The Relationship Between Religiosity and Student Learning Achievement in Chemistry

Nurul Amaliah Nasution*, Ayi Darmana
Medan State University
*Corresponding Author: nurulamalianst99@gmail.com

Abstract: To determine the relationship between religiosity and learning achievement in chemistry for class XII MIPA students at MAN 1 Medan, to know the relationship between religiosity and learning achievement in chemistry material for female students in class XII MIPA at MAN 1 Medan, to determine the relationship between religiosity and learning achievement in chemistry for male students in class XII MIPA at MAN 1 Medan This research aim to find out relationship between religiosity and students`' chemistry learning achievement, is correlational research that aims to understand the relationship between the independent variable and the dependent variable. This research is quantitative descriptive research, so in collecting data the researcher used a questionnaire method, describing and explaining which dimensions of religiosity are more related to the chemistry learning achievement of class XI MIPA students. In this research, there are two variables, namely one independent variable in the form of students" level of religiosity, and one dependent variable in the form of students" chemistry learning achievement. For further research, correlational research on these two variables must be expanded by adding additional criteria. For example, criteria can be added to the dimension of religiosity. In addition, tools must be created to assess students" chemistry learning achievements.

Introduction

All formal educational institutions in Indonesia have national educational goals that originate from the philosophy of the Indonesian state and nation. A value that is interpreted and believed to be a philosophy that brings Indonesia into national unity. The objectives of national education are stated in Law No. 14 of 2005 explains that the aim of national education is to educate the life of the nation and improve the quality of Indonesian people who are faithful, devout, have noble character, and master science, technology, and art to create a just, prosperous, advanced, and civilized society in accordance with Pancasila and the 1945 State Constitution. The aim of education includes explaining good, noble, appropriate, and beautiful values for life.

Forming a religious attitude is not easy, efforts to form a good religious character require a strong religious commitment. It can be seen and witnessed together, that are still many cases of schoolchildren's delinquency ranging from trivial to criminal in nature, such as the culture of skipping school, cheating, stealing, fights between students, drugs, pornographic action and, pornography. One of the efforts made by the school to shape religiosity is that all students at the

SMP/MTs and SMA/MA levels who are Muslim every Friday wear Muslim uniforms. It is hoped that this regulation will be able to make students develop high levels of religiosity. As a Muslims, students are expected to have good religiosity at school by carrying out religious routines at school, not just obeying the rules.

In line with the statement above, the reality of a person's religiosity is very low. Where the quality of a person's appreciation of religion declines or the dimension of depth and overall basic nature of religion is lost. This is a phenomenon of diversity, which is one of the realities that occurs throughout the journey of mankind.

Chemistry has an important role in human life. Many of the various items used every day involve chemistry in the manufacturing process. The term chemistry itself comes from the Arabic ءايميك (kimiya), which means change in substances, or the Greek χημεία (khemeia), which means the science that studies the composition, structure, and properties of substances or materials from the atomic to molecular scale, as well as changes, or transformations, and interactions in the formation of material. Understanding the properties, interactions between atoms, and macroscopic-level knowledge also cannot be separated from chemistry. This aims to help students explain the characteristics of material and the philosophical content of phenomena that occur in all of Allah SWT's creations.

Chemistry is the science that studies the composition, arrangement, structure, changes and reactions of a substance or material and the energy that accompanies them. Therefore, the development of chemistry plays a significant role in human civilization, especially in the fields of industry, health, food, agriculture, mining, and others. However, chemistry tends to be less popular with students and difficult to understand. Often, the reason why students don't like chemistry and find it difficult to understand is because chemistry is abstract. Related concepts that are the topic of electrochemical cells are: redox reactions, galvanic cells in general, anodes, cathodes, conducting wires, and salt bridges.

Religion and science are very colorful for humans. Both are basic needs of life and human systems. Religion for humans is guidance which becomes a belief for its adherents in accordance with their nature from birth, between religious, holy, moral, right, and special human characteristics. The existence of science for religion functions as confirmation and strengthening of religion for its adherents because science can reveal the universe and all the secrets in it. Islam is a religion that covers all aspects of humanity. Islam is also respected because all the rules are made to ensure the safety of people on this earth in, this world, and in the afterlife. However, there are also a small number who believe that religion is only spiritual and cannot be related to science. These two sciences have their respective fields.

