Student Evaluations in 8th Grade Science Subjects: Attitude, Self-Efficacy, Gender

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ABSTRAK

Paradigma pembelajaran abad 21 tidak hanya berfokus pada pemahaman terhadap materi pembelajaran, namun lebih menekankan pada kemampuan berpikir, sikap, dan komunikasi. Penelitian ini bertujuan untuk menganalisis perbedaan dan hubungan antara sikap dan efikasi diri siswa sekolah menengah pertama. Penelitian ini menggunakan metode kuantitatif dengan tipe penelitian asosiatif dan komparatif. Populasi dalam penelitian ini adalah siswa kelas VIII SMP. Penentuan sampel dilakukan dengan menggunakan teknik purposive sampling. Sampel dalam penelitian ini berjumlah 72 orang siswa. Proses pengumpulan data dilakukan dengan menggunakan instrumen berupa kuesioner sikap dan efikasi diri. Data dianalisis secara deskriptif dan inferensial. Analisis inferensial yang digunakan adalah uji-t, yang didahului dengan uji prasyarat analisis yaitu uji normalitas sebaran data dan uji homogenitas varians. Hasil penelitian menunjukkan bahwa adanya perbedaan antara sikap dan efikasi diri siswa laki-laki dan perempuan. Selain itu, penelitian ini juga menunjukkan adanya hubungan antara variabel sikap dan efikasi diri siswa laki-laki dan perempuan. Dalam hal ini dibuktikan dengan nilai signifikansi yang sesuai dengan pandangan yang ada.

ABSTRACT

The 21st century learning paradigm does not only focus on understanding the learning material, but places more emphasis on thinking, attitude, and communication skills. This study aims to analyze the differences and the relationship between attitudes and self-efficacy of junior high school students. This research uses quantitative methods with associative and comparative research types. The populations in this study were students of grade VIII Junior High School. Determination of the sample is done by using purposive sampling technique. The sample in this study amounted to 72 students. The data collection process was carried out using instruments in the form of attitude and self-efficacy questionnaires. Data were analyzed descriptively and inferentially. The inferential analysis used was the t-test, which was preceded by a prerequisite analysis test, namely the normality test of the data distribution and the homogeneity of variance test. The results showed that there were differences between attitudes and self-efficacy of male and female students. In addition, this study also shows a relationship between the attitude variables and self-efficacy of male and female students. In this case, it is evidenced by a significance value that is in accordance with the existing view.

1. INTRODUCTION

21st century education does not only focus on memorizing material but also places emphasis on learning and thinking skills, and enjoying social life (Asrizal et al., 2018; Sadiqin et al., 2017; Wardani et al., 2017). Education is a learning process for students to be able to know, develop and apply any knowledge gained. Education is an activity to optimize the development, use, and personal characteristics of students (Nurhidayatulah & Prodjosantoso, 2018; Oktafiani et al., 2017; Rerung et al., 2017). Education is directed at developing students' potential and skills so that they can be used in living life in society, nation and state (Diani & Hartati, 2018; Elvanisi et al., 2018; Wuryandani et al., 2016). One of the educational facilities is students. Students are an educational component that cannot be abandoned, because without students the learning process cannot be carried out. Students have the ability and speed in absorbing learning materials so that more than books are needed to be able to guide students to become active in learning independently

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(Dogan et al., 2019; Puspita., 2019). Learning is useful for making students gain insight and learning can be done effectively if teaching materials support learning activities (Hartini et al., 2018; Nito et al., 2020; Rochman et al., 2017). One of the learning materials is science material, science learning includes basic concepts, understanding, methods related to natural phenomena (Bachri & Dasmo, 2018; Prihatini, 2017; Semin, 2019).

Natural Sciences is one of the subjects that study natural phenomena. Science subjects are one of the subjects whose learning process emphasizes providing direct experience to develop competencies in order to explore and understand the natural surroundings scientifically (Bellová et al., 2018; Hartini et al., 2018; Iswatun et al., 2017). Science as one of the subjects in school, can provide roles and experiences for students (Camasso & Jagannathan, 2018; Firdaus & Wilujeng, 2018; Pamungkas et al., 2017). Science learning outcomes can also be greatly influenced by the motivation of students. Both internal motivation and external motivation (Adom et al., 2020; Mansouri & Moumine, 2017; Negoro, 2019). One of the Natural Science materials is Physics, Physics is one of the materials that students do not like.

