

The Relationship Between Teacher's Question and Answer Method on Students' Learning Motivation

Losten Tamba^{1*}, Rosma Nababan², Alim Perangin-angin², Lukman Pardede³

¹ Universitas Katolik St. Thomas Medan, Indonesia

² Universitas Darma Agung, Indonesia

³ Universitas HKBP Nommensen Medan, Indonesia

Received: June 5, 2023

Revised: August 19, 2023

Accepted: August 25, 2023

Published: August 31, 2023

Corresponding Author:

Losten Tamba

losten_tamba@yahoo.co.id

DOI: [10.29303/jppipa.v9i8.4546](https://doi.org/10.29303/jppipa.v9i8.4546)

© 2023 The Authors. This open access article is distributed under a (CC-BY License)



Abstract: This study aims to determine the significant relationship between the question-and-answer method and students' learning motivation in class XI at SMK Jambi Medan. This type of research is correlational. The population in this study were all students of Class XI at Jambi Medan Private Vocational School, which consisted of 3 (three) classes, namely: class XI-1, class XI-2, and class XI-3. The sample of this research was 71 people taken from 36 students in class XI-1 and 35 students in class XI-2. The instruments used in this study were questionnaires, documentation, and interviews. The questionnaire used was 33 questions with 5 (five) answer options, the value given for each answer was: a. Always (score 5), b. Often (score 4), c. Sometimes (score 3), d. Rarely (score 2), and e. Never (score 1). From the results of the research and discussion that has been carried out, several conclusions have been obtained, including There is a co-significant relationship between Q&A style and students' learning motivation in XI SMK Private Jambi Medan class, which can be seen from the data of r_{count} (0.770) is greater than the r_{table} (0.279) at a significant level of 5%, or it can be formulated as $0.770 > 0.279$. If seen from the interpretation table "r" product moment r_{count} (0.770) is located at point 0.70-0.90, it can be said to have a strong and high relationship or a significant relationship to student learning motivation.

Keywords: Learning Motivation; Private Vocational School; Question and Answer Method

Introduction

Education is a process that is carried out consciously and intentionally to increase the value of the behavior of a person or society, from bad to better conditions or from not knowing to knowing (Dewantara et al., 2020). Education can be said to be successful if there is an increase in the quality of learning through learning achievement (Komalasari et al., 2020; Rafiola et al., 2020). Student motivation towards learning is a force that will encourage students to learn. Students who will be motivated in learning will appear to be motivated to continue to study diligently, the development of science requires teachers to develop their professionalism (Ayuningsih & Ciptahadi, 2020). In this case, the teacher must be able to master the strategies, methods, and

teaching techniques in the direct learning process (Priyanto & De Kock, 2021). As professional teachers in the field of the learning process, teachers must study the subject matter optimally, approach students through good ideas and plans, and use various learning methods (Yuniastuti et al., 2021). As an illustration, ten people cannot win a soccer game without a good strategy, so is the case with the teacher, the teacher must be able to make strategies so that the learning objectives are achieved properly. Motivation has a very large influence on learning success because student motivation is the main factor determining the degree of student activity. Science teachers must also emulate the teaching conducted by the teacher using various methods.

Motivation is an urge that exists within a person to make a change in behavior (Wardani et al., 2020).

How to Cite:

Tamba, L., Nababan, R., Perangin-angin, A., & Pardede, L. (2023). The Relationship Between Teacher's Question and Answer Method on Students' Learning Motivation. *Jurnal Penelitian Pendidikan IPA*, 9(8), 6720-6726. <https://doi.org/10.29303/jppipa.v9i8.4546>

Motivation becomes very important for students when they enter school. Because by having motivation, they become more enthusiastic about learning and can master the material presented by the teacher so that they excel in studying at school.

Learning motivation is an internal and external encouragement for students who are studying to make changes in behavior, especially in the learning process at school, which generally has supporting indicators or elements (Lumbantobing, 2020). In the learning process, motivation is one of the factors that has a big influence on student learning outcomes (Borah, 2021). Students who have high motivation are expected to get maximum learning results, and conversely students who have low learning motivation will get less than optimal learning results (Rahman, 2022).

If the subject matter being studied is not liked, students will not learn as well as possible because there is no attraction to it. Motivation not only allows the concentration of mind but also will lead to pleasure in learning. Light-heartedness will increase a person's learning ability and also shape him not to easily forget what he has learned. Studying with displeasure will make the lesson difficult or unpopular (Isnawati, 2020).

