P-ISSN: 2580-5525 | E-ISSN: 2580-5533
https://journal.uny.ac.id/index.php/jk/

Mathematics for physics e-module: Students' interest in physics education based on gender

Astalini, Darmaji , Dwi Agus Kurniawan, and Riska Fitriani
Physics Education Study Program, Jambi University, Jambi, Indonesia
Jl. Jambi - Muara Bulian No.KM. 15 Kabupaten Muaro Jambi, Jambi
Email: astalinizakir@unja.ac.id*

Abstract: This study aimed to determine the differences in students' interests in physics education at the University of Jambi towards using e-modules in physics-mathematics learning by observing the existence of gender differences. This study used a quantitative research method. The instrument used was student interest questionnaires. Furthermore, the data were analyzed using descriptive statistics and inferential statistics. The subjects of the study were 91 physics education students. The results of this study show that there are differences in students' interests in the use of the physics-mathematical e-module in learning, namely the average student interest in the physics-mathematical e-module which female students best own, namely in class A with an average of 37.94, slightly higher than the average interest of male in class C, which is 35, 20. Differences in interests are caused by internal factors of these students, namely diligent and consistent behavior in learning. Female students are more diligent in studying than male students, so female students have a higher interest in learning than males.

Keywords: *e-module, gender, interests*

How to cite (APA 7th Style): Astalini, A., Darmaji, D., Kurniawan, D., & Fitriani, R. (2022). Mathematics and physics e-module: Students' interest in physics education based on gender. *Jurnal Kependidikan*, *6*(1). doi:https://doi.org/10.21831/jk.v6i1.43541

INTRODUCTION

Technology that continues to develop has had a great impact on improving the quality of education (Liao & Kachalia, 2015; Putra & Sujarwanto, 2017; Dhina, Hadisoebroto, & Mubaroq, 2019). Improving the quality of education in the learning process can be done by providing the best innovations (McClelland *et al*., 2014; Sukmana & Suartama, 2019; Sukowati, Mustadi, Putro, & Pradewi, 2020). The innovations provided can be in the form of interactive learning media (Nurrita, 2019; Sopacua, Fadli, & Rochmat, 2020; Wati, Ridho, & Sasmita, 2021). One of the interactive learning media is an electronic module (e-module).

Electronic modules (e-modules) are learning modules that can be accessed and used electronically (Hafsah, Rohendi, & Purnawan, 2016; Munthe, Silaban, & Muchtar, 2019; Triwahyuningtyas, Ningtyas, & Rahayu, 2020). The use of e-modules has helped students in the learning process because they can be easily accessed via laptops and smartphones, thereby reducing the use of paper in learning (Dhina *et al*., 2019). One of the lectures that require an e-module is Mathematics for Physics.

Mathematics for Physics contains material on the basics of mathematical analysis that is useful in solving physics problems (Wahyuni, 2012; Ayu, Pratiwi & Muhardjito, 2017; Gunada, Rokhmat, Hikmawati, & Kesipudin, 2017). Most students have difficulty understanding mathematics physics learning so it is considered a difficult subject

(Ellianawati, Rusdiana, Sabandar, & Rusli, 2014; Natalia, Handhika, & Huriawati, 2017; Turşucu, Spandaw, Flipse, Jongbloed, & de Vries, 2018). That matters because, in learning mathematics physics too many mathematical calculations are quite complicated and not all students can understand them well (Marisda & Handayani, 2020). The use of e-modules in mathematics physics learning is considered the right solution to assist students in increasing their understanding of Mathematics for Physics concepts so that they can solve various physics problems. Therefore, it is necessary to study how students are interested in the use of e-modules in learning mathematics and physics.

Interest in learning is very important in the learning process because interest is one of the internal factors that influence learning. Interest in learning according to Qomariah and Sudiarditha (2016) is a feeling of liking or interest of students towards lessons to encourage them to learn and master the knowledge and experience shown through participation and activity in seeking that knowledge and experience. In learning, when students are not interested in learning, it will create a learning atmosphere that is not conducive. Therefore, interest in learning will encourage students to learn better with their interest or liking for lessons so that they have the initiative to continue learning and feel very useful for them, especially with the use of e-modules in learning.

Various studies have shown that the use of e-modules in learning can attract interest in student learning. Such as the research conducted by Irkhamni, Izza, Salsabila, and Hidayah (2021) regarding the use of e-modules as an effort to strengthen students' interest in learning mathematics. The results show that using e-modules in Mathematics can strengthen students' interest in learning in distance learning. Furthermore, research was conducted by Waliulu and Palembang (2022) on the application of flipbook-based e-module learning tools to student learning interests. The results showed that there was an increase in student interest in learning and the ease of the material delivered was more understandable for students in communication theory lectures. Unfortunately, the two studies did not examine the existence of gender differences and have not carried out the learning of mathematics and physics. Therefore in this study, the researcher intends to complement previous studies by examining more specifically and providing the latest innovations in the research carried out so that new findings are produced that can contribute to improving the quality of education in the learning process.