Based on the background above, researchers are interested in conducting research with the title "The Relationship Between Religiosity and Student Learning Achievement in Chemistry".

Methods

This research, entitled the relationship between religiosity and students' chemistry learning achievement, is correlational research that aims to understand the relationship between the independent variable and the dependent variable. This research is quantitative descriptive research, so in collecting data the researcher used a questionnaire method, describing and explaining which dimensions of religiosity are more related to the chemistry learning achievement of class XI MIPA students.
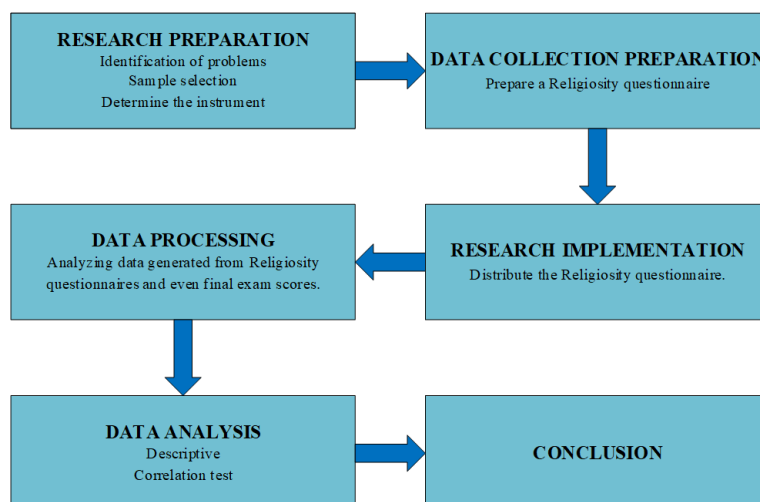
Figure 1. Research flow

Population is the total number consisting of objects or subjects that have certain characteristics and qualities determined by researchers to be studied and then conclusions drawn (Dewi Rosmala, 2021). The population in this study were class XII MIPA students at MAN 1 Medan.

Sample is a portion of the population taken through certain methods that also have certain characteristics. Samples will be taken if researchers are unable to conduct research by taking data directly from the population. This research uses a total sampling technique, where the sample size is the same as the population size (Sugiyono, 2013).

a) In science class 1, there are 14 male students and 15 female students
b) In science class 2, there are 14 male students and 18 female students
c) In science class 3, there are 14 male students and 18 female students
d) In science class 4, there are 12 male students and 23 female students
e) In science class 5, there are 11 male students and 22 female students
f) In science class 6, there are 16 male students and 19 female students
g) In science class 7, there are 13 male students and 22 female students
h) In science class 8, there are 11 male students and 23 female students
i) In science class 9, there are 13 male students and 22 female students
j) In science class 10, there are 14 male students and 22 female students
k) In science class 11, there are 12 male students and 20 female students
l) In science class 12, there are 12 male students and 20 female students

This research uses a correlational approach, which basically means there are two variables, namely the independent variable and the dependent variable. The independent variable (X) in this research is students' religiosity, while the dependent variable (y) is students' learning achievement. The resulting correlation indicates a relationship between student religiosity and student learning achievement in chemistry material.

There are two research variables, namely the independent variable and the dependent variable. The Independent variable is a variable that can influence or be the cause of changes or the emergence of the dependent variable. It can be concluded that the independent variable is a variable that is the cause or has the theoretical possibility of having an impact on other variables.

Results And Discussion

1. Results

In this research, there are two variables, namely one independent variable in the form of students' level of religiosity, and one dependent variable in the form of students' chemistry learning achievement. However, later researchers will also look at whether or not there are differences between achievements based on gender. This research includes a description of data involving the number of students, highest score, lowest score, average (Mean), and standard deviation (SD). Apart from that, data classification for each variable will also be presented to assign categories to each variable. The results of data processing using SPSS version 25 will be explained in the next section.

Tabel 1. Respondent Characteristics (Gender)

Gender	Frequency	Percentage
Man	163	40
Woman	244	60
Total	407	100

The results of the analysis above, you can see the gender distribution of respondents who are class 12 students. It can be seen that there are more female students, namely around 60% of the population or 244 students.