Motivation is a preference and a sense of interest in something or activity, without being told (Fajri et al., 2021). A person's motivation for something will be shown through activities or activities related to his motivation. Students with high learning motivation will carry out activities that they enjoy, be involved in the learning process, and pay attention to what the teacher gives (Mariani, 2022). In relation to learning, motivation is very influential in determining the success of these students, therefore if the lessons learned are not by existing student motivation (Arianti, 2019; Izzatunnisa et al., 2021), students will not learn as well as possible. Because there is no attraction for him. Students will become lethargic and insipid in learning, as a result, the concentration on learning will decrease and eventually students will fail in their studies. Along with the times, the task of teaching for teachers is increasingly difficult. Lack of student learning motivation causes student achievement to decrease, lack of enthusiasm for learning, and does not respond well to lessons. This occurs allegedly because the teacher delivering the lesson does not have variations in delivering teaching materials. Therefore, to overcome students who are less motivated in learning, teachers should know what things affect student motivation. After knowing the cause, teachers should take action that can build students' enthusiasm for learning (Handayani, 2022; Zembylas & Isenbarger, 2002).

Learning methods greatly influence a person's strong attraction to encourage learning motivation. With varied learning methods, teachers conveying learning

really influences students' learning motivation, so teachers should not use just one method in teaching.

A method or technique for presenting learning material that will be used by the teacher when presenting the material, either individually or in groups. In order to achieve the learning objectives that have been formulated, a teacher must know various methods. By having knowledge about the nature of various methods, it will be easier for a teacher to determine the method that best suits the situation and conditions.

From the definition above, it can be said that the question and answer method is a way of teaching a teacher where there is feedback between the teacher and students in learning by means of the teacher asking a question and the question being answered by the student who has been appointed to answer the question, and vice versa. Also, to make it easier for students, they can ask the teacher if they don't understand the material. The relationship between the question-and-answer method and student learning motivation is to develop students' creative thinking actively and systematically and get verbal responses from students so that they can foster learning motivation and new knowledge in the learning process. Using this question-and-answer method will attract students' attention and the class atmosphere will be active.

Research Method

Research Place

This research was carried out in class XI of Jambi Private Vocational School, Medan.

Research design

This research is a quantitative type of research (Nengsih & Oktaria, 2019). The research design is the basis for testing the truth in writing this research. "Methodology is the science that studies the procedure of making observations with proper thinking and is carried out scientifically, through searching, compiling, analyzing and concluding activities."

The first step in this research is determining the object related to the studied problem. The next step is to determine the population and sample to determine the study's limits. After the sample is determined, it is followed by designing a questionnaire to make quantitative data about the question and answer method on student learning motivation in the research sample.

Questionnaires were distributed to students in class XI of Jambi Private Vocational School, Medan. After scoring the questionnaire, the next step is to record the results of student learning motivation. The continuation is analyzing the data for hypothesis testing to reach conclusions.

Population

In this study, the researcher was guided by what was said by Arikunto (2021) "The population is the entire research subject". If someone wants to examine all the elements in the research area, then the research is population research. From the quotation above it is known that the population is the object of research, so the population in this study were all students of class XI at Jambi Medan Private Vocational School, as many as 106 students.

Table 1. State of the Class XI Population of Private Vocational Schools Jambi Medan

Class	Male	Female	Amount
XI-1	29	7	33.00
XI-2	28	7	32.00
XI-3	27	8	31.00
Total	84	22	106

Sample

According to Arikunto (2010), "The sample is a portion or representative of the population to be studied". If the research subjects are less than 100 people, it is better to take all of them, so that the research is population research, then if the population is more than 100 people then 10-15% or 20-25% or more can be taken. Based on the opinion above, because there were 106 students or more than 100 people, the research sample was conducted on 36 students in class XI-1 and 35 in class XI-2.

Table 2. Condition of Sample Class XI Private Vocational School Jambi Medan

Class	Male	Female	Amount
XI-1	29	7	36.00
XI-2	28	7	35.00
Total	57	14	71

Dependent Variable (Student Learning Motivation)

The dependent variable is a variable that is influenced by other variables. It can also be said as a variable that is the result, because there are independent variables. In this study, the dependent variable is Student Learning Motivation.

Data Collection Tools

Data is a very important component in research. Therefore, in collecting the necessary data or information, a researcher must use data collection tools that are appropriate to the research method. In this study, the research tools used were questionnaires, documentation and interviews.

