools the science education was held in 5 X 40 minutes in a week. The other factors were the time of laboratory activity conduction. The learning approach applied mostly the scientific learning approach. The scientific approach's implementation can build scientific thinking like asking, observing, trying, and

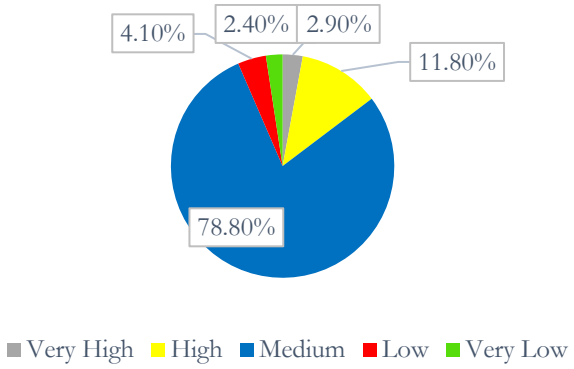

Figure 3 Students self-efficacy in public school

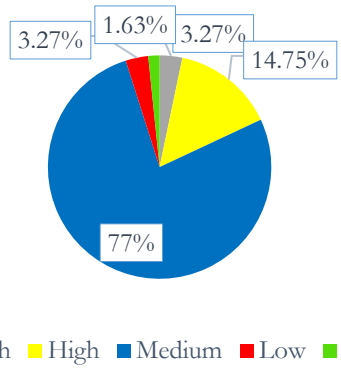

Figure 4 Science students' self-efficacy level in public school A

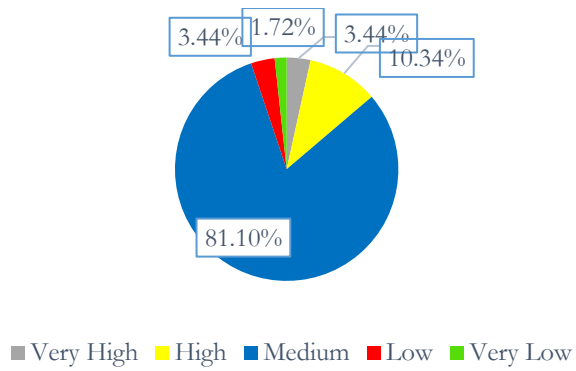

Figure 1 Science students' self-efficacy level in public school B

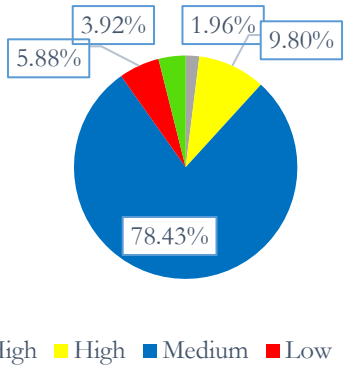

Figure 2 Science students' self-efficacy level in public school C

networking, which can raise students' critical thinking and solve the problem actively (Nurcahyo & Djono, 2018). Those factors will influence the source of students' self-efficacy in learning science.

Students' Science Self-efficacy in Public Schools

Public school students were marked as quickly depressed students because public school's students were mainly at the medium level, as shown in Figure 1. About 134 students from 170 participants were in the medium level of science self-efficacy.

About 143 students in the medium level came from three different public schools. There were 47 students from public school A; also, 47 students from public school B and the rest 40 students were from public school C. Students' in the medium level of science self-efficacy mostly answers the questionnaire on the scale '3', which was 'agree.'

At high and very high levels, students' answers to the questionnaire were quite similar. On scale '3', agree and scale '4' strongly agree. The difference was students at high-level answers more on scale '3' agree than scale '4' strongly agree. On the other hand, the scale '4' was chosen more than scale '3' by students' at a very high level.

The curriculum used in those three public schools was the same as Kurikulum 2013 [2013 Curriculum] or K-13 according to MoEC regulation No 106 of 2014. However, the teaching-learning process was held different in those three public schools since the science teachers implemented different learning models, learning approaches, and learning methods. Some aspects differentiated those three public schools. The interviews were conducted with science teachers of those three public schools to observe how science teaching and learning were held.

Laboratory activity was influence by the third indicator of students' science self-efficacy about practical work. According to interviews with science teachers in three public schools, they found different ways to conduct laboratory activity. Public school A conducted laboratory activity once a semester. This means the students' experience in hands-on activity or practical work was very lack. Thus, some students answer a scale of '2' disagree and '1' strongly disagree for the third indicator.