Physics is one of the subjects that deals with various scientific concepts, some of which can be found in everyday life (Dou et al., 2018; Halim et al., 2017; Maison et al., 2018). Learning physics as a vehicle to grow thinking skills that are useful for solving problems in everyday life (Astalini et al., 2018; Sari et al., 2017; Wilson et al., 2020). Laws that are displayed in the form of mathematical equations (example above F = ma) are common in physics textbooks, both for high school and college levels (MIPA and engineering) (Elvanisi et al., 2018; Hamdani et al., 2017; Van De Heyde & Siebrits, 2022). In the learning process, especially in physics lessons, the attitude of students is very important. Attitude is one of the terms in the field of psychology related to perception and behavior (Kurniawan et al., 2019; Wahyudi & Lestari, 2019; Zarei et al., 2020). Attitude can be defined as the feelings that a person has about an object, his knowledge and beliefs about the object (Jufrida et al., 2019; Kurniawan et al., 2019; Mauliza et al., 2021). The attitude factors include: (1) Social Factors, (2) Direct Instruction, (3) Family, (4) Prejudice, (5) Personal Experience, (6) Media, (7) Educational and Religious Institutions, (8) Physical factors, and (9) Economic and Employment Status (Aithal & Aithal, 2019; Demirtaş & Aksoy, 2016; Kurniawati & Atmojo, 2017). In addition to attitudes, learning physics is also influenced by self-efficacy.

Self-efficacy is an individual's belief about his ability to organize and complete a task needed to achieve certain results (Adu et al., 2020; Gilkes, 2020; Yada et al., 2021). Self-efficacy has a large effect on behavior, for example, a student with low self-efficacy may not want to try to study for an exam because he does not believe that studying will help him do the problem. Self-efficacy is a feeling of confidence in one's own ability to make an action. This shows that individuals can feel freedom in their favorite activities and are responsible for their actions (Lindfors, 2021; Lindvig & Svenni, 2021; Rahman et al., 2019). Self-efficacy is a subjective trait of perception, self-efficacy does not always indicate the right ability, but is related to self-confidence in an individual's ability to face many problems (Riskiningtyas & Wangid, 2019; Sudirman et al., 2020; Tentama & Paputungan, 2019).

The previous research that examined the attitudes of students found that there are shortcomings in terms of the variables being tested. Researchers only tested students' attitudes towards science, nothing showed the development of scientific project-based learning innovations for students(Hidayati et al., 2017). In addition, previous researchers only took from the variants of student attitudes, there were no other variants such as students' motivation and confidence in facing scientific work-based learning. In addition to previous research on attitudes, this researcher is in line with the results of previous research. That there is a relationship between efficacy cells with student learning achievement. The higher the confidence possessed by students, the higher the learning achievement of students. Conversely, the lower the self-confidence possessed by students, the lower the learning achievement of students (M. M. Jannah et al., 2019). Therefore the researcher concludes the objectives of the study are to compare female and male students' attitudes towards science subjects. Then analyze the self-efficacy of female and male students compared to science subjects. And the last one to analyze the self-efficacy of female and male students and the relationship between students' attitudes and self-efficacy towards science subjects.

2. METHOD

This research uses quantitative associative and comparative research using survey procedures. Survey research design is a procedure in quantitative research in which the research administers a survey of a sample or population for the purpose of describing the attitudes, opinions, behaviors, or characteristics of the respondents (Creswell, 2002). The sample in this study was 72 students from SMPN 10 Muaro Jambi in Muaro Jambi district. The sampling technique is purposive sampling. Purposive sampling is a type of sampling in which a research more a less handpicks case (Stommel & Wills, 2004). The reason for taking

this technique is because not all samples have criteria that match the phenomenon being studied. The sample taken is class VII A and VII B consisting of 40 women and 32 men.

There are two instruments in this study, namely attitudes towards science and self-efficacy. The assessment instrument is one of the most important assessment instruments for attitudes. The collection of research data comes from research instruments that come from questionnaires (Cohen et al., 2002). The attitude instrument towards science is in the form of a questionnaire. There are 56 valid question items on this instrument using a Likert scale. The scale consists of 5 points with a score of strongly agreeing is 5, agreeing is 4, neutral is 3, disagreeing is 2, and strongly disagreeing is 1. Each statement is representative of each attitude indicator. The focus of this research is on 7 dimensions of attitude, namely the implications of questions from science, normality of scientists, attitudes towards science investigations, adoption of scientific attitudes, pleasure in learning science, interest in increasing science learning time, interest in a career in science. Furthermore, for the self-efficacy indicator, the indicators are the level of task difficulty, behavior or attitude shown in facing the task, the strength and weakness of belief, individual expectations of ability, perceive experience not as an obstacle, make internal experience as a basis for increasing confidence. For the questionnaire grid for this research, it can be seen in Table 1 and Table 2.