Questionnaire

A questionnaire is a tool for collecting information by providing statements regarding the problem to each

respondent. The statements submitted to students are as many as 33 statements with answers given with 5 (five) optional answer choices, giving a value for each answer the value given is: a. Always (score 5), b. Often (score 4), c. Sometimes (score 3), d. Rarely (score 2), and e. Never (score 1).

Documentation

Documentation is "a method used to collect data through inheritance or information from written sources, such as archives and including books on opinions, theories, propositions or laws, and others related to research problems". Thus, the author uses documentation to obtain data on student learning motivation.

Interview

The interview is a way to obtain information by asking directly the parties involved, namely the interviewer (who asks questions) and the interviewee (who gives answers to the questions). This interview was conducted with the intention of obtaining data that is in accordance with the problem being studied. In this study, interviews were conducted with science subject teachers in class XI at Jambi Medan Private Vocational School to find out the learning process using the question and answer learning method. The interview guide used is an unstructured interview guide, namely an interview guide that only contains an outline of what will be asked (Moleong, 2017).

Research Results

Question and Answer Method (Variable X)

To find out the relationship between the question and answer method at school, the researchers distributed questionnaires to 71 students as respondents with 33 question items. Based on the results of the questionnaire, it is known that the tabulation of the question and answer method in class XI of the Jambi Medan Private Vocational School, before conducting a hypothesis test, is sought first for the class interval. Researchers classify the question and answer method for science subjects with (6) six categories, namely very high, high, sufficient, moderate, low, and very low.

Based on the data obtained from the results of the study with a total of 71 respondents, the highest score was 88 and the lowest was 54 with an average (M = 69.08) and a standard deviation (SD = 7.166).

Question and Answer Method Change Data (X)

Based on the data obtained from the results of the study with a total of 71 students, the highest score was 88 and the lowest was 54 with an average (M = 71.52) and a standard deviation (SD = 6.72). The distribution of

the Question and Answer Method (X) can be seen in Table 3.

Table 3. Frequency distribution Question and Answer Method (X)

Span	Fo	Fr (%)	Category
81- 89	4	5.63	Very High
90 - 98	8	11.27	High
99 - 107	13	18.31	Enough
108 - 116	17	23.94	Medium
117 - 125	13	18.31	Low
126 - 134	12	16.90	Very Low
135 - 143	4	5.63	Less
Amount	71	100.00	

Based on Table 3 above, it can be seen that the Question and Answer Method (X) is categorized as moderate (23.94%).

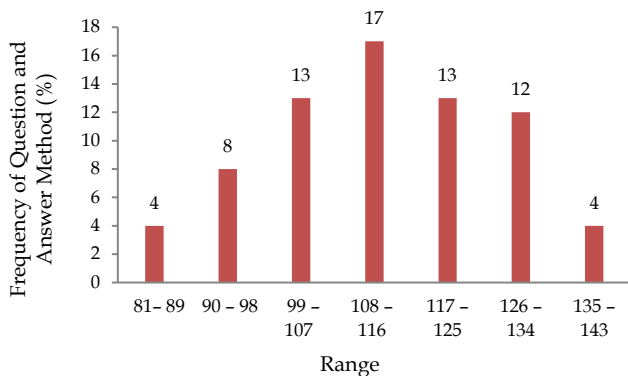


Figure 1. Frequency distribution of Question and Answer Method (X)

Altered Data on Student Learning Motivation (Y)

Based on the data obtained from the results of the study the number of respondents was 71 people who obtained the highest score of 91 and the lowest 45 with an average (M = 69.08) and a standard deviation (SD = 7.166).

The distribution of Student Learning Motivation (Y) can be seen in Table 4 below.

Table 4. Frequency Distribution of Student Learning Motivation (Y)

Span	Fo	Fr (%)	Category
81- 89	4	5.63	Very High
90 - 98	9	12.68	High
99 - 107	12	16.90	Enough
108 - 116	16	22.54	Medium
117 - 125	14	19.72	Low
126 - 134	13	18.31	Very Low
135 - 143	3	4.23	Less
Amount	71	100.00	

Based on Table 4, it can be seen that Student Learning Motivation (Y) is categorized as moderate (22.54%).