The main objective of this study is to examine the differences in student interest in the use of electronic modules in learning mathematics and physics. Although there have been several researchers who have conducted research related to students towards the use of electronic modules, very few researchers report research on interest students in the use of electronic modules which are reviewed based on gender differences, especially in learning mathematics and physics. The results of this study are certainly very useful in increasing the effectiveness of the learning process and knowing the interest of students in conducting independent learning.

METHOD

This research useD a quantitative research type. Quantitative data from this study were obtained through a data collection instrument in the form of a student interest questionnaire. The type of questionnaire used is a closed questionnaire so that respondents can choose a direct answer from the options provided (Fitriani, Kholilah, *et al*., 2021; Fitriani, Putri, Rini,

Sehab, & Pratiwi, 2021; Sultoni, Gunawan, & Sari, 2018). The number of student interest questionnaire statements is 10 items using a Likert scale of 1 to 4. The questionnaire that has been provided will be given to sampling members from the research population.

The population in this study amounted to 91 students of physics education FKIP Jambi University class of 2019 from 3 different classes, namely class A as many as 31 people (17 female and 15 male), class B as many as 31 people (16 female and 18 male), and class C as many as 29 people (15 female and 14 male). The entire population in the study was used as a sample by the researcher determined by the total sampling technique. Total sampling is a sampling technique where the number of samples used is the same as the total population (Simanjuntak, Rohiat, & Elvinawati, 2017; Syafriyeti, Atnur, & Srimulat, 2020). The reason the researcher uses this technique is that the population is less than 100, which is only 91 students, so the entire population should be used as a research sample (Pakpahan, Picauly, & Mahayasa, 2015; Wahyuni & Setyowati, 2020). The total sampling technique is considered the most accurate because it can reduce the influence of sample error, this is because the more samples used, the smaller the error rate (Usman & Akbar, 2009; Putri, Maison, & Darmaji, 2018; Ruswati, 2018).

Student interest questionnaires were given to all physics education students, at FKIP Jambi University via the google form link on Monday, May 3, 2021. The categorization of the interest questionnaire used was guided by Table 1.

Table 1. Interest questionnaire category in physics-mathematics e-module

Number	interval	Category
1	12.0 – 21.0	Not very good
2	21.1– 30.0	not good
3	30.1 – 39.0	good
4	39.1 – 48.0	very good

Table 1 shows that the categories of student interest in the physics-mathematics e-module are categorized into 4 categories, namely very bad, not good, good, and very good. The student interest questionnaire is presented by: I paid close attention to the material presented by the lecturer during the Mathematics physics course, I read math physics books, I also study math physics when I'm at home, I try to get the best grades in math physics class, I can work with friends when studying math physics, I don't like math physics because the material is difficult to understand, I immediately finished the physics course assignment given by the lecturer, If the teacher asks a question in class, I try to answer well, I will ask if there is material in Mathematics for Physics that I do not understand, and I am always present on time when mathematics physics class begins.

Questionnaire data was then analyzed using two data analysis techniques, namely descriptive and inferential statistics. Descriptive statistics are carried out by finding the mean, frequency, percentage, minimum, and maximum values. While inferential statistics by conducting 2 tests, namely the assumption test (normality test & homogeneity test), and hypothesis testing to then draw a conclusion (Agung, 2014; Diantari, Suniasih, & Ardana, 2017). In this study, data analysis was carried out with the help of IBM SPSS 23.

The normality test aims to determine whether the data is normally distributed or not, while the homogeneity test is to determine whether the sample comes from the same

population or not (Nurhadisah, Halim, & Khaldun, 2014; Saidaturrahmi, Gani, & Hasan, 2019). The provisions of the normality test and homogeneity test are if the significance value is less than 0.05 then the data is not normally distributed and not homogeneous, whereas if the significance value is more than 0.05 then the data is normally distributed and homogeneous (Rachmah, Sunaryanto, & Yuniastuti, 2019; Nurhadisah *et al*., 2014; Sulman, Adlim, & Ilyas, 2015). After the data has normality and homogeneity, the researcher can proceed with hypothesis testing, namely the ANOVA test to determine the difference in the average interests of male and female students from 3 different classes. If the significance value of the ANOVA test is less than 0.05, then Ha is accepted, meaning that there is a difference in the average student interest (Listyarini, As'ari, & Furaidah, 2018).

