Formatif: Jurnal Ilmiah Pendidikan MIPA, March 2022, 12 (1), 75-90
http://dx.doi.org/10.30998/formatif.v12i1.10264
p-ISSN: 2088-351X e-ISSN: 2502-5457
Accredited (S2) by Ministry of Research and Technology of Indonesia No. 148/M/KPT/2020
Available online at https://journal.lppmunindra.ac.id/index.php/Formatif/index

Male or Female, who is better? Student's Perception of the E-Module in Physics-Mathematics Vector Material

Astalini, Darmaji, Dwi Agus Kurniawan, Auliya Ramadhanti (*)
Universitas Jambi, Indonesia

Received: July 26, 2021
Revised: January 22, 2022
Accepted: January 31, 2022

Abstract

This study aims to analyze students' perceptions of the Mathematics Physics e-module and to analyze students' perceptions based on gender differences in the Mathematics Physics e-module. This type of research is survey-based research with a quantitative approach. The population of this study was Physics Education students who contracted mathematical Physics with a sample of 80 students of class A and class C. The instrument used in this study was a student's perception questionnaire with 15 questions and an interview sheet with 10 questions. The data analysis technique used in this research was descriptive statistical analysis and inferential data analysis using t-test. The results show that overall students have a positive perception with a perception value of 60% in the very good category and 40% in the good category, whereas when viewed from the gender difference, male students have a perception value of 76.6% in the very good category and 23, 3% in the good category, for female students 50% in the very good category and 50% in the good category. It can be said that the perception of male students has a more positive perception than female students, this is influenced by the way men think that tends to be logical and conceptualized. That is, students with gender differences have striking differences in perceptions. Students' perceptions can be used as a determining factor in the selection of open materials. From the results, it can be seen that gender differences can help in assessing the products made so that they will support the learning process and increase student's learning motivation.

Keywords: Perception, e-Module, Mathematical Physics, Gender

(*) Corresponding Author: auliyadhanti@gmail.com

How to Cite: Astalini, et al. (2022). Male or female, who is better? Student's perception of the e-module in physics-mathematics vector material. *Formatif: Jurnal Ilmiah Pendidikan MIPA, 12* (1): 75-90. http://dx.doi.org/10.30998/formatif.v12i1.10264

INTRODUCTION

21st century learning in the industrial revolution 4.0 requires innovation and the use of technology that goes according to the development of science (Henriksen et al., 2016; Hussin, 2018; Muslim et al., 2021). Education that is built on 21st century competencies (revolutionary era 4.0) focuses on learning that requires students to have skills, knowledge, conceptual understanding, and abilities in the fields of technology, media, and information (Alismail & McGuire, 2015; Huda et al., 2019; Kimbrel, 2020). The quality of education can be achieved by utilizing technology, one of which is in the provision of education in general and as a medium of learning in the classroom because it will greatly help students (Hew et al., 2019; Nurabadi et al., 2018; Stošić, 2015). E-learning is defined as the use of information and communication technology in various educational processes to support and to improve learning (Hasyim & Haling, 2017; Mahande, 2019; Vebrianto & Syafaren, 2018) one example of the application of e-learning is the e-module or module electronic.

E-module is a product of digital-based non-printed teaching materials that can display text, images, animations, and videos through electronic devices such as computers or smartphones (Astalini et al., 2019; Nisa & Andriani, 2020; Serevina et al., 2018). E-modules are also learning resources that contain systematic and interesting materials, methods, limitations and evaluation methods for students designed to achieve competencies that are in accordance with the curriculum electronically (Mazidah et al., 2020; Rahayu & Sukardi, 2020; Sitorus et al., 2019). The use of language in the e-module itself is made simple and systematic so that it is easily understood by students (Gavrilenko, 2018; Pratono et al., 2018; Elvarita et al., 2020). According to research from several experts (Astalini et al., 2019; Rahayu & Sukardi, 2020; Mulyadi et al., 2020) the use of e-modules can increase the effectiveness of student's learning in understanding the material. The ability of students to understand the material is of course the main focus in making e-modules, one of which is if the material is difficult and abstract like Physics.

Physics is a branch of science whose object of study consists of the complexity of the relationship between phenomena which ultimately becomes a concept or theory (Trianggono, 2017; Wartono et al., 2018; Kurniawati dan Nita, 2018). Mathematical Physics is a branch of the study of Physics that discusses in a structured and systematic way about quantum theory analytically using mathematical equations (Petrova, 2020; Ellianawati,et.al, 2017; Jassim & Vahidi, 2021; Astalini et al., 2021). Topics covered are related to advanced courses such as Mechanics, modern Physics, etc. Which contains a description of the problem and how to solve it (Saputri, Fadilah, & Wahyudi, 2016; Tanjung, 2018; Bustami, Ngadimin, & Farhan, 2020). Many students have difficulty getting satisfactory results, most of them think that the learning media are quite few and also still in foreign languages. By looking at the need for an interactive and communicative media for students, it is necessary to have a product in the form of an electronic module that is integrated with the perceptions and attitudes of students towards the course (Pathoni, et.al, 2017; Jazuli, Azizah, & Meita, 2018; Darmaji, Astalini, & Kurniawan, 2019).

Perception is a person's perspective through the process of the five senses to achieve awareness and requires certain items to understand information (Sickle, 2016; Qiong, 2017; Yunita & Maisarah, 2020). We often find that one's perception of the product is aimed at seeing the quality of the product to be used as a learning resource or not (Hadaya et al., 2018; Serevina et al., 2018; Sofyan et al., 2019). This perception is carried out to find out how students view the Mathematics Physics e-module I on vector material using Flip PDF Professional software. This perception will also look at perceptions based on gender differences in each class. Gender itself is a social category that refers to an individual's gender identity, which is divided into women and men (Perry et al., 2019; Sterling, 2019; Sullivan, 2020). In their own perception, gender differences are differences in characteristics, traits, and ways of thinking between men and women (Desiningrum, 2015; Anggoro, 2016; Rizkiyah, Susanto, & Nugroho, 2016). Women's ways of thinking are clearer and their emotions are more visible than men who use their minds more often or are realistic (Hamama et al., 2019; Dilla, Hidayat, & Rohaeti, 2018; Darsini, Fahrurrozi, & Cahyono, 2019).