Table 1. Grid of Student Attitude Questionnaire Instruments in Science Subjects

Variable	Indicator	No. Statement Items	
		(+)	**(-)**
Students' attitudes towards science subjects	Social Implications of IPA	1, 14, 27, 39	7, 20, 32, 45, 53
	Scientist Normality	8, 21, 33, 46, 54	15, 40
	Attitude Towards Science Investigation	2, 41	9, 22, 34, 47, 55
	Adopt Scientific Attitude	3, 26, 28	10, 23, 35, 48
	Fun in Learning Science	4, 17, 29	11, 24, 36, 42, 49, 56
	Interest in increasing the time to study science	5, 18, 30	12, 25, 37, 43, 50
	Interest in a Career in Science	13, 19, 26, 38, 51	6, 31, 44, 52
	Number of Statements	25	31

Table 2. Grid of Student Self-efficacy Questionnaire Instruments in Science Subjects

Variable	Indicator	No. Statement Items
Self-efficacy of students in science subjects	Task Difficulty Level	1,2,3
	Individual Expectations of Ability	4,5,6,7,8,9
	Making experience as a basis for increasing confidence	10,11,12,13,14
Number of Statements		**14**

Because the student's attitude questionnaire towards science uses a Likert scale, there is an interval for each indicator being tested. The intervals for the indicators tested can be seen in Table 3 and Table 4.

Table 3. Categories of Student Attitudes

Category	Indicator Interval			
	Attitude towards IPA investigation	**Fun in learning science**	**Interest in increasing the time to study science**	**Interested in a career in IPA**
Very Not Good	7.0 – 12.6	9.0 – 16.2	10.0 – 18.0	7.0 – 12.6
Not good	12.7 – 18.2	16.3 – 23.4	18.1 – 26.0	12.7 – 18.2
Enough	18.3 – 23.8	23.5 – 30.6	26.1 – 34.0	18.3 – 23.8
Good	23.9 – 29.4	30.7 – 37.8	34.1 – 42.0	23.9 – 29.4
Very good	29.5 – 35.0	37.9 – 45.0	42.1 – 50.0	29.5 – 35.0

The Likert scale used in this study is: 1 (very bad), 2 (not good), 3 (quite good), 4 (good), 5 (very good) with 56 questions about attitudes and 28 questions about self-efficacy. The results of students' questionnaire answers regarding processing skills were analyzed using descriptive statistics. By using associative research it can determine the relationship or type of the variables used. Therefore, differential statistics are used with assumption tests consisting of normality, linearity and homogeneity tests as well as

hypothesis testing, namely T test and correlation test (Dehadri & Dehdari, 2022; Kim et al., 2018). The first step in this research is to determine the normality and homogeneity of a data using normality test and homogeneity test.

Table 4. Categories of Student Self-Efficacy

Category	Indicator Interval		
	Task difficulty level	**Individual expectations of abilities**	**Making experience as a basis for increasing confidence**
Very Not Good	3.0 – 5.4	6.0 – 10.8	5.0 – 9.0
Not good	5.5 – 7.8	10.9 – 15.6	9.1 – 13.0
Enough	7.9 – 10.2	15.7 – 20.4	13.1 – 17.0
Good	10.3 – 12.6	20.5 – 25.2	17.1 – 21.0
Very Not Good	12.7 – 15.0	25.3 – 30.0	21.1 – 25.0

In collecting data in the form of attitude activities carried out using descriptive statistics based on the categories given by the researcher. The data needed in this research were collected and obtained from SMPN 10 Muaro Jambi. There is also a procedure for collecting data in this research in accordance with the Figure 1.
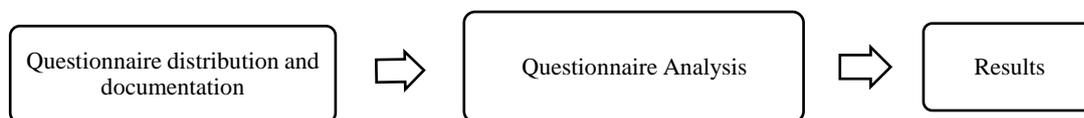

Figure 1. Research Procedure

3. RESULT AND DISCUSSION

Result
Descriptive Statistics Test

The descriptive of students' attitudes towards science in class VIII A with indicators of attitude implications towards science investigations. The Descriptive statistics data of students' attitudes is show in Table 5.

Table 5. Descriptive Statistics Of Students' Attitudes Towards Science Grade 8 on Indicators of Attitudes Towards Science Investigations

Student response	Interval	F	Persentase	Category	Mean	Median	Min	Max
Female	7.0-12.6	0	0%	Very not good				
	12.7-18.2	1	5%	Not good				
	18.3-23.8	3	15%	Enough				
	23.9-29.4	15	75%	Good	3.80	4.00	2.00	5.00
	29.5-35.0	1	5%	Very good				
Male	7.0-12.6	0	0%	Very not good				
	12.7-18.2	0	0%	Not good				
	18.3-23.8	6	35.3%	Enough				
	23.9-29.4	9	52.9%	Good	3.76	4.00	3.00	5.00
	29.5-35.0	2	11.8%	Very good				

Based on Table 5, the attitude of grade 8A students with attitude indicators towards science investigations was found that female students with a percentage of 75% were categorized as good. There are 15 female students who have a good category with values ranging from 27.8 to 33.6. For male students in the good category with a percentage of 52.9% as many as 9 students. But for the very good category, male students are superior to female students by 6.8%. Furthermore, students' attitudes towards science with an indicator of Career Interest in the Natural Sciences in class VIII A. Then descriptive statistics of students' attitudes on the indicators of Career Interest is show in Table 6.