FINDING AND DISCUSSION

Interest questionnaires that have been collected will be analyzed using descriptive statistical tests first with results that can be seen in Table 2. Table 2 shows that the dominant male students have an interest in the very good category, namely 52.9%, the same as female students who have an interest in the very good category, which is 58.2%. Females are more dominant in providing excellent interest than males. The average interest score of male students is 34.86, lower than the average female student interest score of 37.94. The minimum score given to the interest of male students is 22.00 and 23.00 for female students. Meanwhile, the maximum score given to male students is 43.00, and 48.00 for female students. Furthermore, the results of descriptive statistical tests for class B interest questionnaires can be seen in Table 3.

Table 2. Description of class a students' interest in mathematics for physics e-module

Gender	Category	f	%	Mean	Min.	Max.
Male	Not very good	0	0	34.86	22.00	43.00
	Not good	2	11.8			
	B ok	6	35.3			
	Very good	9	52.9			
Female	Not very good	0	0	37.94	23.00	48.00
	Not good	0	10.5			
	B ok	6	31.3			
	Very good	9	58.2			

Table 3. Description of class B students' interest in mathematics for physics e-module

Gender	Category	f	%	Mean	Min.	Max.
Male	Not very good	0	0	34,20	23.00	42.00
	Not good	2	18.75			
	B ok	4	43.75			
	Very good	8	37.50			
Female	Not very good	0	0	36.71	23.00	47,00
	Not good	3	12.2			
	B ok	7	31.6			
	Very good	6	56.2			

Table 3 shows that the dominant male students have an interest in the good category, namely 43.75%, while the female students have an interest in the very good category, namely 56.2%. Females are more dominant in providing excellent interest than males. The average interest score of male students is 34.20, lower than the average interest score of female students, which is 36.71. The minimum score given to the interest of male and female students is 23.00. Meanwhile, the maximum score given is 42.00 for males and 47.00 for females. The results of the descriptive statistical test of class C interest questionnaires can be seen in Table 4.

Table 4. Description of class C students' interest in mathematics for physics e-module

Gender	Category	f	%	Mean	Min.	Max.
Male	Not very good	0	0	35,20	23.00	42.00
	Not good	2	13.3			
	Good	6	40.0			
	Very good	7	46.7			
Female	Not very good	0	0	37.07	23.00	48.00
	Not good	3	14.3			
	Good	6	35.7			
	Very good	5	50.0			

Table 4 shows that the dominant male student has an interest in the good category, namely 46.7%, while the female student has an interest in the very good category, which is 50.0%. Females are more dominant in providing excellent interest than males. The average interest score of male students is 35.20, lower than the average interest score of female students, which is 37.07. The minimum score given to the interest of male and female students is 23.00. Meanwhile, the maximum score given to male students is 42.00, and 48.00 for female students.

Next is the assumption test which consists of two tests, namely the normality test and the homogeneity test as a condition that must be met before testing the hypothesis using the ANOVA test. The results of the normality test can be seen in Table 5.

Table 5. The output results of the normality test of students' interests in the e-module of mathematics for physics

Gender	Class	Kolmogorov-Smirnov [a]		
		Statistics	N	Sig.
Female	Class A	.197	17	.145
	Class B	.163	14	.200
	Class C	.226	15	.051
Male	Class A	.205	15	.114
	Class B	.147	16	.200
	Class C	.196	14	.149

Table 5 shows that data on the interest of male and female students in grades A, B and C obtained a significance score of more than 0.05. So it can be concluded that all student interest data in each class and on each gender is normal. After the data is normally distributed, the next step is to perform a homogeneity test to see the homogeneity of the data. The results of the SPSS output from the homogeneity test can be seen in Table 6.

Table 6. Output results of student interest homogeneity test in e-module

Levene stats	df1	df2	Sig.	Gender
2.766	2	43	0.073	Female
.298	2	42	0.744	Male

Table 6 shows that the acquisition of the significance of data on the interest of male and female students is more than 0.05. So it can be concluded that the student's interest data are all homogeneous. Hypothesis testing can be done if the data is normal and homogeneous. The hypothesis test used in this research is to use the ANOVA test to see how the interests of female students differ from those of male students. The results of the ANOVA test using SPSS 23 can be seen in Table 7.

Table 7. ANOVA test results questionnaire student interest in mathematics for physics e-module

Gender		df	F	Sig.
Female	Between Groups	2	4.574	0.016
	Within Groups	43		
	Total	45		
Male	Between Groups	2	4.017	0.025
	Within Groups	42		
	Total	44		

Table 7 shows that the significance value obtained by female students is 0.016 and for male students, it is 0.025 which is smaller than the significance value used, which is 0.05, so the average interest of female students is 0.05, and the interest of male students from all three grades in the Mathematics for Physics e-module is significantly different. The basis for decision making on the ANOVA test is if the significance value is less than 0.05 then there is a difference in the average interest, while if the significance value is greater than 0.05, there is no difference in the average interest.