This research was conducted as a complement to previous research as for some research related to this research is a research conducted by Pathoni, Jufrida, Saputri, et al. (2017) about students' perceptions of learning e-modules in the Core Atomic Physics course with the result that students have a good perception of the e-module products made. Then research by Putri et al. (2020), regarding the e-module of the Kinetic Theory of Gases based on 3D Pageflip Professional with the result that students tend to have a good perception of the e-module that is compatible with Physics learning materials. And the last one is in the research conducted by Ramadan et al. (2020) about the development

of e-module-based Basic Physics I teaching materials with the result that the products developed are suitable for use so that students are able to study independently. Based on several studies that have been presented above, no research has been found related to the study of student's perceptions on e-modules in the Mathematics Physics course, and there is no perception assessment by considering gender differences among students. This is because the difference in human sex is important to be involved in the comparison of the two perceptions of the object to be perceived (Çera et al., 2018; Gazzola et al., 2020; nal et al., 2018). Therefore, to complement the shortcomings of previous research, the researcher wishes to conduct research by examining student's perceptions of the Mathematics Physics e-module by considering the differences in student's gender.

Based on several studies that have been presented above, no research has been found related to the study of student's perceptions of e-modules in the Mathematics Physics course, and there is no perception assessment by considering gender differences among students. This is because the difference in human sex is important to be involved in the comparison of the two perceptions of the object to be perceived (Çera et al., 2018; Gazzola et al., 2020; nal et al., 2018). Therefore, to complement the shortcomings of previous research, the researcher wishes to conduct research by examining student's perceptions of the Mathematics Physics e-module by considering the differences in student's gender. The researchers conducted this study with the aim of analyzing the level of students' perceptions of the Physics-mathematical e-module and to determine students' perceptions based on gender differences in the Physics-mathematical e-module.

METHODS

This study used a quantitative research approach. Quantitative methods are commonly used to analyze data such as questionnaires (Alshenqeeti, 2014; Apuke, 2017; Choy, 2014). The population in this study was students of Physics Education class of 2019 Jambi University. The sample used in this study was all students of Physics Education with a total of 80 people consisting of 40 people for class A and 40 people for class C. The sample used in this study was obtained using a simple random sampling technique.

The data in this study were obtained from quantitative data using a questionnaire. Data collection was carried out by distributing questionnaires via Google Form to students and then filling in the statements that have been given. Questionnaire is useful method for easily collecting data from participants in studies using rating scales (Cohen, Lawrence, & Keith, 2007; Cagetti et al., 202 C.E.; Woerkom et al., 2016). The questionnaire used in this study was made using a Likert scale. Research questionnaires given to students had different scores, namely Very Good (SB) = 4 , Good (B) = 3, Not Good (TB) = 2, and Very Not Good (STB) = 1. The grid of data collection instruments used in this study can be seen in table 1.

The data analysis technique in this study used descriptive statistical analysis and analytical statistics. Descriptive statistical analysis was carried out with statistical calculations which included mean, mode, median, standard deviation, minimum value and maximum value (Winarsunu, 2017; Odhier et al., 2019; Nurwulandari & Darwin, 2020). Analytical statistical analysis was carried out using a different test, namely the t test, which was then focused on the comparison of perceptions per gender of each class (Zhu, et.al, 2019; Masni, Ralmugiz, & Rukman, 2020; Ramdahan, 2020). The t-test is used if the data is normally distributed and homogeneous (Kurniawan, et.al, 2019; Huda et al., 2020; Suprianto, Ahmadi, & Suminar, 2019). The flow chart in this study is as follows:

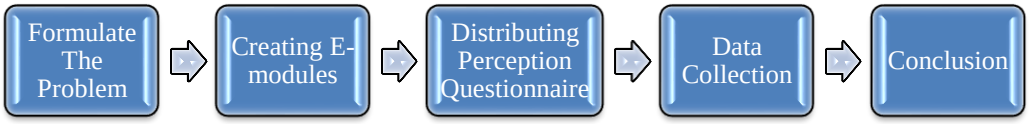

Table 1. Grid of Students' Perception Questionnaire Instruments

Assessment Indicator	Rated Aspect
E-Module Display	Text clarity
	Multimedia size fit
	Clarity of color and shape
	Multimedia display quality is good
	The multimedia presented is interesting
Presentation of Material in E-Modules	Easy to understand material
	The order of the material is clear
	The sentences used are simple and easy to understand
	The language used is communicative
	The suitability of the example with the material
	Multimedia compatibility with the material
Benefits of E-Modules	Ease of use of the module
	Media can help students understand the material
	Interest in using mod mod
	Increased learning motivation

RESULTS & DISCUSSION

The data from the perception itself is obtained from a questionnaire that has been distributed to active students of Physics Education at Jambi University batch 2019 via Google Form. This research is conducted on students of Physics Education class 2019 regular classes A and C consisting of 80 students in total. This study aims to see how students Identification of Problems Creating E-modules Students Perception Conclusion perceive the e-module of Mathematics Physics I based on the Flip PDF Professional application on Vector material. The results data obtained in the questionnaire are analyzed using IBM SPSS Statistic 22 which consist of the students' perceptions in class A and C, students' perceptions in class A, students' perceptions in class B, students' perceptions in class A based on gender, and students' perceptions in class C based on gender. The results of students' perceptions of the Vector Material Mathematics Physics e-module can be seen in table 2.

The data obtained are then analyzed using descriptive statistical analysis techniques and inferential statistics. Based on the analysis results obtained for the two classes tested with a total sample of 80 students, it is found that 48 students (60%) state that the e-module is very good while the remaining 32 students (40%) state that the e-module is at good category with the mean value is 50.88 then the median value is 49, the mode value is 45, and the maximum and minimum values are 60 and 43, respectively,

and the standard deviation is 5.089. Overall, the students who are tested have a positive perception of the e-module that had been made.

Table 2. Results Description Data Perceptions of Students Against E-Module Mathematical Physics

Interval	F	%	Category	Mean	Median	Mo	Max	Min	Std
48,76 – 60,00	48	60	Very Good						
37,51 – 48,75	32	40	Good						
26,26 – 37,50	0	0	Not Good	50,88	49,0	45	60	43	5,089
15,00 – 26,25	0	0	Very Not Good						

After analyzing the statistical descriptions of student's perceptions, the next researcher conducts a descriptive statistical analysis with the second variable, based on studen's gender differences. The descriptive results of the perception statistics based on gender science students towards e-modules can be seen in Table 3.