On the other hand, since the laboratory in public school B was under reconstruction, the science teacher conducted practical work in the classroom by using safe tools. Therefore, there was a variation of students' answers in the third indicator, but most students answered scale '2' and '3' although some answered scale '1'. In contrast, the science teacher in public school C conducted the laboratory activity according to the content. If the material needed practical activity so there was practical work. So, students answer mostly scale '2' and '3' for the third indictor. Still, two students answered scale '1' for the statement, "I know how to carry out experimental procedures in the science laboratory."

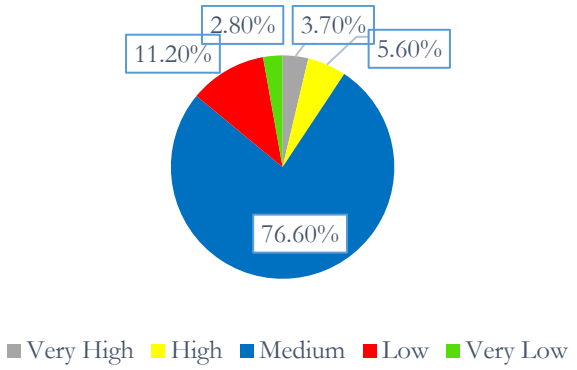

Figure 6 Students self-efficacy in private school

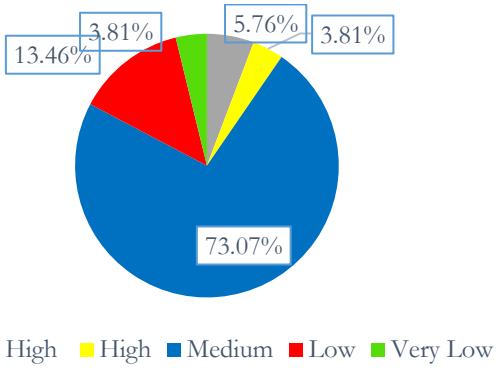

Figure 5 Science students' self-efficacy level in private school B

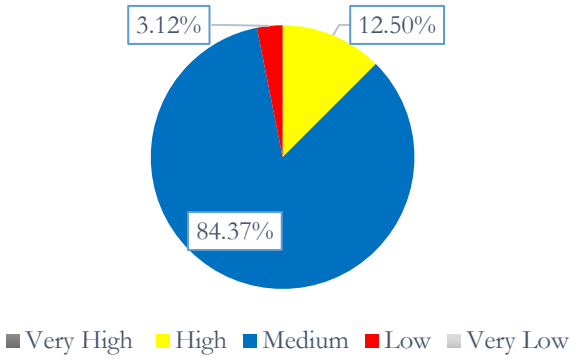

Figure 7 Science students' self-efficacy level in private school A

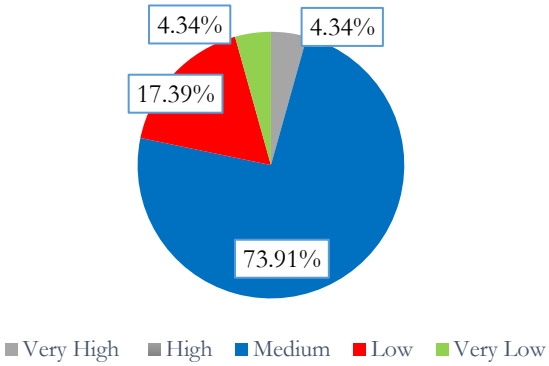

Figure 8 Science students' self-efficacy level in private school

Implementing the learning model and learning approach influenced the other four indicators of science students' self-efficacy. The learning model, learning approach, and learning method were the factors that could create a particular classroom environment. The classroom environment is responsible for shaping and building students' self-efficacy (Dorfman & Fortus 2019).

According to interviews with science teachers in three public schools, they implemented the same learning approach, the scientific learning approach. In implementing the scientific learning approach, students could build scientific thinking like asking, observing, trying, and networking, which could raise students' critical thinking and solve the problem actively (Nurcahyo & Djono, 2018). Thus, most of the three public schools were at the medium level of science self-efficacy (Figures 2-4).