Table 6. Descriptive Statistics of Students' Attitudes towards Science Grade 8 on the Indicators of Career Interest in the Science Field

Student response	Interval	F	Persentase	Category	Mean	Median	Min	Max
Female	7.0-12.6	0	0%	Very not good				
	12.7-18.2	1	5%	Not good				
	18.3-23.8	9	45%	Enough				
	23.9-29.4	8	40%	Good	3.55	3.50	2.00	5.00
	29.5-35.0	2	10%	Very good				
Male	7.0-12.6	0	0%	Very not good				
	12.7-18.2	6	11.8%	Not good				
	18.3-23.8	9	35.3%	Enough				
	23.9-29.4	12	52.9%	Good	2.76	3.00	2.00	4.00
	29.5-35.0	0	0%	Very good				

Based on Table 6, the attitude of grade 8A students with indicators of interest in the field of science, it was found that female students with a percentage of 45% were categorized as sufficient and participants for good categories were 40%. For male students in the good category with a percentage of 52.9% as many as 12 students and for the percentage in the sufficient category of 35.2%. Furthermore, students' attitudes towards science with indicators of Fun in Learning Science in class VIII A is show in Table 7.

Table 7. Descriptive Statistics of Students' Attitudes towards Science Grade 8 on the Indicators of Fun in Learning Science

Student response	Interval	F	Persentase	Category	Mean	Median	Min	Max
Female	9.0-16.2	0	0%	Very not good				
	16.3-23.4	0	0%	Not good				
	23.5-30.6	7	35%	Enough				
	30.7-37.8	13	65%	Good	3.65	4.00	3.00	4.00
	37.9-45	0	0%	Very good				
Male	9.0-16.2	0	0%	Very not good				
	16.3-23.4	1	5.9%	Not good				
	23.5-30.6	6	35.3%	Enough				
	30.7-37.8	10	58.8%	Good	3.53	4.00	2.00	4.00
	37.9-45	0	0%	Very good				

Based on Table 7, the attitudes of grade 8A students with indicators of enjoyment in learning science, it was found that the average female students were in the good category because the percentage value was 65% while only 35% chose enough. For male students in the good category with a percentage of 58.8% and for the sufficient category it is 35.3%. Furthermore, students' attitudes towards science with the indicator of Interest increase the time to study science in class VIII A is show in Table 8.

Table 8. Descriptive Statistics of Students' Attitudes towards Science Grade 8 on the Indicator Interest in Increasing Science Learning Time

Student response	Interval	F	Persentase	Category	Mean	Median	Min	Max
Female	10.0-18.0	0	0%	Very not good				
	18.1-26.0	0	0%	Not good				
	26.1-34.0	7	35%	Enough				
	34.1-42.0	11	55%	Good	3.75	4.00	3.00	5.00
	42.1-50	2	10%	Very good				
Male	10.0-18.0	0	0%	Very not good				
	18.1-26.0	0	0%	Not good				
	26.1-34.0	6	35.3%	Enough				
	34.1-42.0	11	64.7%	Good	3.65	4.00	3.00	4.00
	42.1-50	0	0%	Very good				

Based on Table 8, the attitude of grade 8A students with the indicator of interest in increasing science learning time chose a good response because the percentage of male students was 55% and male was 64.7%. Furthermore, students' attitudes towards science in class VIII B with indicators of the implications of attitudes towards science investigations is shown in Table 9.

Table 9. Descriptive Statistics of Students' Attitudes towards Science Class 8b On Indicators of Attitudes towards Science Investigations

Student response	Interval	F	Persentase	Category	Mean	Median	Min	Max
Female	7.0-12.6	0	0%	Very not good				
	12.7-18.2	0	0%	Not good				
	18.3-23.8	7	35%	Enough				
	23.9-29.4	13	65%	Good	3.65	4.00	3.00	4.00
	29.5-35.0	0	5%	Very good				
Male	7.0-12.6	0	0%	Very not good				
	12.7-18.2	7	41.2%	Not good				
	18.3-23.8	9	52.9%	Enough				
	23.9-29.4	1	5.9%	Good	2.65	3.00	2.00	4.00
	29.5-35.0	0	0%	Very good				

Based on Table 9, the attitudes of grade 8B students with attitude indicators towards science investigations found that female students chose 65% in the good category while for male students they chose 41.2% in the bad category but there were still 52.9% who chose enough. Furthermore, students' attitudes towards science relate to the indicator of Career Interest in the Natural Sciences in class VIII B is show in Table 10.