Table 3. Data Results Description of Perception Statistics by Gender of Students

Gender	Interval	F	%	Category	Mean	Med	Mo	Max	Min
Male	48,76 – 60,00	23	76.6	Very Good	52,26	52	57	60	45
	37,51 – 48,75	7	23.3	Good					
	26,26 – 37,50	0	0	Not Good					
	15,00 – 26,25	0	0	Very Not Good					
Female	48,76 – 60,00	25	50	Very Good	50,06	48,5	45	60	43
	37,51 – 48,75	25	50	Good					
	26,26 – 37,50	0	0	Not Good					
	15,00 – 26,25	0	0	Very Not Good					

From table 3 regarding the data on the results of statistical descriptions of student's perceptions based on gender, the average value (mean) is 52.26 for men and 50.06 for women, the median value is 52 for male perceptions and 48.5 for women, the mode is 57 for male gender and 45 for female gender, the maximum and minimum values are 60 and 45 for men and 60 and 43 for women, then the standard deviation value is 4,667 for the perception of men and women. 5.195 for women's perceptions. In addition, there are also 23 male students (76.6%) who have very good perceptions of e-modules and the remaining 7 people (23.3%) who have good perceptions of e-modules and for women around 14 people (43.75) have a very good perception of the e-module and the remaining 18 students (56.25%) have a good level of perception of the e-module given.

The steps taken by the researcher to find out the comparison between class and gender perceptions is to use a prerequisite test. The prerequisite test is carried out using the normality test and homogeneity test (Nurvianti & Syarkowi, 2018; Kurniawan et al., 2019; Suprianto et al., 2019). The normality test is carried out to test whether a series of observations comes from some fully defined continuous distribution or the data is normally distributed (Das & Imon, 2016; Filion, 2015; Kwak & Park, 2019; Lilliefors, 2017). To test for normality, it can be done using the Kolmogorov-Smirnov condition that if the significance value is > 0.05 then the data can be said to be normally distributed Razali et al, 2012; Ghasemi dan Zahediasl, 2012). Homogeneity test is carried out using Levene's test to see whether the data was homogeneous or not, if the value of Sig. greater than $\alpha = 0.05$, then it indicates that H0 is acceptable so it can be concluded that the data variance is homogeneous (Fuad et al., 2017; Laurens et al., 2018; Tekedere & Göker,

2016). Based on the results that have been obtained, the normality test for perceptions for each class is 0,2. Meanwhile, for the homogeneity test, the value of Sig. Levene's Test for Equality of Variances is 0,576. With the normality and homogeneity test sig values greater than the requirement, namely 0.05, it can be concluded that the data is normally distributed and homogeneous. After the prerequisite test is met, the data is processed using descriptive statistics and hypothesis testing independent sample t-test.

After completing the prerequisite test, namely testing normality and homogeneity. The next researcher tests the hypothesis, namely the independent t-test. The t-test is an example of a parametric test that works on normally distributed scale data and compares the two most frequently used means (Fathy et al., 2016; Gerald, 2018).

Table 4. Group Statistic

	Class	N	Mean	Std. Deviation	Std. Error Mean
E-Module Perception	A	40	51.48	5.109	0.808
	C	40	50.30	5.065	0.801

Based on the table 4, it is known that the number of data on student's perceptions of the E-Module for class A is 40 students, while for class C is 40 students. The average value of student's perception results or the mean for class A is 51.48, while for class C is 50.30. Thus, statistically descriptive, it can be concluded that the difference is significant (significant) or not, so we need to interpret the independent sample test table 5.

Table 5. Independent Sample Test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
E-Module Perception	Equal variances assumed	.013	.910	1.033	78	.035
	Equal variances not assumed			1.033	77.994	.035

Independent sample t-test can be calculated using the formula or SPSS. The first thing to do under the variable view is to write the variable under test in the first column under the first row. Under the data view: In the data view we click analyze and then click compare mean. From compare mean we go to independent sample t-test. Under t-test input, move the score under test into the test variables box. Write the test score (population mean) into the test score box and finally click ok (Choudhary, 2018; Gerald, 2018). By comparing the significance, if the probability is > 0.05, then the hypothesis (Ho) is rejected and if the probability is < 0.05, the alternative hypothesis (Ha) is accepted (Agustina, 2018; Bhatti et al., 2019). Based on table 8, it is known that the value of Sig. Levene's Test of Equality of Variance is 0, 910 > 0.05, it means that the data variance between class A and class C is homogeneous or the same. In the 'Equal Variance Assumed' section, the Sig value is known. (2-tailed) is 0.035 < 0.05, so as the basis for decision making in the independent sample t test, it can be concluded that H0 is rejected and Ha is accepted. Thus, it can be concluded that there is a significant difference between the perception results of class A and class C students.

After conducting an independent sample t test in general for both classes, then the researcher conducted the same test based on the gender of the students per class, namely class A and class C, as presented in the table 6.

Table 6. Group Statistic Class A

	Gender	N	Mean	Std. Deviation	Std. Error Mean
E-Module Perception	Male	16	53.75	4.389	1.097
	Female	24	49.96	5.069	1.035

Based on table 6, it is known that the number of data on student's perceptions of the E-Module for class A is 16 male students and 24 female students. The average value of student's perception results or the mean for men is 53.75, while for women it is 49.96. Thus, statistically descriptive, it can be concluded that the difference is significant or not, so we need to interpret the independent sample test table 7.

Table 7. Independent Sample Test Class A

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
E-Module Perception	Equal variances assumed	.002	.962	2.441	38	.019
	Equal variances not assumed			2.514	35.321	.017

Based on table 7, it is known that the value of Sig. Levene's Test of Equality of Variance is 0.962 > 0.05, which means that the data variance between males and females in class A is homogeneous or the same. In the 'Equal Variance Assumed' section, the Sig value is known. (2-tailed) of 0.19 < 0.05, so as the basis for decision making in the independent sample t test, it can be concluded that H0 is rejected and Ha is accepted. Thus, it can be concluded that there is a significant (significant) difference between the perception results of male and female students in class A.

Table 8. Group Statistic Class C

	Gender	N	Mean	Std. Deviation	Std. Error Mean
E-Module Perception	Male	14	50.57	4.536	1.212
	Female	26	50.15	5.409	1.061

Based on table 8, it is known that the number of data on student's perceptions of the E-Module for class A is 14 male students and 26 female students. The average value of student's perception results or the mean for men is 50.57, while for women it is 50.15. Thus, statistically descriptive, it can be concluded that there is a significant difference (significantly) or not, so we need to interpret the independent sample test table from Class C below.

Table 9. Independent Sample Test class C

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
E-Module Perception	Equal variances assumed	.005	.412	.246	38	.017
	Equal variances not assumed			.259	31.062	.061

Based on table 9, it is known that the value of Sig. Levene's Test of Equality of Variance is 0.412 > 0.05, which means that the data variance between males and females in class C is homogeneous or the same. In the 'Equal Variance Assumed' section, the Sig value is known. (2-tailed) of 0.017 <0.05, so as the basis for decision making in the independent sample t test, it can be concluded that H0 is rejected and Ha is accepted. Thus, it can be concluded that there is a significant (significant) difference between the perceptions of male and female students in class C.