Tabel 2. Religiosity Variable

Data	Results
The number of students	407
The highest score	70
Lowest Value	28
Mean	56.9484
Standard Deviation	7.83039

There were 407 respondents with the highest total score being 70 and the lowest being 28. Data on respondents' religiosity scores was spread out with a mean value of 56.9484 and a standard deviation of 7.83039.

Tabel 3. Conversion of Table

Intervals	Frequency	Percentage	Category
55 – 70	279	68.6	Very good
40 – 54	113	27.8	Good
25 – 39	15	3.6	Pretty good
< 25	0	0.0	Not good
Amount	407	100	

It can be seen that the overall distribution of respondents' religious values is in the good and very good categories.

a) Dimension 1

Tabel 4. Dimension 1

No	Dimensions		Category
	Intervals	Frequency	
1	12 – 15	129	Very good
2	9 – 11	180	Good
3	6 – 8	76	Pretty good
4	<6	22	Not good
Amount		407	

The distribution of respondents' religious scores in dimension 1 of Religious Knowledge as a whole is in the good and very good categories.

b) Dimension 2

Tabel 5. Dimension 2

No	Dimensions		Category
	Intervals	Frequency	
1	8 – 10	59	Very good
2	6 – 7	223	Good
3	4 – 5	110	Pretty good
4	<4	15	Not good
Amount		407	

The distribution of respondents' religious values in dimension 2 of Religious Experience as a whole is in the good and quite good categories.

c) Dimension 3

Tabel 6. Dimension 3

No	Dimensions		Category
	Intervals	Frequency	
1	16 – 20	376	Very good
2	12 – 15	30	Good
3	8 – 11	1	Pretty good
4	<8	0	Not good
Amount		407	

The overall distribution of respondents' religious values in dimension 3 of Ritualism is in the good and very good categories.

d) Dimension 4

Tabel 7. Dimension 4

No	Dimensions		Category
	Intervals	Frequency	
1	5	355	Very good
2	3–4	46	Good
3	2	6	Pretty good
4	1	0	Not good
Amount		407	

Jurnal Teknologi Pendidikan:
Jurnal Penelitian dan Pengembangan Pembelajaran
https://e-journal.undikma.ac.id/index.php/jtp/index

April 2024. Vol. 9 No. 2
E-ISSN: 2656-1417
P-ISSN: 2503-0602
pp. 144-156

The overall distribution of respondents' religious values in dimension 4 Ideology is in the good and very good categories.

e) Dimension 5

Tabel 8. Dimension 5

No	Dimensions		Category
	Intervals	Frequency	
1	16 – 20	351	Very good
2	12 – 15	54	Good
3	8 – 11	2	Pretty good
4	<8	0	Not good
Amount		407	

The distribution of respondents' religious values in dimension 5 of overall appreciation is in the good and very good categories.

Validity test

Tabel 9. X1

X1	Pearson Correlation	$.720^{**}$	$.696^{**}$	$.753^{**}$	1
	Sig. (2-tailed)	.000	.000	.000	
	N	407	407	407	407

**. Correlation is significant at the 0.01 level (2-tailed).

The sig or p value of the X1 correlation and the questions that form it have a value of less than alpha 0.05, meaning that the data obtained is valid and can be used.

Tabel 10. X2

X1	Pearson Correlation	$.720^{**}$	$.696^{**}$	$.753^{**}$	1
	Sig. (2-tailed)	.000	.000	.000	
	N	407	407	407	407

**. Correlation is significant at the 0.01 level (2-tailed).

That the sig or p value of the X2 correlation and the questions that form it have a value of less than alpha 0.05, meaning that the data obtained is valid and can be used.

Tabel 11. X3

X1	Pearson Correlation	$.720^{**}$	$.696^{**}$	$.753^{**}$	1
	Sig. (2-tailed)	.000	.000	.000	
	N	407	407	407	407

**. Correlation is significant at the 0.01 level (2-tailed).

The sig or p value of the X3 correlation and the questions that form it have a value of less than alpha 0.05, meaning that the data obtained is valid and can be used.

X4 (Variable X4 was not tested for validity because it only has 1 forming question)

Tabel 12. X5

X5	Pearson Correlation	$.794^{**}$	$.587^{**}$	$.458^{**}$	$.778^{**}$	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	407	407	407	407	407

**. Correlation is significant at the 0.01 level (2-tailed).

The sig or p value of the X5 correlation and the questions that form it have a value of less than alpha 0.05, meaning that the data obtained is valid and can be used.