The novelty of this research is that there is a gender review between males and females to see students' interest in using the physics-mathematical e-module. Gender differences can affect a person's level of ability in overcoming a math problem (Musriliani & Anshari, 2015). In general, gender is defined as the biological difference between females and males in terms of interest or interest in something (Rahmawaty, 2015).

Based on the descriptive statistical tests in Table 2, 3, and 4, it is known that the percentage of male students' interest in class A is 52.9% in the very good category, for class B is 43.75% in the good category, and for class, B is 43.75% in the good category. class C by 46.7% with a very good category. Based on the three classes, the highest interest of male students is owned by class A, which is 52.9%. Furthermore, the percentage of interest of female students in class A is 58.2% in the very good category, for class B 56.2% in the very good category, and for class C 50.0% in the very good category. Based on the three classes, the highest interest for female students is owned by class A, which is 58.2%.

As for the average student interest, the female gender in class A is 37.94, in class B is 36.71, and in class C is 37.07. Overall, female students in class A have higher interests than students in class B and class C. Furthermore, the average interest of male students in class A

is 34.86, in class B it is 34.20, and in class C by 35.20. Overall, the interest of male students in class C is higher than that of male students in class A and class B. In this case, if we look at the two genders, then female students in class A are more dominant in having higher average interests. which is 37.94 compared to class B and C and compared to the interest of males in class A, class B, and class C. This can happen because a female in class A gives more interest in the very good category with several female students as many as 15 people.

Based on Table 5 regarding the normality test, it appears that female students in class A, class B, and class C obtained a significance value greater than 0.05. Based on the basis for deciding on the normality test, it was concluded that the data from the interest questionnaire had a normal distribution. The same is true for male students in class A, class B, and class C, who get a significance value of less than 0.05. So it is also concluded that the data from the interest questionnaire has a normal distribution. Furthermore, in Table 6 regarding the homogeneity test, the significance value for female students and male students in class A, class B, and class C obtained a significance value greater than 0.05. Based on the decision-making basis for the homogeneity test, it is concluded that the data from the interest questionnaire is homogeneous or the same. After obtaining normal and homogeneous data, it is possible to test the hypothesis, namely the ANOVA test.

The ANOVA test that has been carried out using the SPSS results for female students is a significance value of 0.016 less than 0.05, so it can be concluded that female students between classes A, B, and C have a significant difference in average interest in the use of email. mathematics physics module in learning. Meanwhile, for male students, a significance value of 0.025 is also smaller than 0.05 so there is also an average significant difference between the interests of male students in classes A, B, and C.

Gender differences between males and females can affect the interests that a person has. Differences in a person's interests can be caused by differences in the way each individual thinks and the basic knowledge they have in giving their interest in something from the point of view of both males and females (Aprillianti, 2017; Warliah, 2017; Khanifah & Adityawarman, 2020). The male gender generally has an indifferent nature with a lower interest in learning than a female who is more sympathetic, and sensitive/sensitive to something (Musbah, Cowtown, & Tyfa, 2016; Rindayanti & Budiarto, 2017; Sofha & Utomo, 2018). In addition, differences in interest are caused by internal factors of these students, namely diligent and consistent behavior in learning. Female students are more diligent in studying than male students so female students have a higher interest in learning than males (Sayidani, Irianto, & Fuady, 2016).

High interest in learning will determine the process and high learning outcomes as well. The success of the learning process can be seen from the achievement of good learning outcomes by the learning objectives that have been set (Pantic & Wubbels, 2012; Jayul & Irwanto, 2020). Achieving good learning outcomes requires the involvement and active role of students in the learning process so that the quality of learning will increase (Kazempour, 2014; Puspita, Supriadi, & Pangestika, 2018). Improving the quality of the learning process cannot be separated from the role of interactive e-modules (Fauziyah & Triyono, 2020; Herawati & Muhtadi, 2018; Kuswanto, 2019) so that students do not feel bored and can carry out the learning process independently, especially in learning mathematics and physics.

Mathematics physics learning using e-modules can make learning run more effectively and can help students to improve their ability to solve physics problems mathematically and

do independent learning. One of the characteristics of effective learning activities is learning activities that are marked by the interest and attention of students in learning (Sholehah, Handayani, & Prasetyo, 2018). Someone who has a high interest in learning will try harder to follow the lesson well to get the best results. According to Darmadi (2017), the factors that influence the emergence of interest in learning are the lesson will be interesting for students if there is a relationship between the lesson and real-life, the opportunity given by the teacher to students to play an active role in the teaching and learning process, and assistance provided by teachers to their students in achieving certain goals such as the media used in learning to attract students' interest.