The steps taken by the researcher to find out the comparison between class and gender perceptions is to use a prerequisite test. The prerequisite test is carried out using the normality test and homogeneity test. The normality test is carried out to test whether a series of observations comes from some fully defined continuous distribution or the data is normally distributed (Das & Imon, 2016; Filion, 2015; Kwak & Park, 2019; Lilliefors, 2017). To test for normality, it can be done by using the Kolmogorov-Smirnov condition that if the significance value is > 0.05 then the data can be said to be normally distributed. Homogeneity test is carried out by using Levene's test to see whether the data is homogeneous or not, if the value of Sig. greater than $\alpha = 0.05$, then it indicates that H0 is acceptable so it can be concluded that the data variance is homogeneous (Fuad et al., 2017; Laurens et al., 2018; Tekedere & Göker, 2016). Based on the results that have been obtained, the normality test for perceptions for each class is 0,2. Meanwhile, for the homogeneity test, the value of Sig. Levene's Test for Equality of Variances is 0,576. With the normality and homogeneity test sig values greater than the requirement, namely 0.05, it can be concluded that the data is normally distributed and homogeneous. After the prerequisite test is met, the data is processed by using descriptive statistics and hypothesis testing independent sample t-test.

Independent sample t-test can be calculated using the formula or SPSS. The first thing to do under the variable view is to write the variable under test in the first column under the first row. Under the data view: In the data view we click analyze and then click compare mean. From compare mean we go to independent sample t-test. Under t-test input, move the score under test into the test variables box. Write the test score (population mean) into the test score box and finally click ok (Choudhary, 2018; Gerald, 2018). By comparing the significance, if the probability is > 0.05, then the hypothesis (Ho) is rejected and if the probability is <0.05, the alternative hypothesis (Ha) is accepted (Agustina, 2018; Bhatti et al., 2019).

Based on research from (Çera et al., 2018; Ogungbamila & Bola Udegbe, 2014; Samuelsson & Samuelsson, 2016; Rizkiyah, Susanto, & Nugroho, 2016) there are usually significant differences in perceptions based on a person's gender, girls tend to follow the majority class and more competitive in choosing something while boys are more likely to prioritize personal concepts. From the research that the researcher has done on the students of class A and class C who have been grouped by gender, the results are the same as the previous research above. In addition to the above factors, this study is also in

line with research conducted (Anggoro, 2016; Dilla, Hidayat, & Rohaeti, 2018; Darsini, Fahrurrozi, & Cahyono, 2019), where the results of this study state that men have higher perception values. higher than women, this is certainly closely related to biological factors in the human brain. Where as many know women use their emotions more often when facing or responding to something, while men are on the contrary where they are more inclined and more often use their minds or can be said to be more realistic.

Based on the results that have been obtained, it is known that the perceived value tends to be good. With a good e-module assessment, it is hoped that in the future this e-module will help students understand Mathematics Physics learning. In addition, products that use Indonesian and make it simpler and easier to understand are expected to make students free in interpreting learning without worrying about misunderstandings in delivering or discussing material. In the long term, this e-module is believed to be able to improve the pedagogic abilities of Physics Education students as future teacher candidates who are certainly required to have critical analytical and calculation skills.

Pedagogic ability is a person's ability to teach which includes various aspects related to education, basic teaching skills and classroom management so that learning activities can run effectively to achieve educational goals (Alekhina et al., 2020; Indriani, 2016; Todd, 2014). To be able to improve pedagogic abilities, good and flexible learning media are needed, one of which is utilizing technological advances, namely in this study the e-module of Mathematics Physics I vector material.

For educators themselves, perception research like this is very useful in improving the quality of an educator in mastering the material and sharing knowledge with the students he teaches so that they can become professional educators (Mashuri, 2017; Widyastuti, Widiyaningrum, & Lisdiana, 2017; Lewis & Holloway, 2019). By getting good perceptions from students of the e-module product being tested, it can be said that this research also helps educators, especially lecturers in Mathematics Physics I, in seeing what kind of learning students like. This means that if students already like learning, good learning outcomes will follow. Then from the side of the Mathematics Physics course itself. E-modules that get good perception results will certainly help lecturers add complementary learning resources that are easy to understand and simple. So it is hoped that further research may be able to examine how students' perceptions are associated with high-level student thinking skills or student attitudes in studying Mathematics Physics using technological advances, namely e-modules, so that it will produce great benefits for students.

The use of e-modules can increase students' interest in learning mathematical Physics. Students can learn mathematical physics practically through smartphones that can be accessed anywhere and anytime. By working on the questions in the e-module, it can improve students' understanding abilities. This study shows that each student has their own perception in the use of media as technological advances in the field of education. The student's perception is influenced by gender. As a result, his research can be a guide for further research. The next researcher can conduct research on student perceptions of the mathematical physics e-module on student interest and motivation and student learning outcomes based on gender differences. Also, the further researchers can conduct research on student perceptions in the use of mathematical physics e-modules on students' critical thinking skills.

CONCLUSION

Based on the results when viewed by gender, there are significant differences perception between female and male students in each class. So that gender can be said to

be one of the factors that influence differences in perception. The difference is seen after testing the assumptions and testing the hypothesis. Descriptions of student perceptions can be seen in descriptive data analysis, while differences in perceptions are seen based on the results of the t-test that has been carried out in each class by looking at the difference in average scores between male students and female students. The advantage of this research is to see students' perceptions of the e-module of Mathematics Physics I on partial differential material based on gender variables. The limitations of this study are only to see the differences in student perceptions. It is hoped that further researchers can conduct research on e-modules in broader fields such as critical thinking, high order thinking skills, interests, motivation, or others.

REFERENCES

Agustina. (2018). The Effect of Using Educational Multimedia in Dictation on Students' Listening Comprehension at MA Darul Hikmah Pekanbaru. *Journal of English For Academic*, *5*(1), 1–19.

Alekhina, E. V., Zolkin, A. L., Parkhomenko, R. N., Pirogov, A. I., Safonov, A. L., Zapalatskaya, V. S., & Krasnoshlikova, O. G. (2020). Philosophical and pedagogical aspects of career guidance policy for learners and students. *Journal of Environmental Treatment Techniques*, *8*(1), 175–181.