Reliability test

The Cronbach's Alpha value from the test is 0.722, thus it can be concluded that all variables are reliable and can be used for the next test.

Tabel 13. Reliability Test

Reliability Statistics

Cronbach's Alpha	N of Items
.722	13

Normality test

Before carrying out the normality test, the researcher checked and found 30 outliers. To improve the model, the researcher chose to eliminate the outliers because they amounted to less than 10%. After carrying out the normality test as in the picture above, the sig or p value for the Kolmogorov Smirnov test was found to be 0.093, which is greater than alpha 0.05 so it can be said that the residuals are normally distributed.

Table 14. Normality Test

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		377
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	2.47899916
Most Extreme Differences	Absolute	.043
	Positive	.041
	Negative	-.043
Test Statistic		.043
Asymp. Sig. (2-tailed)		.093[c]

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

Heteroscedasticity test

Table 14. Heteroscedasticity test

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.025	.438		-.058	.954
	X1	-.108	.029	-1.045	-3.700	.000
	X2	.148	.033	.840	4.544	.000
	X3	.072	.048	.376	1.493	.137
	x4	-.018	.063	-.027	-.280	.780
	X5	-.038	.029	-.307	-1.291	.198

a. Dependent Variable: abres

The sig value for X1 and X2 was less than alpha 0.05, meaning that X1 and

Autocorrelation test

Table 15. Autocorrelation test

Durbin-Watson
.544

A value of 0.544 was found, which is less than dl (1.613) ~ 4-du(4-1.736). This means that there are symptoms of autocorrelation. However, it is no problem to continue with model formation.

Multicollinearity test

Table 16. Multicollinearity test

Collinearity Statistics	
Tolerance	VIF
.147	9.718
.110	9.076
.159	8.825
.407	2.455
.166	7.143

The tolerance value of the five variables was more than 0.1 and the VIF value was less than 10. This means that the data did not experience symptoms of multicollinearity.

Multicollinearity test

a. Regression Model

Table 17. Regression Model

Model		Unstandardized Coefficients	
		B	Std. Error
1	(Constant)	77.238	.708
	X1	.595	.047
	X2	.381	.053
	X3	.182	.078
	x4	.593	.101
	X5	.341	.048

a. Dependent Variable: Y

After carrying out multiple linear regression for X1, X2, X3, X4, X5

b. Regression Model Evaluation

Table 18. Regression Model Evaluation

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.891^a	.882	.892	.389

a. Predictors: (Constant), X5, x4, X2, X3, X1

b. Dependent Variable: Y

The R Square value was 0.882, which means that the model has been formed well and can explain around 88.2% of the population. The remaining 11.8% is explained by other variables not examined in this study.

c. F test

Table 19. F Test

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.760	5	.552	9.535	.032^b
	Residual	12.619	218	.058		
	Total	15.378	223			

a. Dependent Variable: Y

b. Predictors: (Constant), X5, x4, X2, X3, X1

The ANOVA analysis above, it was found that the sig or p value was smaller than alpha 0.05, meaning that there was a significant influence between the five variables X and variable Y.

d. T Test (Partial)

Table 20. F Test (Partial)

Coefficients[a]

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	77.238	.708		109.091	.000
	X1	.595	.047	.529	12.652	.001
	X2	.381	.053	.198	7.229	.003
	X3	.182	.078	.087	2.347	.020
	x4	.593	.101	.083	5.854	.005
	X5	.341	.048	.252	7.167	.010

a. Dependent Variable: Y

All sig values for X1 to X5 are less than 0.05, which means that all variables influence Y significantly.

e. Gender Influence test (Anova two way)

Table 21. Gender Influence test (Anova two way)

Tests of Between-Subjects Effects

Dependent Variable: Y

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	9.356[a]	1	9.356	1.138	.287
Intercept	1866117.696	1	1866117.696	226983.862	.000
JK	9.356	1	9.356	2.138	.047
Error	1825.144	222	8.221		
Total	1913258.000	224			
Corrected Total	1834.500	223			

a. R Squared = .005 (Adjusted R Squared = .001)

Results of the 2 way ANOVA test above, it was found that the sig value for JK or gender was 0.47, which is less than alpha 0.05. This means that there is a significant difference between the values of men and women.