In public school A, the implementation of scientific learning approaches was combined with the discovery learning model and the discussion learning method. In the discovery learning model, students are considered to explore the material independently and solve the teacher's problem (Großmann & Wilde, 2019). Since students explore independently in the discovery learning, the more they do, the higher their understanding of the concept (Großmann & Wilde, 2019; Nurcahyo & Djono, 2018). Thus, 77% of 61 participants in public school A were at the medium level. Still, in the range of 70%, there were 78.43% of students at the medium level of 51 participants in public school B. Even though public schools A and C had a similar number of students at the medium level, they implemented different learning models. In public school C, the science teacher implemented a direct learning model. Students learned from teacher explanation through certain teaching media in the direct learning models (Putri, Leksono, & Cholid, 2019).

The number of students at the medium level in public school B was higher than in public schools A and C. There were 47 students from 58 participants or 81.10% at the medium level. Students' science self-efficacy in public school B was influenced by the inquiry learning model and discussion learning methods. Students' who experience inquiry-based learning tend to have high curiosity, which is positively related to their learning achievement (van Schijndel, Jansen, & Raijmakers, 2018). Students with high curiosity also tend to have good science students' traits (Nugraha, Putri, & Sholihin, 2020). The discussion learning method also encourages students to compare themselves with friend ability, which is an example of vicarious experience (Dorfman & Fortus, 2019; Webb-Williams, 2018).

Students' Self-Efficacy Classification in Private Schools

Science students' self-efficacy in private school were quite similar to students in public school. Most of the students in private schools are classified as a medium level of self-efficacy. 76.6% of students of the total 107

Table 4 Correlation analysis in public school

Spearman's rank correlation coefficient		Students' Self-efficacy	Students' Science Achievement
Students' Self-efficacy	Correlation coefficient	1.000	.119
	Sig.		.121
	N	170	170
Students' Science Achievement	Correlation coefficient	.119	1.000
	Sig.	.121	
	N	170	170

Table 5 Correlation analysis in private school

Spearman's rank correlation coefficient		Students' Self-efficacy	Students' Science Achievement
Students' Self-efficacy	Correlation coefficient	1.000	.158
	Sig.		.105
	N	107	107
Students' Science Achievement	Correlation coefficient	.158	1.000
	Sig.	.105	
	N	107	107

participants from three different private schools were at the medium level, but the number of students at a low level higher than at a high level. The following fourth level was very high and the last very low level.

There was a contrast laboratory activity conduction in three private schools. Private school A conducted a laboratory six times a semester since the science lesson was separated into three subjects: biology, chemistry, and physics. Each subject has its laboratory for conducting practical work. Therefore, most of the private school students answered the scale '3' agree and '4' strongly agree for the third indicator of science self-efficacy. Meanwhile, private school B and C students mostly answered scale '3' agree and '4' strongly agree for the third indicator. Even though the students' answers were the same, private schools, B and C, had different practical work styles. It means in this study, the number of practical work conducted influence more than practical works' style itself.

In private school B, the laboratory activity was conducted three times in a semester and groups. The group work influenced the source of students' self-efficacy, especially vicarious experience (Eymur & Geban, 2017; Webb-Williams, 2018). On the other hand, since private school C implemented web-based learning, the practical work and demonstration were conducted digitally. The use of technology in the teaching-learning process was the way to fulfill the need in this 4.0 industrial era (Lase, 2019). The different times and ways to conduct practical work created different school cultures. It shows that the school culture becomes one source of shaping students' self-efficacy (Dorfman & Fortus, 2019).

Like in public school, the other four indicators of science students' self-efficacy in private schools were influenced by implementing the learning model and learning approach. Three different private schools implemented the same learning approach, which was the scientific learning approach. The scientific approach's implementation can strengthen students' scientific thinking (Nurcahyo & Djono, 2018). Thus, in each private school, more than 70% of students were at the medium level (Figures 5-8).

The specific result of students' science self-efficacy in three private schools was quite different because each science teacher implemented different learning models. In private school A, no student belonged to very high and very low levels. The implementation of the cooperative learning model influenced the results on students' science self-efficacy. In cooperative learning models, students worked in groups and were assumed to understand by peer teaching (Eymur & Geban, 2017). Work in a group or group discussion would influence vicarious experience and verbal persuasion from peers (Dorfman & Fortus, 2019; Webb-Williams, 2018). At the same time, the science teacher in private school C also implemented a cooperative learning model. Thus, there was a similar result; there was only one student at very high and very low levels in private school C. Besides, private schools A and C combined Kurikulum 2013 [2013 Curriculum] with DWI Bahasa [bilingual] school systems and used international textbooks like Cambridge and Oxford as learning sources.