Alshenqeeti, H. (2014). Interviewing as a Data Collection Method : A Critical Review. *English Linguistics Research*, *3*(1), 39–45. https://doi.org/10.5430/elr.v3n1p39

Anggoro, B. S. (2016). Analisis Persepsi Siswa SMP terhadap Pembelajaran Matematika ditinjau dari Perbedaan Gender dan Disposisi Berpikir Kreatif Matematis. *Al-Jabar : Jurnal Pendidikan Matematika*, *7*(2), 153–166. https://doi.org/10.24042/ajpm.v7i2.30

Antwi, S. K., & Hamza, K. (2015). Qualitative and Quantitative Research Paradigms in Business Research : A Philosophical Reflection. *European Journal of Business and Management*, *7*(3), 217–226.

Apuke, O. D. (2017). Arabian Journal of Business and Management Review (Kuwait Chapter). *Arabian Journal of Business and Management Review (Kuwait Chapter)*, *6*(10), 40–47. https://doi.org/10.12816/0040336

Astalini, A., Darmaji, D., Kurniawan, D. A., & Chen, D. (2021). Investigating Student Perceptions Based on Gender Differences Using E-Module Mathematics Physics in Multiple Integral Material. *Jurnal Pendidikan Sains Indonesia*, *9*(4), 598-615.

Astalini, Darmaji, Kurniawan, W., Anwar, K., & Kurniawan, D. A. (2019). Effectiveness of Using E-Module and E-Assessment. *IJIM*, *13*(9), 21–39.

Ayu, H. D., Saputra, S., Sarwanto, S., & Mulyani, S. (2021). Diagnostic analysis of student concept in environmental physics. *Journal of Physics: Conference Series*, *1869*(1), 012177. https://doi.org/10.1088/1742-6596/1869/1/012177

Bhatti, N. B., Siyal, A. A., Qureshi, A. L., & Bhatti, I. A. (2019). Socio-Economic Impact Assessment of Small Dams Based on T-Paired Sample Test Using SPSS Software. *Civil Engineering Journal*, *5*(1), 153–164.

Bustami, Ngadimin, & Farhan, A. (2020). The Difficulty Factors of Students to Understand Mathematics Physics 1 at Physics Education Department FKIP Unsyiah Bustami1*,. *Asian Journal of Science Education*, *2*(1), 1–10. https://doi.org/10.24815/ajse.v2i1.14725

Cagetti, M. G., Cairoli, J. L., Senna, A., & Campus, G. (2020). COVID-19 Outbreak in North Italy : An Overview on Dentistry . A Questionnaire Survey. *International Journal of Environmental Research and Public Health*, *17*, 1–12.

Çera, G., Cepel, M., Zakutna, S., & Rozsa, Z. (2018). Gender differences in perception of the university education quality as applied to entrepreneurial intention. *Journal of International Studies*, *11*(3), 147–160. https://doi.org/10.14254/2071-8330.2018/11-3/13

Choudhary, R. (2018). Application of " independent t- test " by using SPSS for conducting physical education researches. *International Journal of Physical Education, Sports and Health*, *5*(1), 237–241.

Choy, L. T. (2014). The Strengths and Weaknesses of Research Methodology : Comparison and Complimentary between Qualitative and Quantitative Approaches. *IOSR Journal Of Humanities And Social Science*, *19*(4), 99–104.

Darmaji, Astalini, Kurniawan, D. A., Parasdila, H., & Iridianti. (2019). E-Module Based Problem Solving in Basic Physics Practicum for Science Process Skills. *IJOE*, *15*(15), 4–17.

Das, K. R., & Imon, A. H. M. R. (2016). A Brief Review of Tests for Normality. *American Journal of Theoretical and Applied Statistics*, *5*(1), 5–12. https://doi.org/10.11648/j.ajtas.20160501.12

Desiningrum, D. R. (2015). Kesejahteraan Psikologis Lansia Janda/Duda Ditinjau dari Persepsi Terhadap Dukungan Sosial dan Gender. *Jurnal Psikologi Undip*, *13*(2), 102–106. https://doi.org/10.14710/jpu.13.2.102-201

Elvarita, A., Iriani, T., & Handoyo, S. S. (2020). Pengembangan Bahan Ajar Mekanika Tanah Berbasis E-Modul pada Program Studi Pendidikan Teknik Bangunan, Universitas Negeri Jakarta. *Jurnal Pendidikan Teknik Sipil (JPenSil)*, *9*(1), 1–7. https://doi.org/10.21009/jpensil.v9i1.11987

Etikan, I., & Bala, K. (2017). Sampling and sampling methods. *Biometrics & Biostatistics International Journal*, *5*(6), 215–217. https://doi.org/10.15406/bbij.2017.05.00149

Fathy, S., Said, E., & Fattah, A. (2016). The Effectiveness of Using Blogs as an Independent Learning Tool to Develop Reading Skills for University Students. *Journal of Education and Practice*, *7*(32), 65–73.

Filion, G. J. (2015). The signed Kolmogorov-Smirnov test : why it should not be used. *GigaScience*, *4*(9), 7–9. https://doi.org/10.1186/s13742-015-0048-7

Fuad, N. M., Zubaidah, S., Mahanal, S., & Suarsini, E. (2017). Improving Junior High Schools ' Critical Thinking Skills Based on Test Three Different Models of Learning. *International Journal of Instruction*, *10*(1), 101–116.

Fugard, A. J. B., & Potts, H. W. W. (2015). Supporting thinking on sample sizes for thematic analyses : a quantitative tool. *International Journal of Social Research Methodology*, *18*(6), 667–681. https://doi.org/10.1080/13645579.2015.1005453

Gavrilenko, N. (2018). Online model for teaching and learning the specialized translation. *Eurasia Journal of Mathematics, Science and Technology Education*, *14*(6), 2711–2717. https://doi.org/10.29333/ejmste/85421

Gazzola, P., Pavione, E., Pezzetti, R., & Grechi, D. (2020). Trends in the fashion industry. The perception of sustainability and circular economy: A gender/generation quantitative approach. *Sustainability (Switzerland)*, *12*(7), 1–19. https://doi.org/10.3390/su12072809

Gerald, B. (2018). A Brief Review of Independent , Dependent and One Sample. *International Journal of Applied Mathematics and Theoretical Physics*, *4*(2), 50–54. https://doi.org/10.11648/j.ijamtp.20180402.13

Hadaya, A., Asrowi, & Sunardi. (2018). Perception of Junior High School Students about the Use of E-books as Learning Sources. *Jurnal of Educational Science and Technology*, *4*(1), 55–61.

Hamama, S. F., Hallaby, S. F., & Ramona, S. (2019). Analisis Persepsi Siswa Berdasarkan Gender Terhadap Pembelajaran Biologi di Dalam Kelas. *Jurnal Dedikasi Pendidikan*, *8848*(1), 21–26. http://jurnal.abulyatama.ac.id/index.php/dedikasi/article/download/113/113

Hasyim, N., & Haling, A. (2017). The e-Learning Needs Analysis in Graduate Programs of Universitas Negeri Makassar. *Journal of Educational Science and Technology (EST)*, *3*(3), 233–242.