Table 10. Descriptive Statistics of Students' Attitudes towards Science Class 8b on the Indicators of Career Interest in the Natural Sciences

Student response	Interval	F	Persentase	Category	Mean	Median	Min	Max
Female	7.0-12.6	0	0%	Very not good				
	12.7-18.2	2	10%	Not good				
	18.3-23.8	9	45%	Enough				
	23.9-29.4	8	40%	Good	3.40	3.50	2.00	5.00
	29.5-35.0	1	5%	Very good				
Male	7.0-12.6	0	0%	Very not good				
	12.7-18.2	0	35.3%	Not good				
	18.3-23.8	8	47.1%	Enough				
	23.9-29.4	9	52.9%	Good	3.53	4.00	3.00	4.00
	29.5-35.0	0	0%	Very good				

Based on Table 10, the attitude of grade 8B students with an indicator of interest in a career in science, it was found that female students chose 45% in the sufficient category and 45% in the good category while for male students they chose 47.1% in the sufficient category and 52.9% in the good category. Furthermore, students' attitudes towards science with indicators of Fun in Learning Science in class VIII B is show in Table 11.

Table 11. Descriptive Statistics of Students' Attitudes towards Science Class 8b on the Indicators of Fun in Learning Science

Student response	Interval	F	Persentase	Category	Mean	Median	Min	Max
Female	9.0-16.2	0	0%	Very not good				
	16.3-23.4	0	0%	Not good				
	23.5-30.6	9	45%	Enough				
	30.7-37.8	10	50%	Good	3.60	4.00	3.00	5.00
	37.9-45	1	5%	Very good				
Male	9.0-16.2	0	0%	Very not good				

Student response	Interval	F	Persentase	Category	Mean	Median	Min	Max
	16.3-23.4	5	29.4%	Not good				
	23.5-30.6	11	64.7%	Enough				
	30.7-37.8	1	5.9%	Good	3.76	4.00	3.00	5.00
	37.9-45	0	0%	Very good				

Based on Table 11, the attitude of grade 8B students with indicators of enjoyment in learning science, it was found that female students chose 50% in the good category while male students only chose 5.9% in the good category but they chose the sufficient category, which was 64.7%. Furthermore, students' attitudes towards science with an interest indicator increase the time for learning science in class VIII B is show in Table 12.

Table 12. Descriptive Statistics of Students' Attitudes towards Science Grade 8 on the Indicator Interest in Increasing Science Learning Time

Student response	Interval	F	Persentase	Category	Mean	Median	Min	Max
Female	10.0-18.0	0	0%	Very not good				
	18.1-26.0	0	0%	Not good				
	26.1-34.0	9	45%	Enough				
	34.1-42.0	10	50%	Good	3.60	4.00	3.00	5.00
	42.1-50	1	5%	Very good				
Male	10.0-18.0	0	0%	Very not good				
	18.1-26.0	0	0%	Not good				
	26.1-34.0	7	41.2%	Enough				
	34.1-42.0	8	47.1%	Good	3.71	4.00	3.00	5.00
	42.1-50	2	11.8%	Very good				

Based on Table 12, the attitude of grade 8B students with the indicator of interest in increasing science learning time, it was found that female students chose 50% in the good category and male students chose 47.1% in the good category. The description of students' self-efficacy towards science in class VIII A with an indicator of Task Difficulty Level is show in Table 13.

Table 13. Descriptive Statistics of Students' Self-Efficacy towards Science Class 8A on the Indicator of the Difficulty of Tasks

Student response	Interval	F	Persentase	Category	Mean	Median	Min	Max
Female	3.0-5.4	1	5%	Very not good				
	5.5-7.8	1	5%	Not good				
	7.9-10.2	10	50%	Enough				
	10.3-12.6	7	35%	Good	3.30	3.00	1.00	5.00
	12.7-15	1	5%	Very good				
Male	3.0-5.4	1	6.3%	Very not good				
	5.5-7.8	0	0%	Not good				
	7.9-10.2	6	37.5%	Enough				
	10.3-12.6	9	56.3%	Good	3.44	4.00	1.00	4.00
	12.7-15	0	0%	Very good				

Based on Table 13, the self-efficacy of grade 8A students with an indicator of the level of task difficulty found that female students with a percentage of 5% were categorized as very good, 35% good, 50% sufficient and 5% not good. For male students, the category is very good with a percentage of 0%, good 56.3%, 37.5% is enough. The description of students' self-efficacy towards science in class VIII A with indicators of individual expectations of ability is show in Table 14.