2. Discussion

To determine the relationship between religiosity and learning achievement, the F test was used. The F test carried out in this study aims to evaluate the relationship between the religiosity variable and student learning achievement in chemistry subjects, with a focus on grade 12 students as respondents. The F test results show a statistical value of 9.535 with a significance value (sig) of 0.032. A significant F value indicates that there is a significant relationship between students' level of religiosity and their learning achievement in chemistry subjects.

With a significance value of 0.032 which is less than the generally used significance level (0.05), we can reject the null hypothesis. This indicates that there are significant differences in chemistry learning achievement between groups of students with different levels of religiosity. Therefore, these results provide empirical support for the assumption that students' level of religiosity can influence their learning achievement in the context of chemistry subjects.

It is important to detail these findings by exploring the direction and strength of the relationship between religiosity variables and academic achievement. With this significant relationship, it can be considered that the religiosity factor has an important contribution to student achievement in learning chemistry. These findings may have practical implications in the context of educational development, providing additional understanding of the factors that influence student achievement.

The analysis of the relationship between each dimension of religiosity and student achievement in chemistry subjects has yielded significant findings. Among the five dimensions studied, religious knowledge showed a strong correlation with learning achievement, with a significance value (sig) of 0.001 and a t value of 12.652. This indicates that students who possess a higher level of religious knowledge tend to achieve better in their chemistry studies.

In addition, the dimension of religious experience also exhibited a significant relationship with learning achievement, with a sig value of 0.003 and a t value of 7.229. This suggests that students who have had rich and meaningful religious experiences may also show better performance in their chemistry studies. These findings highlight the importance of religious knowledge and experiences in academic success, particularly in the field of chemistry.

In conclusion, this study has demonstrated the significant impact of religiosity on student achievement in chemistry subjects. The dimensions of religious knowledge and experience were found to have a strong and positive association with learning achievement. These insights can serve as a valuable contribution to the understanding of the role of religiosity in academic performance and could potentially inform educational practices and policies.

The Two-Way ANOVA analysis carried out to compare the learning achievement of male and female students in chemistry has yielded an F statistical value of 2.138 with a significance value (sig) of 0.047. These findings indicate a significant difference in learning achievement between the two gender groups. With a sig value that falls below the commonly used significance level (0.05), it can be concluded that the difference in learning achievement between men and women is not due to mere chance. This underscores the influence of gender on student learning achievement in chemistry. While the F value may suggest a relatively small difference, it is important to note that this difference is nonetheless significant.

Conclusion

The research results show that religiosity has a significant correlation with students' chemistry learning achievement. Students who have a disciplined habit of praying also have a significant correlation.able to develop individuals who have mature planning so that, as a result of mature planning in learning, the learning outcomes obtained are also higher.

Recommendation

1. This study shows that religiosity has a relationship significantly on students' academic performance. Researchers suggest that religiosity must always be instilled in the attitudes, behavior and mindset of students and teachers, and also created and used in the school environment.
2. Parents must pay more attention, help and be role models for their children so that they can become more independent and try their best in learning chemistry.
3. For further research, correlational research on these two variables must be expanded by adding additional criteria. For example, criteria can be added to the dimension of religiosity. In addition, tools must be created to assess students' chemistry learning achievements. In this way, learning achievement scores are simply the result of students' grades.

Refrences

Abidin, J., & Fahmi, I. (2019). *Media Sosial Dalam Mempengaruhi Perilaku Keberagamaan Siswa Dan Solusinya Melalui Pendidikan Agama Islam*.

Agus, Bustanudin. (2006). Agama Dalam Kehidupan Manusia Pengantar Antropologi Agama. Jakarta: PT Raja Grafindo Persada.

Arifin, Zainal. (2010). Evaluasi Pembelajaran Prinsip, Teknik, Prosedur. Bandung: PT Remaja Rosdakarya.

Arifin,B.S. (2015) Psikologi sosial. Bandung: CV Pustaka Setia.

Arikunto, S. (2010).*Prosedur Penelitian Suatu Pendekatan Praktik*. Jakarta: Rineka Cipta

Asmara, A. P. (2016). Kajian Integrasi Nilai-Nilai Karakter Islami Dengan Kimia Dalam Materi Kimia Karbon. *JurnalPendidikan* Sains Universitas *Muhammadiyah Semarang*, 4.