Henriksen, D., Mishra, P., & Fisser, P. (2016). Infusing creativity and technology in 21st century education: A systemic view for change. *Educational Technology and Society*, *19*(3), 27–37.

Hew, K. F., Lan, M., Tang, Y., Jia, C., & Lo, C. K. (2019). Where is the "theory" within the field of educational technology research? *British Journal of Educational Technology*, *0*(0), 1–16. https://doi.org/10.1111/bjet.12770

Huda, S., Firmansyah, M., Rinaldi, A., Sugiharta, I., Astuti, D. W., Fatimah, O., & Prasetyo, A. E. (2019). Understanding Of Mathematical Concepts In The Linear Equation With Two Variables: Impact Of E-Learning And Blended Learning Using Google Classroom. *Jurnal Pendidikan Matematika*, *10*(2), 261–270.

Huda, S., Yasin, M., Fitri, A., Syazali, M., Supriadi, N., Umam, R., & Jermsittiparsert, K. (2020). Numerical Ability Analysis: The Impact of the Two Stay-Two Stray Learning Model on the Sequence and Series Topic in Islamic Boarding School. *Journal of Physics: Conference Series*, *1467*(1). https://doi.org/10.1088/1742-6596/1467/1/012002

Hussin, A. A. (2018). Education 4 . 0 Made Simple : Ideas For Teaching. *International Journal Of Education And Literacy Studies*, *6*(92), 92–98.

Ilmi, R., Arnawa, I. M., Yerizon, & Bakar, N. N. (2021). Development of an Android-Based for Math E-Module by using Adobe Flash Professional CS6 for Grade X Students of Senior High School Development of an Android-Based for Math E-Module by using Adobe Flash Professional CS6 for Grade X Students of. *Journal of Physics: Conference Series*, 1–8. https://doi.org/10.1088/1742-6596/1742/1/012026

Indriani, F. (2016). Kompetensi Pedagogik Mahasiswa dalam Mengelola Pembelajaran Tematik Integratif Kurikulum 2013 pada Pengajaran Micro Di PGSD UAD Yogyakarta. *Journal of Elementary School*, *3*(1), 1–12.

Jazuli, M., Azizah, L. F., & Meita, N. M. (2018). Pengembangan Bahan Ajar Elektronik Berbasis Android Sebagai Media Interaktif. *LENSA (Lentera Sains): Jurnal Pendidikan IPA*, *7*(2), 47–65. https://doi.org/10.24929/lensa.v7i2.22

Joshi, A., Kale, S., Chandel, S., & Pal, D. K. (2015). Likert Scale : Explored and Explained. *British Journal of Applied Science & Technology*, *7*(4), 396–403. https://doi.org/10.9734/BJAST/2015/14975

Kimbrel, L. A. (2020). The Impact of a Structured Protocol on Graduate Student Perception of Online Asynchronous Discussions. *Journal of Curriculum and Teaching*, *9*(3), 172–181. https://doi.org/10.5430/jct.v9n3p172

Komikesari, H., Mutoharoh, M., Dewi, P., Utami, G., Anggraini, W., & Himmah, E. (2020). Development of e-module using flip pdf professional on temperature and heat material Development of e-module using flip pdf professional on temperature and heat material. *Journal Of Physics Conference Series*. https://doi.org/10.1088/1742-6596/1572/1/012017

Kurniawan, W., Darmaji, D., Astalini, A., Kurniawan, D. A., & Hidayat, M. (2019). Multimedia physics practicum reflective material based on problem solving for science process skills. *International Journal of Evaluation and Research in Education (IJERE)*, *8*(4), 590–595. https://doi.org/10.11591/ijere.v8i4.20258

Kwak, S. G., & Park, S. (2019). Normality Test in Clinical Research. *Journal of Rheumatic Diseases*, *26*(1), 5–11.

Laurens, T., Batlolona, F. A., Batlolona, J. R., & Leasa, M. (2018). How Does Realistic Mathematics Education (RME) Improve Students ' Mathematics Cognitive Achievement ? *EURASIA Journal of Mathematics, Science and Technology Education*, *14*(2), 569–578. https://doi.org/10.12973/ejmste/76959

Lewis, S., & Holloway, J. (2019). Datafying the teaching 'profession': remaking the professional teacher in the image of data. *Cambridge Journal of Education*, *49*(1), 35–51. https://doi.org/10.1080/0305764X.2018.1441373

Lilliefors, H. W. (2017). On the Kolmogorov-Smirnov Test for Normality with Mean and Variance Unknown. *Journal of the American Statistical Association*, *62*(318), 399–402.

Mahande, R. D. (2019). IS Success Model for EDMODO E-learning User Satisfaction through TAM on Students. *Journal of Educational Science and Technology (EST)*, *5*(2), 140–152.

Marshman, E., Kalender, Z. Y., Schunn, C., Nokesh-Malach, T., & Singh, C. (2017). A longitudinal analysis of students' motivational characteristics in introductory physics courses: Gender differences. *Canadian Journal of Physics*, 1–23.

Masni, E. D., Ralmugiz, U., & Rukman, N. K. (2020). Peningkatan Kemampuan Penalaran dan Komunikasi Statistik Mahasiswa Melalui Pembelajaran Statistik Inferensial Berbasis Proyek dengan Meninjau Gaya Kognitif Mahasiswa. *Pedagogy*, *5*(2), 12–26.

Mazidah, Erna, M., & Anwar, L. (2020). Developing an Interactive Chemistry E-Module for Salt Hydrolysis Material to Face the Covid-19 Pandemic Developing an Interactive Chemistry E-Module for Salt Hydrolysis Material to Face the Covid-19 Pandemic. *Journal of Physics: Conference Series*, 1–6. https://doi.org/10.1088/1742-6596/1655/1/012051

Mohajan, H. K. (2018). Munich Personal RePEc Archive Qualitative Research Methodology in Social Sciences and Related Subjects Qualitative Research Methodology in Social Sciences and Related Subjects. *Journal of Economic Development, Environment and People*, *7*(1), 23–48.

Mulyadi, R, S., Atmazaki, & Agustina. (2020). The Development Of E-Modules Based on Adobe Flash For Indonesian Subjects At IAIN Bukittinggi The Development Of E-Modules Based on Adobe Flash For Indonesian Subjects At IAIN Bukittinggi. *Journal Of Physics Conference Series*, *1471*, 1–9. https://doi.org/10.1088/1742-6596/1471/1/012002

Muslim, F., Refnida, R., Chen, D., & Wirayuda, R. P. (2021). Macroeconomic Digital Book Development: How are the Feasibility of Experts and Student Responses?. *Journal of Education Technology*, *5*(3), 501-510.