Table 14. Descriptive Statistics of Students' Self-Efficacy towards Science Grade 8a on Indicators of Individual Expectations of Ability

Student response	Interval	F	Persentase	Category	Mean	Median	Min	Max
Female	6.0-10.8	0	0%	Very not good				
	10.9-15.6	1	5%	Not good				
	15.7-20.4	5	25%	Enough				
	20.5-25.2	13	65%	Good	3.70	4.00	2.00	5.00
	25.3-30	1	5%	Very good				
Male	6.0-10.8	0	0%	Very not good				
	10.9-15.6	0	0%	Not good				
	15.7-20.4	7	43.8%	Enough				
	20.5-25.2	8	50%	Good	3.63	4.00	3.00	5.00
	25.3-30	0	0%	Very good				

Based on Table 14, the self-efficacy of grade 8A students with indicators of individual expectations of ability was found that female students with a percentage of 5% were categorized as very good, 65% good, 25% sufficient and 5% not good. For male students, the category is very good with a percentage of 0%, good 50%, just 43.8%. The description of students' self-efficacy towards science in class VIII A with indicators using internal experience as a basis for increasing confidence is show in Table 15.

Table 15. Descriptive Statistics of Students' Self-Efficacy Towards Science Grade 8a on Indicators Making Internal Experience the Basis for Increasing Confidence

Student response	Interval	F	Persentase	Category	Mean	Median	Min	Max
Female	5.0-9.0	0	0%	Very not good				
	9.1-13	3	15%	Not good				
	13.1-17	12	60%	Enough				
	17.1-21	4	20%	Good	3.15	3.00	2.00	5.00
	21.1-25	1	5%	Very good				
Male	5.0-9.0	0	0%	Very not good				
	9.1-13	1	6.3%	Not good				
	13.1-17	10	62.5%	Enough				
	17.1-21	5	31.3%	Good	3.25	3.00	2.00	4.00
	21.1-25	0	0%	Very good				

Based on Table 15, the self-efficacy of grade 8A students with indicators of individual expectations of ability was found that female students with a percentage of 5% were categorized as very good, 20% good, 60% sufficient and 15% not good. For male students, the category is very good with a percentage of 0% good 31.3%, 62.5% enough, and 6.3% not good.The description of students' self-efficacy towards science in class VIII B with an indicator of Task Difficulty Level is show in Table 16.

Table 16. Descriptive Statistics of Students' Self-Efficacy towards Science Class 8b on the Indicator of the Difficulty of Tasks

Student response	Interval	F	Persentase	Category	Mean	Median	Min	Max
Female	3.0-5.4	1	5%	Very not good				
	5.5-7.8	1	5%	Not good				
	7.9-10.2	11	55%	Enough				
	10.3-12.6	6	30%	Good	3.25	3.00	1.00	5.00
	12.7-15	1	5%	Very good				
Male	3.0-5.4	2	12.5%	Very not good				
	5.5-7.8	0	0%	Not good				
	7.9-10.2	7	43.8%	Enough				
	10.3-12.6	4	25%	Good	3.44	3.00	1.00	5.00
	12.7-15	3	18.8%	Very good				

Based on Table 16, the self-efficacy of grade 8B students with an indicator of the level of task difficulty found that female students with a percentage of 5% were categorized as very good, 30% good, 35% enough, 5% not good, and 5% very bad. For male students, the category is very good with a percentage of 18.8%, good 25%, quite 43.8% and very bad 12.5%. The description of students' self-efficacy towards science in class VIII B with indicators of individual expectations of ability is show in Table 17.

Table 17. Descriptive Statistics of Students' Self-Efficacy towards Science Class 8b on Indicators of Individual Expectations of Ability

Student response	Interval	F	Persentase	Category	Mean	Median	Min	Max
Female	6.0-10.8	0	0%	Very not good				
	10.9-15.6	0	0%	Not good				
	15.7-20.4	14	70%	Enough				
	20.5-25.2	6	30%	Good	3.30	3.00	3.00	4.00
	25.3-30	0	0%	Very good				
Male	6.0-10.8	0	0%	Very not good				
	10.9-15.6	3	18.8%	Not good				
	15.7-20.4	10	62.5%	Enough				
	20.5-25.2	3	18.8%	Good	3.00	3.00	2.00	4.00
	25.3-30	0	0%	Very good				

Based on Table 18, the self-efficacy of grade 8B students with indicators of individual expectations of ability was found that female students with a percentage of 0% were categorized as very good, 30% good, 70% enough. For male students, the category is very good with a percentage of 0% good 18.8%, 62.5% quite and very bad 18.8%. The description of students' self-efficacy towards science in class VIII B with indicators using internal experience as a basis for increasing confidence is show in Table 19.