The use of media in mathematics physics learning in the form of e-modules can make students more enthusiastic and interested in continuing to learn and understand mathematics physics learning materials that can provide long-term benefits later, especially for students who have aspirations to become educators must have and master basic skills in solving mathematical problems, be it physics or other problems as a basis for mastering other sciences. The results obtained from this study are expected to help further researchers in providing updates in the future and can be used as a reference and source of knowledge for researchers or readers. The variables used in this study can also be developed by adding other variables as innovations for further research. It is recommended for educators to continue to develop learning media used in the teaching and learning process by evaluating the interests or interests of each student regarding the learning media used to improve the quality of education in Indonesia.

CONCLUSION

Based on the description of the results and the discussion that has been described to answer research questions about student interest in the physics-mathematical e-module which is reviewed based on gender differences, the conclusions obtained are from the ANOVA test it is known that the interest of female students obtained a significance value of 0.016 and the significance value of male students was 0.025 which was smaller than 0.05, so that there was an average significant difference between the interests of male students and female students in grades A, B, and C. Female students class A has a higher interest than the interest of female students in class B and class C, which is 37.94. Furthermore, for male students, the interest of class C was higher than that of class A and class B, which was 35.20. Overall, it was concluded that female students in class A had a higher average interest rate than classes B and C, compared to male students in class A, class B, and class C. This could be due to internal factors of the student, namely diligent and consistent behavior in learning. Female students are more diligent in studying than male students so female students have a higher interest in learning than males. It is recommended that researchers who wish to conduct similar research can add reviews from the other side not only based on gender, for example, but also based on culture and religion.

REFERENCES

Agung, A. A. G. (2014). *Metodologi penelitian pendidikan*. Media Publishing.

Aprillianti, E. (2017). Persepsi mahasiswa akuntansi terhadap praktik manajemen laba dari perspektif jenis kelamin. *Jurnal Bisnis Dan Akuntansi*, *10*(8), 37-56.

Ayu, H. D., Pratiwi, H., K, S., & Muhardjito. (2017). Pengembangan e-scaffolding untuk meningkatkan kualitas proses dan hasil belajar. *Jurnal Kependidikan*, *1*(2), 334-347. Retrieved from https://doi.org/10.21831/jk.v1i2.

Darmadi. (2017). *Pengembangan model dan metode pembelajaran dalam dinamika belajar siswa*. Deepublish.

Dhina, M. A., Hadisoebroto, G., & Mubaroq, S. R. (2019). Development of e-practicum module for pharmacy physics learning. *Momentum: Physics Education Journal*, *3*(2), 95-102. https://doi.org/10.21067/mpej.v3i2.3763.

Diantari, K. A., Suniasih, N. W., & Ardana, I. K. (2017). Pengaruh model pembelajaran time token berbantuan media question card terhadap kompetensi pengetahuan IPA kelas IV SDN Gugus Dewi Sartika Kecamatan Denpasar Selatan. *Journal of Education Technology*, *1*(2), 198-203. https://doi.org/10.23887/jet.v1i3.12505.

Ellianawati, Rusdiana, D., Sabandar, J., & Rusli, A. (2014). Capaian level berpikir reflektif mahasiswa program remidial perkuliahan fisika matematika 1 berbasis cognitive apprenticeship instruction. *Jurnal Pendidikan Fisika Indonesia*, *10*(2), 150-157. https://doi.org/10.15294/jpfi.v10i2.3450.

Ellianawati, & Wahyuni, S. (2012). Pengembangan Bahan Ajar Fisika Matematika Berbasis Self Regulated Learning Sebagai upaya Peningkatan Kemampuan Belajar Mandiri. *Jurnal Pendidikan Fisika Indonesia*, *8*(1), 33–40. https://doi.org/10.15294/jpfi.v8i1.1992

Fauziyah, S., & Triyono, M. B. (2020). Pembelajaran teknologi informasi dan komunikasi ditinjau dari minat belajar. *Jurnal Kependidikan*, *4*(2), 256-268.

Fitriani, R., Kholilah, K., Rini, E. F. S., Pratiwi, M. R., Safitri, H., Syiarah, H., & Ramadhanti, A. (2021). Analisis karakter kerja keras siswa kelas XI IPA di SMAN 1 Kota Jambi. *PENDIPA Journal of Science Education*, *5*(2), 188-194. https://doi.org/10.33369/pendipa.5.2.188-194.

Fitriani, R., Putri, W. A., Rini, E. F. S., Sehab, N. H., & Pratiwi, M. R. (2021). Pengaruh Kerja Keras Terhadap Hasil Belajar Siswa. *SAP (Susunan Artikel Pendidikan)*, *5*(3), 213–220.