Differently, private school B only implemented the national curriculum or Kurikulum 2013 [2013 Curriculum], but they implemented the habituation to speak English for a particular day. Private school B did not implement cooperative learning models like private schools A and C. The science teacher in private school B often implemented the inquiry learning model. Students who experienced inquiry learning models tend to have high curiosity (van Schijndel et al., 2018). Students with high curiosity also tend to have good traits as science students (Nugraha et al., 2020). Therefore, 5.7% of students from 52 participants had a very high level of science self-efficacy.

3.2 Correlation between Students' Self-Efficacy and Their Science Achievement

Students' achievement or students' scores in learning science in this study used the available score in every public and private school. The available score comes from teacher assessment in a whole semester. In other words, students' achievement was used the secondary data.

The relationship between students' self-efficacy and their achievement in learning science in public school's general data was investigated using spearman's rank-order correlational analysis. There was no correlation between

Table 6 Correlation analysis in public school A

Spearman's rank correlation coefficient		Students' Self-efficacy	Students' Science Achievement
Students' Self-efficacy	Correlation coefficient	1.000	.187
	Sig.		.148
	N	61	61
Students' Science Achievement	Correlation coefficient	.187	1.000
	Sig.	.148	
	N	61	61

Table 7 Correlation analysis in public school B

Spearman's rank correlation coefficient		Students' Self-efficacy	Students' Science Achievement
Students' Self-efficacy	Correlation coefficient	1.000	.199
	Sig.		.135
	N	58	58
Students' Science Achievement	Correlation coefficient	.199	1.000
	Sig.	.135	
	N	58	58

Table 8 Correlation analysis in public school

Spearman's rank correlation coefficient		Students' Self-efficacy	Students' Science Achievement
Students' Self-efficacy	Correlation coefficient	1.000	.172
	Sig.		.227
	N	51	51
Students' Science Achievement	Correlation coefficient	.172	1.000
	Sig.	.227	
	N	51	51

Table 9 Correlation analysis in private school A

Person correlation coefficient		Students' Self-efficacy	Students' Science Achievement
Students' Self-efficacy	Correlation coefficient	1.000	.210
	Sig.		.248
	N	32	32
Students' Science Achievement	Correlation coefficient	.210	1000
	Sig.	.248	
	N	32	32

the two variables, $r = 0.12, n = 170, \rho > 0.05$ as shown in Table 4.

In the private schools' general data, the relationship between students' self-efficacy and their achievement in learning science was also investigated using spearman's rank-order correlation analysis, based on the normality test result. As shown in the Table 5, the results show that was no correlation between two variables, $r = 0.16, n = 107, \rho > 0.05$.

Both public and private schools had different results from the previous study. In an earlier study, students with high self-efficacy tended to have higher achievement than students with lower self-efficacy (Kirbulut & Uzuntiryaki-Kondakci, 2019). However, students' achievement was not only influenced by self-efficacy. In another study, motivation was influenced by students' achievement more than self-efficacy (Nurwendah & Suyanto, 2019). Additionally, another study found that self-efficacy would not be consistently related to students' achievement for certain African American students (DeFreitas, 2012).

In this case, students' achievement can be influenced more by socioeconomic status, which becomes the cause of the Indonesian achievement gap (Acar, 2019; Faisal & Martin, 2019; Muttaqin, Wittek, Heyse, & van Duijn, 2019). Higher motivation in the teaching-learning process also leads students to achieve higher scores (Nurwendah & Suyanto, 2019). Besides, how students regulate their emotions also influences their achievement. Students with better emotion regulation tend to have higher achievement than those with low emotion regulation (Kirbulut & Uzuntiryaki-Kondakci, 2019).

In the present study, it was also found that students' self-efficacy or belief to succeed in science was not in line with their effort to realize their science belief. In other words, students tend to manipulate their beliefs when they fill the questionnaire form provided by the researcher. When students have faced the exam without preparation, they show their actual science ability in different circumstances.

Correlation between Students' Self-Efficacy and Science Achievement in Public Schools

This section further analyzes the relationship between two variables in each data of three public schools, as shown in the following Tables: 6, 7, and 8. According to each data's normality test in three public schools (table 2), the correlation analysis used rank-spearman. Since the data of three public schools were not normally distributed.