Table 19. Descriptive Statistics of Students' Self-Efficacy towards Science Grade 8b on Indicators Making Internal Experience the Basis for Increasing Confidence

Student response	Interval	F	Persentase	Category	Mean	Median	Min	Max
Female	5.0-9.0	0	0%	Very not good				
	9.1-13	1	5%	Not good				
	13.1-17	10	50%	Enough				
	17.1-21	9	45%	Good	3.40	3.00	2.00	4.00
	21.1-25	0	0%	Very good				
Male	5.0-9.0	2	12.5%	Very not good				
	9.1-13	1	6.3%	Not good				
	13.1-17	11	68.8%	Enough				
	17.1-21	2	12.5%	Good	2.82	3.00	1.00	4.00
	21.1-25	0	0%	Very good				

Based on Table 19, the self-efficacy of grade 8B students with indicators using internal experience as a basis for increasing confidence was found that female students with a percentage of 0% were categorized as very good, 45% good, 50% sufficient, 5% not good. For male students, the category is very good with a percentage of very good 0%, good 12.5%, enough 68.8%, not good 6.3% and very bad 12,5%.

Assumption Test
Normality test

The normality test of students' attitudes towards science in grades VIII A and VIII B is described in Table 20.

Table 20. Descriptive Normality Test of Students' Attitudes and Self-Efficacy on Science Grades 8A and 8B

	Tests of Normality					
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Class_A	0.084	37	0.200	0.948	37	0.083
Class_B	0.094	37	0.200*	0.982	37	0.785

Based on the results of Table 20, the normality test was obtained with the Kolmogorov-Smirnov test, the significance value > from 0.05, it can be concluded that the data is normally distributed.

Homogeneity Test

The homogeneity test of students' attitudes and students' self-efficacy towards science in class VIII A and VIII B is described in Table 21.

Table 21. Descriptive Test of the Homogeneity of Attitudes and Students' Self-Efficacy towards Science Grade 8A dan 8B

Test of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
Attitude	Based on Mean	2.641	8	18	0.142
	Based on Median	1.208	8	18	0.348
	Based on Median and with adjusted df	1.208	8	5.283	0.431
	Based on trimmed mean	2.531	8	18	0.051

Based on Table 21 obtained, the results of the homogeneity test obtained are a significance value of 0.431 which has met the requirements > 0.05. The results of the linearity test obtained are a significance value of 0.051 has met the requirements> 0.05, it can be concluded that the variance of the two variables is related in class 8A.

Linearity Test

The linearity test of students' attitudes and self-efficacy in class VIII A is described as show in Table 22.

Table 22. Descriptive Linearity Test Of Students' Attitudes and Self-Efficacy Towards Science Grade 8A and 8B

ANOVA Table							
			Sum of Squares	Df	Mean Square	F	Sig.
self-efficacy * attitude	Between Groups	(Combined)	1402.419	21	66.782	1.081	0.447
		Linearity	107.338	1	107.338	1.738	0.207
		Deviation from Linearity	1295.081	20	64.754	1.048	0.471
	Within Groups		4685.000	926.500	15	61.767	
	Total		17008.432	2328.919	36		

Based on Table 22 obtained, the results of the linearity test obtained are a significance value of 0.471 and has met the requirements > 0.05, so it can be concluded that there is a linear relationship between attitudes and self-efficacy in class 8A.

Hypothesis T Test

The results of T-test attitudes and self-efficacy of students in grade 8A and grade 8B are shown in Table 23.

Table 23. T-Test Attitudes and Self-Efficacy of students in grade 8A and grade 8B

Gender	Class	N	Mean	Sig-	Sig. (2-tailed)
Female		20	165.65		0.632
	8A	16	160.67	0.369	0.642
Male					
Female		20	163.45	0.949	0.423
	8B	16	162.47		0.424
Male					

From Table 23, it can be seen that there is a difference between students' attitudes towards science for male and female students in class VIII A and class VIII B. This is evidenced by the value of sig (2-tailed) > 0.05.

Discussion

Descriptive statistics is one type of statistic that processes statistical analysis more towards data management, presentation, and classification. Base on the results of the descriptive statistical test of class VIII A and VIII B there were 37 students with a comparison of 20 female students and 17 male students. In the first indicator regarding attitudes towards science investigations for grade 8A, female students were superior to male students with 75% female students and 52.9% male students. For grade 8B female students are also superior to male students with a percentage of 0% female students in the bad category and 41.2% male students being unfavorable. In the second indicator, namely interest in a career in science, grades 8A and 8B have the same results, namely male students are superior to female students with a good percentage of 52.9% for male students and 40% for female students. In the third indicator of enjoyment in learning science, grade 8A is superior to female students than male students with the percentage of both female students 65% and male students 58.8%. Similar to class 8A, class 8B is also outperformed by female students with a percentage of 50% in both categories and 5.9% for male students. And for the last indicator of interest in increasing science learning time, class 8A is outperformed by male students with a percentage of good category 64.7% and female students 55%, in contrast to class 8A, class 8B is excelled by female students with a percentage in the good category of 50% and students male 47.1%.