Gunada, I. W., Rokhmat, J., Hikmawati, H., & Kesipudin, K. (2017). Pengembangan bahan ajar kompilasi fisika matematika II pokok bahasan persamaaan diferensial untuk meningkatkan penalaran matematis. *Jurnal Pendidikan Fisika Dan Teknologi*, *3*(2), 216-227. https://doi.org/10.29303/jpft.v3i2.414.

Hafsah, N. R. J., Rohendi, D., & Purnawan, P. (2016). Penerapan media pembelajaran modul elektronik untuk meningkatkan hasil belajar siswa pada mata pelajaran teknologi mekanik. *Journal of Mechanical Engineering Education*, *3*(1), 106-112. https://doi.org/10.17509/jmee.v3i1.3200

Herawati, N. S., & Muhtadi, A. (2018). Pengembangan modul elektronik (e-modul) interaktif pada mata pelajaran kimia kelas XI SMA. *Jurnal Inovasi Teknologi Pendidikan*, *5*(2), 180-191. https://doi.org/10.21831/jitp.v5i2.15424.

Irkhamni, I., Izza, A. Z., Salsabila, W. T., & Hidayah, N. (2021). Pemanfaatan canva sebagai e-modul pembelajaran matematika terhadap minat belajar peserta didik. *Konferensi Ilmiah Pendidikan*, *1*(1), 127-134.

Jayul, A., & Irwanto, E. (2020). Model pembelajaran daring sebagai alternatif proses kegiatan belajar pendidikan jasmani di tengah pandemi Covid-19. *Jurnal Pendidikan Kesehatan Rekreasi*, *6*(2), 190-199. https://ojs.mahadewa.ac.id/index.php/jpkr/issue/view/53.

Kazempour, M. (2014). The interrelationship of science experiences, beliefs, attitudes, and self-efficacy: A case study of a pre-service teacher with positive science attitude and high science teaching self-efficacy. *European Journal of Science and Mathematics Education*, *1*(3), 106-124. https://doi.org/10.30935/scimath/9391.

Khanifah, N., & Adityawarman. (2020). Perbedaan persepsi etis mahasiswa akuntansi terhadap praktik earnings management. *Jurnal Akuntansi Multiparadigma*, *9*(3), 1-11. https://doi.org/10.18202/jamal.2010.04.7083.

Kuswanto, J. (2019). Pengembangan modul interaktif pada mata pelajaran IPA terpadu kelas VIII. *Jurnal Media Infotama*, *15*(2), 51-56. https://doi.org/10.37676/jmi.v15i2.866.

Liao, J. M., & Kachalia, A. (2015). Providing educational content and context for training the next generation of physicians in quality improvement. *Academic Medicine*, *90*(9), 1241-1245. https://journals.lww.com/academicmedicine/toc/2015/09000.

Listyarini, D. W., As'ari, A. R., & Furaidah. (2018). Pengaruh model teams games tournament berbantuan permainan halma terhadap minat dan hasil belajar pada materi bunyi siswa kelas IV sekolah dasar. *Jurnal Pendidikan: Teori, Penelitian, Dan Pengembangan*, *3*(5), 538-543. http://journal.um.ac.id/index.php/jptpp/ article/view/10930/5283.

Marisda, D. H., & Handayani, Y. (2020). Model pembelajaran kolaboratif berbasis tugas sebagai alternatif pembelajaran fisika matematika. *Prosiding Seminar Nasional Fisika PPs Universitas Negeri Makassar*, *2*, 9-12. https://ojs.unm.ac.id/semnasfisika/article/view/12858.

McClelland, M., Cameron, C. E., Duncan, R., Bowles, R. P., Acock, A. C., Miao, A., & Pratt, M. E. (2014). Predictors of early growth in academic achievement: The head-toesknees-shoulders task. *Front. Psychol.*, *5*, 1-14. https://doi.org/10.3389/fpsyg.2014.00599.

Munthe, E. A., Silaban, S., & Muchtar, Z. (2019). Discovery learning based e-module on protein material development. *Proceedings of the 4th Annual International Seminar on Transformative Education and Educational Leadership (AISTEEL 2019)* (pp. 710-713). https://www.atlantis-press.com/proceedings/aisteel-19/125928461,

Musbah, A., Cowtown, C. J., & Tyfa, D. (2016). The role of individual variables, organizational variables and moral intensity dimensions in Libyan management accountan's ethical decision making. *Journal of Business Ethics*, *134*(3), 335-358. https://link.springer.com/article/10.1007/s10551-014-2421-3.

Musriliani, C., & Anshari, B. I. (2015). Pengaruh pembelajaran contextual teaching learning (CTL) terhadap kemampuan koneksi matematis siswa SMP ditinjau dari gender. *Jurnal Didaktik Matematika*, *2*(2), 49-58. https://doi.org/10.24815/dm.v2i2.2814.