The relationship between students' science self-efficacy and their achievement in public school A was investigated using spearman's rank-order correlational analysis. As shown in Table 6, there was no correlation between the two variables. The relationship between students' science self-efficacy and their achievement in public school B was investigated using spearman's rank-order correlational analysis. There was no correlation between the two variables, as shown in Table 7. The relationship between students' self-efficacy and their learning achievement in public school C was also investigated using spearman's

Table 10 Correlation analysis in private school B

Spearman's rank correlation coefficient		Students' Self-efficacy	Students' Science Achievement
Students' Self-efficacy	Correlation coefficient	1.000	.095
	Sig.		.503
	N	52	52
Students' Science Achievement	Correlation coefficient	.095	1.000
	Sig.	.503	
	N	52	52

Table 11 Correlation analysis in private school C

Person correlation coefficient		Students' Self-efficacy	Students' Science Achievement
Students' Self-efficacy	Correlation coefficient	1.000	.041
	Sig.		.852
	N	23	23
Students' Science Achievement	Correlation coefficient	.041	1.000
	Sig.	.852	
	N	23	23

rank-order correlational analysis. Like the other two public schools, there was no correlation between the two variables, as shown in Table 8.

The correlation of public schools A, B, and C was categorized with a small correlation because of the r-value < 3.0 (Pallant, 2011). However, the correlation strength was not valuable since the significance value showed no correlation between the two variables. However, the r-value is needed to determine the r2 value. The r2 value is the denotation of correlation determination. It is used to see how much certain variables can be used to predict the other variables. The r2 value for each public school was: 0,035 for public school A, 0.040 for public school B, and 0.03 for public school C. It means that science self-efficacy in each public school can only predict less than 4% of the total variation in science achievement. It means there was another 96% prediction of science achievement except for self-efficacy—for example, the implementation of a specific learning model in the teaching and learning process. The application of learning models has a significant effect on increasing students' motivation, which becomes a basis to improve students' achievement (Islam et al., 2018). The learning approach can also predict science achievement because it has been related to secondary and university students' learning outcomes (Ardura & Galán, 2019).

Reading literacy becomes one of the other 96,5% prediction in students' science achievement of the total variation in public school A. The wrong readers' performance was worse than their peers with a high degree of reading literacy (Caponera, Sestito, & Russo, 2016). According to science teacher interviews, the literacy of students in public school A was still low. Discovery learning models implemented by the science teacher could also predict students' achievement in learning science. It showed a better learning outcome from students who followed discovery learning. Because students' were flexible in discovery learning in expressing and finding answers to teacher questions with various open issues (Putriani & Rahayu, 2018).

Implementing the inquiry-based learning model in the teaching-learning process could be one of the predictions on students' science achievement of the rest 96% prediction. Inquiry-based learning leads students to have high curiosity, which is positively related to their knowledge acquisition (van Schijndel et al., 2018). Students are encouraged to explore knowledge by themselves through questions and answer with the teacher in inquiry-based learning. However, in the interview, the science teacher said that students' engagement in the teaching-learning process was low. Students' involvement is an essential factor in science achievement (Uçar & Sungur, 2017).

Additionally, in the interview, the science teacher said since the zonation regulation was implemented in public school B, there were more students' variations. One of the highlighted changes that influenced by the implementation of the regulation is the gap of socioeconomic. In some research shows for students in High Achieving School (HAS), SES becomes the second most significant contributor in achievement and the third most considerable contributor for students in Low Achieving School (LAS) (Acar, 2019).

The science teacher in public school C often implements direct learning models in the teaching-learning process. Students' got knowledge from teacher explanation through certain teaching media in the direct learning models. However, students' outcomes with direct learning models were lower than students with SAVI learning models (Putri et al., 2019). The learning model used could be one prediction in the other 97% of the total variation in science achievement in public school C because the application of learning models has a significant effect on increasing students' motivation which becomes a basis to improve students achievement (Islam et al., 2018).

Correlation between Students' Self-Efficacy and Science Achievement in Private School

The relationship between students' science self-efficacy and their science achievement in private school A was investigated using person correlational analysis. There was no correlation between the two variables as seen in Table 9, $r = 0.210, n = 32, \rho > 0.05$. In private school B, the relationship between students' science self-efficacy and

their science achievement science was investigated using spearman-rank correlational analysis. The result is, there was no correlation between two variables, as shown in Table 10, $r = 0.095, n = 52, \rho > 0.05$. Moreover, the relationship between students' science self-efficacy and their science achievement in private school C was investigated using person correlational analysis. As shown in Table 11, there was no correlation between two variables, $r = 0.041, n = 23, \rho > 0.05$.