The second test for descriptive statistics is the student's self-efficacy test on science. In the self-efficacy test, it was tested on class 8A and class 8B of SMP N 10 Muaro Jambi with 20 female students and 16 male students. In the first indicator, namely the level of task difficulty, for class 8A, male students are superior with a percentage of 56.3% in good category and 35% for female students. In grade 8B, male students were also outperformed with a very good percentage of 18.8% and female students of 5%. In the second indicator regarding individual expectations of ability, class 8A is outperformed by female students with a percentage of good category 65% and male students 50%. The same is the case with class 8A, class 8B is also outperformed by female students with a percentage of good category 30% and male students 18.8%. And for the last indicator regarding using experience as the basis for increasing confidence, in grade 8A male students were outperformed with a percentage of good category 31.3% and for female students 20%. Unlike the 8A class, the 8B class was outperformed by the female students with a total percentage of 45% in the good category and the percentage of male students 12.5%.

In testing the hypothesis, the researcher used the T test as a comparison between the genders of students to find out whether there were differences in attitudes and self-efficacy of female and male students. For the t-test of attitudes in grades 8A and 8B, there was no difference in attitudes towards science between male and female students, this can be seen from the significance value (2-tailed) where the value is > 0.05. For the self-efficacy T test for grades 8A and 8B, there was also no difference between female students and male students because the significance value (2-tailed) was > 0.05. After conducting the T-test, the researcher also conducted a correlation test to connect attitudes and self-efficacy towards science grades 8A and 8B. In the first correlation test, namely linking the attitudes and self-efficacy of male students in grade 8A and grade 8B, seen from table 30 there is a relationship between attitudes and self-efficacy of male students in grade 8A and grade 8B, which is known from seeing the significance (2-tailed) where if < 0.05 then there is a relationship. To relate the attitudes and self-efficacy of female students in grade 8A and grade 8B as well as male students, there is a relationship between attitudes and self-efficacy of female students in grade 8A and grade 8B because the significance value (2-tailed) < 0.05.

The previous research that examined the attitudes of students. From previous research, there are shortcomings in terms of the variables being tested. Researchers only tested students' attitudes towards science, nothing showed the development of scientific project-based learning innovations for students (Hidayati et al., 2017). In addition, the predecessor researchers only took from the variants of students' attitudes, there were no other variants such as students' motivation and confidence in facing scientific work-based learning. In addition to previous research on attitudes, this researcher is in line with the results of previous research. That there is a relationship between cell efficacy and student learning achievement. The higher the confidence possessed by students, the higher the learning achievement of students. On the other hand, the lower the self-confidence possessed by students, the lower the learning achievement of students (Muthiah Miftahul Jannah et al., 2019).

Researchers have to test students' attitudes and self-efficacy which aims to understand students, thinking processes and psychology that students take in studying science subjects. By testing student attitudes, students can understand the character of students towards science subjects, such as if students behave well with science subjects, it can be seen that students' character will be active. And by testing self-

efficacy, it can find out students' thinking processes and student psychology on science subjects, if students have confidence in science, they will process every existing material. With a good attitude and self-efficacy, students can process and develop knowledge and apply science subjects. From previous research, it is also confirmed that attitudes affect science learners.

Judging from the calculation of hypotheses, the core of this study discusses the differences and relationships between attitudes and student self-efficacy, and attitudes and self-efficacy between classes. In the hypothesis test of attitudes and self-efficacy between the genders of students in grade 8A there is no difference between female students and male students as well as class 8B also has no difference. However, when viewed from the comparison between classes, students' attitudes towards science were outperformed by class 8A. In the correlation test, there is a relationship between attitude and self-efficacy in class 8A and class 8B. The disadvantage of this study is that it only takes the attitude and self-efficacy variables to students, there are no other variables such as interest, motivation, and others. So the researcher suggests reading other articles that contain other variables.

4. CONCLUSION

Based on the results of research testing and data analysis, the conclusions of this study were 74 students' attitudes towards science from 2 classes, namely class VIII A and class VIII B, each 20 female students and 17 male students. As well as the self-efficacy sample as many as 72 students from class VIII A and class VIII B, each 20 female students and 16 male students. With the results obtained, there is a comparison between female students and male students in each indicator, the attitudes and self-efficacy of students are obtained. Then on science learning is categorized as moderate to good, ranging from female students to male students. However, the attitudes of female students mostly have a better category. From the data generated in the test, it was found that the attitude variable had a significant difference in the attitudes of students between classes and there was a relationship between students and self-efficacy in class VIII A, as evidenced by the value of sig (2-failed) < 0.05. For the self-efficacy variable, the results obtained that there is a significant difference in students' self-efficacy with science subjects between classes and the relationship between attitudes and self-efficacy in class VIII B.

5. ACKNOWLEDGEMENTS

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