Nisa, W. L., & Andriani, N. (2020). Development of E-Modules Based on Multi-representations in Solid-State Physics Introductory Subject. *Berkala Ilmiah Fisika*, *8*(2), 73–81. https://doi.org/10.20527/bipf.v8i2.7690

Nurabadi, A., Sucipto, S., Juharyanto, J., & Gunawan, I. (2018). The Implementation of Education Management Standards in the School Laboratory State University of Malang for Improving Educational Quality. *Education and Humanities Research*, *269*, 127–132. https://doi.org/10.2991/coema-18.2018.33

Nurvianti, I., & Syarkowi, A. (2018). Penggunaan Komik pada Pembelajaran Fluida Statis di Kelas XI IPA SMA Negeri 2 Kota Jambi Tahun 2017. *Jurnal Penelitian Pembelajaran Fisika*, *9*(1), 59–65. https://doi.org/10.26877/jp2f.v9i1.2124

Nurwulandari, A., & Darwin, M. (2020). Heywood Case Data Statistics : Using The Model Respesification Technique. *Nucleus*, *1*(2), 74–84. https://doi.org/https://doi.org/10.37010/nuc.v1i2.173

Odhier, P. O., Ajowi, J. O., & Mwebi, B. (2019). Investigation on Contributions of Principals on School Machinery and Equipment Management in Secondary Schools in Kenya. *International Journal of Novel Research in Humanity and Social Science*, *6*(5), 73–88.

Ogungbamila, B., & Bola Udegbe, I. (2014). Gender differences in the effects of perception of organizational injustice on workplace reactivity. *Europe's Journal of Psychology*, *10*(1), 150–167. https://doi.org/10.5964/ejop.v10i1.575

Pal, S. K., Singh, H. P., Kumar, S., & Chatterjee, K. (2018). A family of efficient estimators of the finite population mean in simple random sampling. *Journal of Statistical Computation and Simulation*, *88*(5), 920–934. https://doi.org/10.1080/00949655.2017.1408808

Pathoni, H., Jufrida, J., Saputri, I., & Sari, W. (2017). Persepsi Mahasiswa Terhadap E-Modul Pembelajaran Mata Kuliah Fisika Atom Dan Inti. *Jurnal Eksakta Pendidikan (Jep)*, *1*(1), 55–62. https://doi.org/10.24036/jep/vol1-iss1/35

Pathoni, H., Jufrida, Saoutri, I., & Sari, W. (2017). Persepsi Mahasiswa terhadap E-Modul Pembelajaran Mata Kuliah Fisika Atom dan Inti. *Jurnal EKsakta Pendidikan (JEP)*, *1*(1), 55–62.

Perry, D. G., Pauletti, R. E., & Cooper, P. J. (2019). Gender identity in childhood: A review of the literature. *International Journal of Behavioral Development*, *43*(4), 289–304. https://doi.org/10.1177/0165025418811129

Petrova, L. (2020). Discrete Quantum Transitions, Duality: Emergence of Physical Structures and Occurrence of Observed Formations (Hidden Properties of Mathematical Physics Equations). *Journal of Applied Mathematics and Physics*, *08*(09), 1911–1929. https://doi.org/10.4236/jamp.2020.89144

Pratono, A., Sumarti, S. S., & Wijayati, N. (2018). Contribution of Assisted Inquiry Model of E-Module to Students Science Process Skill. *Journal of Innovative Science Education*, *7*(1), 62–68. https://doi.org/10.15294/jise.v7i1.20633

Putri, I. T., Aminoto, T., & Pujaningsih, F. B. (2020). Pengembangan e -modul fisika berbasis pendekatan saintifik pada materi teori kinetik gas. *Edufisika: Jurnal Pendidikan Fisika*, *5*(1), 1–11.

Qiong, O. (2017). A Brief Introduction to Perception. *Studies in Literature and Language*, *15*(4), 18–28. https://doi.org/10.3968/10055

Queiros, A., Faria, D., & Almeida, F. (2017). Strenght and Limitations of Qualitative and Quantitative Research Methods. *European Journal of Education Studies*, *3*(9), 369–387. https://doi.org/10.5281/zenodo.887089

Rahayu, I., & Sukardi. (2020). The Development Of E-Modules Project Based Learning for Students of Computer and Basic Networks at Vocational. *Journal Of Education Technology*, *4*(4), 398–403.

Ramadhan, M. A., Handoyo, S. S., & Alfarisi, M. M. (2020). Pengembangan Bahan Ajar Mekanika Tanah Berbasis E-Modul Pada Program Studi Pendidikan Teknik Bangunan, Universitas Negeri Jakarta. *Jurnal Pendidikan Teknik Sipil (JPenSil)*, *9*(1), 1–7. https://doi.org/10.21009/jpensil.v9i1.11987

Ramdahan, R. (2020). perbedaan Tingkat Minat Membaca Siswa Kelas VIII A dan VIII D. *Jurnal Pendidika*, *5*(2), 8–12.

Riantoni, C., Yuliati, L., Mufti, N., & Nehru, N. (2017). Problem solving approach in electrical energy and power on students as physics teacher candidates. *Jurnal Pendidikan IPA Indonesia*, *6*(1), 55–62. https://doi.org/10.15294/jpii.v6i1.8293

Rizkiyah, E., Susanto, N., & Nugroho, S. (2016). Perbedaan Persepsi Risiko Ditinjau Dari Gender Pada Kegiatan Pendakian Gunung. *Industrial Engineering Online Journal*, *5*(4).

Samuelsson, M., & Samuelsson, J. (2016). Open Review of Educational Research Gender differences in boys ' and girls ' perception of teaching and learning mathematics. *Open Review of Educational Research*, *3*(1), 18–34. https://doi.org/10.1080/23265507.2015.1127770

Saputri, D. F., Fadilah, S., & Wahyudi, W. (2016). Efektivitas Penggunaan Buku Ajar Fisika Matematika Berbasis Inkuiri dalam Perkuliahan Fisika Matematika. *Jurnal Penelitian & Pengembangan Pendidikan Fisika*, *02*(2), 7–14. https://doi.org/10.21009/1.02202

Sari, U., Hajiomer, A., Güven, K., & Faruk, Ö. (2017). Effects of the 5E Teaching Model Using Interactive Simulation on Achievement and Attitude in Physics Education. *International Journal of Innovation in Science and Mathematics Education*, *25*(3), 20–35.