Natalia, D., Handhika, J., & Huriawati, F. (2017). Pengembangan instrumen tes diagnosis konsep IPA fisika. *Momentum: Physics Education Journal*, *1*(2), 103. https://doi.org/10.21067/mpej.v1i2.1966.

Nurhadisah, N., Halim, A., & Khaldun, I. (2014). Pembelajaran kooperatif tipe numbered head together dengan pendekatan inkuiri untuk meningkatkan penguasaan konsep kalor siswa SMA. *Jurnal Pendidikan Sains Indonesia*, *2*(1), 54-64.

Nurrita, T. (2019). Pengembangan media pembelajaran untuk meningkatkan hasil belajar siswa. *Journal of Physics: Conference Series*, *1321*(2), 171-187. https://doi.org/10.1088/1742-6596/1321/2/022099.

Pakpahan, R. S., Picauly, I., & Mahayasa, I. N. W. (2015). Cemaran mikroba Escherichia coli dan total bakteri koliform pada air minum isi ulang. *Kesmas: National Public Health Journal*, *9*(4), 300-307. https://doi.org/10.21109/kesmas.v9i4.733.

Pantic, & Wubbels, T. (2012). Competence-based teacher eduation: A change from didaktik to curriculum culture. *Journal of Curriculum Studies*, *44*, 61-87.

Puspita, L., Supriadi, N., & Pangestika, A. D. (2018). Pengaruh model pembelajaran creative problem solving (CPS) disertai teknik diagram vee terhadap keterampilan berpikir kreatif peserta didik materi fungi kelas X Man 2 Bandar Lampung. *Biosfer: Jurnal Tadris Biologi*, *9*(1), 01. https://doi.org/10.24042/biosf.v9i1.2871.

Putra, I. A., & Sujarwanto, E. (2017). Analisis keterampilan proses sains peserta didik melalui bahan ajar multimedia interaktif alat ukur dan pengukuran dengan pendekatan behavioristik. *Momentum: Physics Education Journal*, *1*(2), 91-102. https://doi.org/10.21067/mpej.v1i2.2013.

Putri, A. R., Maison, & Darmaji. (2018). Kerjasama dan kekompakan siswa dalam pembelajaran fisika di kelas XII MIPA SMAN 3 Kota Jambi. *Jurnal Pendidikan Fisika*, *3*(2), 32-40.

Qomariah, S. S., & Sudiarditha, I. K. R. (2016). Kualitas media pembelajaran, minat belajar, dan hasil belajar siswa: studi pada mata pelajaran ekonomi di kelas X IIS SMA Negeri 12 Jakarta. *Jurnal Pendidikan Ekonomi Dan Bisnis (JPEB*), *4*(1), 33-47.

Rachmah, L. L., Sunaryanto, & Yuniastuti. (2019). Pengaruh lingkungan keluarga dan fasilitas keluarga terhadap motivasi belajar dan hasil belajar. *Journal of Chemical Information and Modeling*, *53*(9), 1689-1699.

Rahmawaty, A. (2015). Harmoni dalam keluarga perempuan karir: Upaya mewujudkan kesetaraan dan keadilan gender dalam keluarga. *Palastren Jurnal Studi Gender*, *8*(1), 1-34. https://dx.doi.org/10.21043/palastren.v8i1

Rindayanti, R., & Budiarto, D. S. (2017). Hubungan antara Love of Money, Machiavellian dengan persepsi etis: Analisis berdasarkan perspektif gender. *Akuntabilitas*, *10*(2), 261-272. https://doi.org/10.15408/akt.v10i2.6137.

Ruswati, I. (2018). Faktor eksternal dan faktor internal terhadap pendidikan Islam Darussalam Cerme Gresik. *JRE: Jurnal Riset Entrepreneurship*, *1*(2), 38-52.

Saidaturrahmi, S., Gani, A., & Hasan, M. (2019). Penerapan lembar kerja peserta didik inkuiri terbimbing terhadap keterampilan proses sains peserta didik. *Jurnal Pendidikan Sains Indonesia*, *7*(1), 1-8. https://doi.org/10.24815/jpsi.v7i1.13554.

Sayidani, A., Irianto, W. S. G., & Fuady, M. J. (2016). Perbandingan prestasi belajar mahasiswa lulusan SMA dan SMK pada Prodi S1 Pendidikan Teknik Informatika Universitas Negeri Malang. *Teknologi Dan Kejuruan: Jurnal Teknologi, Kejuruan Dan Pengajarannya*, *39*(2), 155-162. https://doi.org/http://journal.um.ac.id/index.php/teknologi-kejuruan/issue/view/820.