Basri, Y. M. (2015). Pengaruh gender, religiusitas dan sikap love of money pada persepsi etika penggelapan pajak mahasiswa akuntansi. *Jurnal Ilmiah Akuntansi dan Bisnis*, 10(1), 45-54.

Darmadi (2017). Pengembangan Model dan Metode Pembelajaran dalam Dinamika Belajar Siswa. Yogyakarta: CV Budi Utama

Dewi Priyanti. (2008). Mandiri Belajar Spss- Bagi Mahasiswa Dan Umum., Yogyakarta: Mediakom.

Dewi, R., & Pardede, M. (2021). Pengaruh Kemampuan kerja, motivasi dan pengembangan karier terhadap kinerja karyawan PT. Bina Buana Semesta. *Jurnal Ekonomi Bisnis Indonesia*, *16.*

Hadrati, Ilham. (2016). Korelasi antara Religiusitas dan Konsep Diri dengan Prestasi Belajar Siswa Kelas VIII MTsN Model Makasar. Skripsi. Universitas Islam Negeri Alaudin Makassar.

Helmawati. (2016). Pendidikan Keluarga. Bandung: PT Remaja Rosdakarya.

Hidayah, H., Iriyadi, D., & Gufron, I. A. (2022). Relasi Sains Dan Agama dalam Perpspektif Ian Graeme Barbour. 13.

Kautsar, A., & Edi, J. (2017). Pendidikan Karakter Religius, Disiplin Dan Bakat Melalui Penigkatkan Kualitas Sarana Prasarana Sekolah. *JMKSP (Jurnal Manajemen, Kepemimpinan, dan Supervisi Pendidikan)*, 2, 259-277.

Logan, B. C. (2013). The Impact of Religious Commitment and Motivation on African American Male Academic Achievement.

Maesaroh, Siti. (2013). Peranan Metode Pembelajaran Terhadap Minat dan Prestasi Belajar Pendidikan Agama Islam. 1.

Mustafidah, L. (2008). Hubungan Antara Religiusitas Terhadap Prestasi Belajar Siswa Muslim Kelas Xi Sma Negeri 3 Malang. Skripsi.

Muti'ah, M., Siahaan, J., & Sukib, S. (2021). Upaya Meningkatkan Motivasi dan Pemahaman Ilmu Kimia Melalui Demonstrasi Kimia Bagi Siswa SMA N 1 Labuapi. Jurnal Pengabdian Magister Pendidikan IPA, 4.

Prayoga, Y. C. (2019). Pengaruh latar Belakang Pendidikan, Religiusitas Dan Budaya Sekolah Terhadap Akhlak Remaja di Gondangrejo Kabupaten Karanganyar Tahun 2018. *IAIN Surakarta*.

Purnomo, F. H., & Suryadi, B. (2018). *Uji Validitas Konstruk Pada Instrumen Religiusitas Dengan Metode Confirmatory Factor Analysis (CFA).* Jurnal Pengukuran Psikologi dan Pendidikan Indonesia (JP3I), 6.

Sugiyono. (2009). Metode Penelitian PendidikanPendekatan Kuantitatif, Kualitatif, dan R&D. Bandung: CV Alfabeta.

Sugiyono. (2017). Metode Penelitian Kuantitatif, Kualitatif, dan R&D. Bandung: Pt Alfabet.

Syafe, I., Mashvufah, H., & Susanti, A. (2020). Konsep Gender Dalam Perspektif Pendidikan Islam. Al-Tadzkiyah: Jurnal Pendidikan Islam, 11 (02), 243–257.

Ulfa, R. (2021). Variabel Penelitian Dalam Penelitian Pendidikan. Al-Fathonah, 1(1), 342-351.

Wardani. W. (2018). 'Pengaruh Gender Terhadap Kemampuan Berfikir Kritis Siswa SMA Program IPS Pada Mata Pelajaran Geografi'. Jurnal Pendidikan Teori Penelitian dan Pengembangan. Vol. 3. (12). Hlm. 1530-1534.

Zega,I.S., dan Darmana, A. (2019). Implementasi bahan ajar hidrolisis garam terintegrasi nilai-nilai islami dengan model problem based learning untuk meningkatkan hasil belajar siswa Ditinjau dari Minat Belajar Siswa.Jurnal Inovasi Pembelajaran Kimia (Journal of inovation in chemistry Education), 1(2): 64-73.