The correlation analysis results of public schools A, B, and C were categorized as a small correlation since the r-value was < 0.3 (Pallant, 2011). However, the correlation strength was not valuable since the significance value was higher than 0.05, but the r-value is needed to determine the r2 value. The r2 was a denotation of correlation determination. It is used to see how much certain variables can be predicted to the other variables. The r2 value for each private school was: 0.044 for private school A, 0.009 for private school B, and 0.001 for private school C. It means science self-efficacy in each private school only can predict less than 4.4% of the total variation in science achievement. The other prediction of science achievement could be implementing the learning model because the application of learning models has a significant effect on increasing students' motivation, which becomes a basis to improve students' achievement (Islam et al., 2018). The learning approach can also predict science achievement because it has been related to secondary and university students' learning outcomes (Ardura & Galán, 2019).

In the interview, the science teacher in private school A said that students' reading literacy in public school A was low. Whereas private school A already implements government regulation that increases students' reading literacy. They included reading time in the school schedule every Tuesday and Thursday morning for about 20 minutes before the teaching-learning process was held. Reading literacy could be one of the other 95,6% of the total variation in science achievement prediction in private school A since the bad readers were performing worse than their peers with a high degree of reading literacy (Caponera et al., 2016). The other prediction of 96,6% of the total variation was implementing cooperative learning models since cooperative learning models can improve students' achievement in learning science (Altun, 2015).

There was a similarity between public school B and private school B in terms of the learning model used in the teaching-learning process. In those two schools, the implementation of inquiry-based learning models become one of the prediction factors on students' achievement in learning science. Students with inquiry-based learning tend to have high curiosity, which is positively related to their knowledge acquisition (van Schijndel et al., 2018). Students' curiosity improved due to habituation in the teaching-learning process, in which students should explore knowledge by themselves through questioning and answer that guided by the teacher. Implementation of the learning model has a significant effect on increasing students' motivation, and students' self-efficacy was left behind students' motivation to predict students' achievement (Islam et al., 2018; Nurwendah & Suyanto, 2019).

Private school C implemented web-based learning in the teaching-learning process. Web-based learning can develop students' motivation in learning science (Raes & Schellens, 2012). The higher students' motivation to learn, the higher their learning achievement (Sulisworo, Agustin, & Sudarmiyati, 2016). So, the implementation of web-based learning could be one of the 99.9% factors that predicted students' science achievement in learning science.

The other prediction could be implementing cooperative learning models, just like in private school A, since cooperative learning models can improve students' achievement in learning science (Altun, 2015). In cooperative learning models, students worked in groups and were assumed to understand by peer teaching (Eymur & Geban, 2017).

4. CONCLUSION

According to the previous chapter's findings and discussion analysis, several conclusions are summed up by the researcher. First, students' science self-efficacy in public school was mainly at the medium level. There were 78.8% of the total of 170 participants or 134 students classified in the medium level of self-efficacy in learning science.

Secondly, students' self-efficacy in learning science for the private school was also mainly at the medium level. Eighty-two students, or 76.6% of the total of 107 students from three different private schools, were classified as having a medium level of self-efficacy in learning science.

Third, both in private and public schools, students' self-efficacy in learning science was influenced by the implementation and learning approach. A specific classroom environment could be created by the implementation of learning models and learning approaches. The classroom environment could influence the four sources of students' self-efficacy. In line with the previous study, different private schools like bilingual-boarding schools and religion-school are also responsible for shaping students' self-efficacy in learning science.

Fourth, both public and private schools did not correlate students' science self-efficacy and science achievement in general data. A similar result was also indicated by the six public and private schools' correlational analysis. There was no correlation between students' self-efficacy in learning science in those six schools.

Last, students' self-efficacy was not the only factor influencing or predicting students' achievement in learning science. Students' who have higher self-efficacy did not always have higher achievement. Supporting the previous study, many factors can influence students' achievement in

learning science. For example, students' motivation to learn, students' emotion regulation, school systems, classroom environment, and the implementation of both learning models and learning approaches in the teaching-learning process can be listed in this respect. Also, this study found that students' self-efficacy or belief to succeed in science was not in line with their effort to realize their belief to succeed in science. In other words, students tend to manipulate their beliefs when they fill the questionnaire form. When students have faced the exam without preparation, they show their actual science ability in different circumstances.

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