Sholehah, S. H., Handayani, D. E., & Prasetyo, S. A. (2018). Minat belajar siswa pada mata pelajaran matematika kelas IV SD Negeri Karangroto 04 Semarang. *Mimbar Ilmu*, *23*(3), 237-244. https://doi.org/10.23887/mi.v23i3.16494.

Simanjuntak, N. D. P., Rohiat, S., & Elvinawati. (2017). Hubungan antara sarana laboratorium terhadap keterampilan proses sains siswa kelas XI MIPA 5 di SMA Negeri 3 Kota Bengkulu. *Alotrop Jurnal Pendidikan Dan Ilmu Kimia*, *1*(2), 102-105.

Sofha, D., & Utomo, D. (2018). Keterkaitan religiusitas, gender, lom dan persepsi etika penggelapan pajak. *Jurnal Ilmu Manajemen Dan Akuntansi Terapan (JIMAT)*, *9*(2), 43-61. http://jurnal.stietotalwin.ac.id/index.php/jimat/issue/view/17.

Sopacua, J., Fadli, M. R., & Rochmat, S. (2020). The history learning module integrated character values. *Journal of Education and Learning (EduLearn)*, *14*(3), 463-472. https://doi.org/10.11591/edulearn.v14i3.16139.

Sukmana, A. I. W. I. Y., & Suartama, I. K. (2019). Pengembangan mobile learning berorientasi model pembelajaran flipped classroom pada mata kuliah multimedia. *Journal of Education Technology*, *2*(1), 45. https://doi.org/10.23887/jet.v2i1.13808.

Sukowati, S., Mustadi, A., Putro, A. A. Y., & Pradewi, G. I. (2020). Self-regulation of primary education pre-service teachers. *Journal of Education and Learning (EduLearn)*, *14*(2), 263-271. https://doi.org/10.11591/edulearn.v14i2.13983.

Sulman, S., Adlim, A., & Ilyas, S. (2015). Peningkatan motivasi dan hasil belajar siswa SMP pada materi getaran dan gelombang dengan menggunakan media TIK slide powerpoint dan demonstrasi alat sederhana. *Jurnal Pendidikan Sains Indonesia*, *3*(2), 122-130.

Sultoni, S., Gunawan, I., & Sari, D. N. (2018). Pengaruh etika profesional terhadap pembentukan karakter mahasiswa. *Jurnal Administrasi Dan Manajemen Pendidikan*, *1*(3), 279-283. https://doi.org/10.17977/um027v1i32018p279.

Syafriyeti, R., Atnur, W. N., & Srimulat, F. E. (2020). Persepsi mahasiswa terhadap modul berorientasi kkni untuk penguatan scientific approach pada mata kuliah pengetahuan lingkungan. *Jurnal Edu-Bio: Education and Biology*, *2*(1), 20-26. https://ejurnal.univalabuhanbatu.ac.id/index.php/edu-bio/article/view/138.

Triwahyuningtyas, D., Ningtyas, A. S., & Rahayu, S. (2020). The problem-based learning e-module of planes using kvisoft flipbook maker for elementary school students. *Jurnal Prima Edukasia*, *8*(2), 199-208. https://doi.org/10.21831/jpe.v8i2.34446.

Turşucu, S., Spandaw, J., Flipse, S., Jongbloed, G., & de Vries, M. J. (2018). Teachers' beliefs systems about improving transfer of algebraic skills from mathematics into physics in senior pre-university education. *International Journal of Science Education*, *40*(12), 1493-1519. https://doi.org/10.1080/09500693.2018.1486520.

Usman,H., & Akbar, P. S. (2009). *Metode penelitian sosial*. Bumi Aksara.

Wahyuni, S., & Setyowati, R. (2020). Gambaran stress mahasiswa tingkat akhir dalam penyusunan KTI di tengah wabah covid 19. *Jurnal AKPER YPIB Majalengka*, *6*(12), 1-14. https://ejournal.akperypib.ac.id/category/jurnal-vol-vi/nomor-12/.

Waliulu, Y. S., & Palembang, C. F. (2022). Penerapan perangkat pembelajaran e-modul berbasis flipbook teori komunikasi terhadap minat belajar mahasiswa. *Aksiologi: Jurnal Pendidikan Dan Ilmu Sosia*, *2*(2), 2747-2752.

Warliah. (2017). Pendidikan berbasis gender awareness: Strategi meminimalisir bias gender di pondok pesantren. *Jurnal Islam Nusantara*, *1*(2), 118-130. https://doi.org/10.33852/jurnalin.v1i2.

Wati, M., Ridho, M. H., & Sasmita, F. D. (2021). Pengembangan materi ajar fisika bermuatan authentic learning pada pokok bahasan gerak melingkar. *Jurnal Kependidikan*, *5*(2), 178-193.