Serevina, V., Sunaryo, Raihanati, Astra, I. M., & Sari, I. J. (2018). Development of E-Module Based on Problem Based Learning (PBL) on Heat and Temperature to Improve Student ' s Science Process Skill. *The Turkish Online Journal of Educational Technology*, *17*(3), 26–36.

Seruni, R., Munawaoh, S., Kurniadewi, F., & Nurjayadi, M. (2019). Pengembangan Modul Elektronik (E-Module) Biokimia Pada Materi Metabolisme Lipid Menggunakan Flip Pdf Professional. *JTK (Jurnal Tadris Kimiya)*, *4*(1), 48–56. https://doi.org/10.15575/jtk.v4i1.4672

Sharma, G. (2017). Pros and cons of different sampling techniques. *International Journal of Applied Research*, *3*(7), 749–752.

Shishigu, A., Hailu, A., & Anibo, Z. (2018). Problem-based learning and conceptual understanding of college female students in physics. *Eurasia Journal of Mathematics, Science and Technology Education*, *14*(1), 145–154. https://doi.org/10.12973/ejmste/78035

Sickle, J. Van. (2016). Discrepancies between student perception and achievement of learning outcomes in a flipped classroom. *Journal of the Scholarship of Teaching and Learning*, *16*(2), 29–38. https://doi.org/10.14434/josotl.v16i2.19216

Sitorus, D. S., Siswandari, & Kristiani. (2019). Character Value To Improve Students ' Learning Outcomes AND. *Cakrawala Pendidikan*, *38*(1), 120–129. https://doi.org/10.21831/cp.v38i1.20878

Sofyan, H., Anggrereini, E., & Saasiah, J. (2019). Development of E-Modules Based on Local Wisdom in Central Learning. *European Journal of Education Research*, *8*(4), 1137–1143. https://doi.org/10.12973/eu-jer.8.4.1137

Sriwahyuni, I., Risdianto, E., & Johan, H. (2019). Pengembangan Bahan Ajar Elektronik Menggunakan Flip Pdf Professional Pada Materi Alat-Alat Optik Di Sma. *Jurnal*

Stošić, L. (2015). The Importance Of Educational Technology In. *International Journal of Cognitive Research in Science, Engineering and Education*, *3*(1), 111–114.

Sullivan, A. (2020). Sex and the census: why surveys should not conflate sex and gender identity. *International Journal of Social Research Methodology*, *23*(5), 517–524. https://doi.org/10.1080/13645579.2020.1768346

Suprianto, A., Ahmadi, F., & Suminar, T. (2019). The Development of Mathematics Mobile Learning Media to Improve Students' Autonomous and Learning Outcomes. *Journal of Primary Education*, *8*(1), 84–91.

Sutarno, S., Setiawan, A., Kaniawati, I., & Suhandi, A. (2017). Pre-Service Physics Teachers' Problem-solving Skills in Projectile Motion Concept. *Journal of Physics: Conference Series*, *895*(1). https://doi.org/10.1088/1742-6596/895/1/012105

Tanjung, Y. I. (2018). Pengaruh Model Pembelajaran Berbasis Masalah Teknik Polya terhadap Hasil Belajar dan Aktivitas Mahasiswa pada Mata Kuliah Fisika Matematika II. *Jurnal Ikatan Alumni Fisika Universitas Negeri Medan*, *4*(2), 1–26.

Tekedere, H., & Göker, H. (2016). Examining the Effectiveness of Augmented Reality Applications in Education : A Meta-Analysis. *International Journal Of Environmental & Science Education*, *11*(16), 9469–9481.

Todd, S. (2014). Between Body and Spirit: The Liminality of Pedagogical Relationships. *Journal of Phylosophy of Education*, *48*(2), 56–72. https://doi.org/10.1002/9781118944707.ch4

Trianggono, M. M. (2017). Analisis Kausalitas Pemahaman Konsep Dengan Kemampuan Berpikir Kreatif Siswa Pada Pemecahan Masalah Fisika. *Jurnal Pendidikan Fisika Dan Keilmuan (JPFK)*, *3*(1), 1. https://doi.org/10.25273/jpfk.v3i1.874

Ünal, F., Tarhan, S., & Köksal, E. Ç. (2018). Gender and Perception of Profession. *Journal of Education and Training Studies*, *6*(3a), 35. https://doi.org/10.11114/jets.v6i3a.3156

Vebrianto, R., & Syafaren, A. (2018). BIOMIND Module : A Quality Teaching and Assessment Media. *Journal of Educational Science and Technology (EST)*, *4*(1), 62–73.

Wambugu, P. W., & Changeiywo, J. M. (2008). Effects of mastery learning approach on secondary school students' physics achievement. *Eurasia Journal of Mathematics, Science and Technology Education*, *4*(3), 293–302. https://doi.org/10.12973/ejmste/75352

Wartono, W., Hudha, M. N., & Batlolona, J. R. (2018). How are the physics critical thinking skills of the students taught by using inquiry-discovery through empirical and theorethical overview? *Eurasia Journal of Mathematics, Science and Technology Education*, *14*(2), 691–697. https://doi.org/10.12973/ejmste/80632

Willits, F. K., Theodori, G. L., & Luloff, A. E. (2016). Another Look at Likert Scales. *Journal of Rural Social Sciences*, *31*(3), 126–139. https://doi.org/10.1017/S0036930615000770

Winarsunu, T. (2017). *Statistik dalam Penelitian Psikologi dan Pendidikan* (Pertama). Universitas Muhammadiyah Malang.

Woerkom, M. Van, Mostert, K., Els, C., Bakker, A. B., Beer, D., & Jr, S. R. (2016). Strengths use and deficit correction in organizations : development and validation of a questionnaire. *European Journal of Work and Organizational Psychology*, *25*(6), 960–975. https://doi.org/10.1080/1359432X.2016.1193010

Wu, H., & Leung, S. O. (2017). Can Likert Scales be Treated as Interval Scales?—A Simulation Study. *Journal of Social Service Research*, *43*(4), 527–532. https://doi.org/10.1080/01488376.2017.1329775

Yunita, W., & Maisarah, I. (2020). Students ' Perception On Learning Language At The Graduate Program Of English Education Amids The Covid 19 Pandemic. *Journal of Linguistics and Language Teaching*, *2069*(6), 107–120.

Zhu, A., Srivastava, A., Ibrahim, J. G., Patro, R., & Love, M. I. (2019). Nonparametric expression analysis using inferential replicate counts. *Nucleic Acids Research*, *47*(18), e105. https://doi.org/10.1093/nar/gkz622