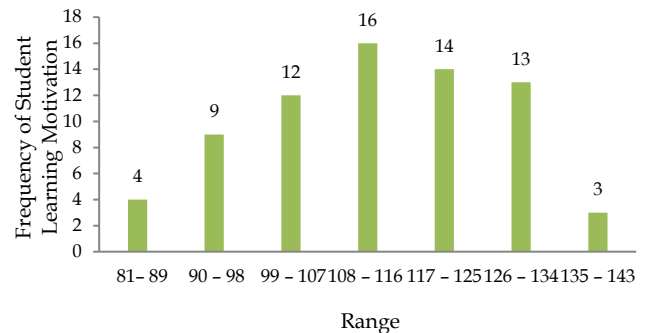


Figure 2. Frequency distribution of Question and Answer Method (X)

The Tendency of the Science Teacher's Question And Answer Method

The tendency of the science teacher's question and answer method in class XI students of the Jambi Medan Private Vocational School was moderate (71%). In the question and answer method, it is intended that students can catch lessons easily, effectively and can be digested by children properly. When connected with education, this step must be realized in the educational process. The method can be interpreted as the method used by the teacher in establishing relationships with students during the learning process. Thus, the question-and-answer method is a tool for creating a learning process (Mogea, 2019).

There are several principles that need to be considered in trying to determine a method. These principles are: a) there is no one superior learning method for all purposes in all conditions (Zuo et al., 2022), (b) different learning methods have different and consistent effects on learning outcomes, and (c) learning conditions can have a consistent effect on learning outcomes. In learning activities, the teacher does not have to stick with one method but the teacher should use a variety of methods so that teaching is not boring but attracts students' attention. The use of various methods will not benefit learning activities if their use is not appropriate according to the situations that support it and the psychological conditions of students. Therefore, this is where teacher professionalism is needed in selecting the right method.

The question-and-answer method is a method used to implement plans that have been prepared in real activities so that the goals that have been prepared are optimally achieved (Pratomo & Shofwan, 2022). This means the method is used to realize the strategy that has been set. Thus, the method in a series of learning systems plays a very important role.

The Tendency in Student Learning Motivation

The tendency of students' learning motivation in class in class XI students of Jambi Medan Private Vocational School is high (73%). Motivation is a preference and a sense of interest in something or activity, without being told. Motivation is basically the acceptance of a relationship between oneself and something outside oneself. The stronger or closer the relationship, the higher the motivation. motivation is not innate but needs to be cultivated by someone. Motivation is influenced by internal factors such as concentration, desires, interests, and needs.

If students have motivation in a particular lesson, it will be easier for them to develop their abilities optimally in that lesson. Great motivation in the field they like will ultimately make children focus more attention and time to be more active in achieving the best achievements. However, if they are forced to study areas they are not interested in, students will face many obstacles, so that learning outcomes are not optimal and students may even experience failure in the science subject area.

Motivation is related to the style of movement that encourages a person to face or deal with people, objects, activities, and experiences that are stimulated by the activity itself (Reardon & Derner, 2023). The most effective way to generate motivation for a new subject is to use existing student motivation. So, motivation can be expressed through statements that show that students prefer one thing over another, it can also be manifested through participation in an activity. Motivation is not innate, it is acquired (Muhammad, 2017).

Student learning motivation is a process that results in changes in behavior both in terms of psychomotor (Anggraini, 2016; Emda, 2018). Changes in behavior that is, which appears at the time, but will appear on other occasions. Changes caused by learning are relative, permanent, which means that the changes will last for a relatively long time, but the changes will not persist continuously, so that at some time they can change again as a result of learning.

Motivation is an urge that causes an individual's attention to be tied to certain objects such as work, lessons, objects, and people (Kuhl et al., 2021). Motivation is closely related to cognitive, affective, and psychomotor aspects (Hildan et al., 2022). Motivation is also related to something that causes satisfaction in him.

There is a Significant Relationship Between the Science Teacher's Question and Answer Method and Students' Learning Motivation

The results of this study indicate that there is a significant relationship between the Question and Answer Method (X) and Student Learning Motivation (Y) in class XI students of Private Vocational Schools

Jambi Medan. A significant relationship between the Question and Answer Method (X) and Student Learning Motivation (Y) in class XI students at Jambi Private Vocational School, Medan. A significant relationship between the Question Method indicates that the more often the Question and Answer Method is used in the learning process at school, the Student's Learning Motivation increases. It can be understood that using learning based on the question-and-answer method can help increase student interest in learning.

The Question and Answer method is a method for forming and increasing student learning motivation so that students are able to improve the quality of learning motivation among their peers.

Conclusion

Based on the results of the research and discussion, it can be concluded that: (1) The tendency of the science teacher's question and answer method in class XI students of the Jambi Medan Private Vocational School is moderate (71%). In the question and answer method, it is intended that students can catch lessons easily, effectively and can be digested by children properly; (2) The tendency of students' learning motivation in class XI of Jambi Medan Private Vocational School is high (73%). Motivation is a preference and a sense of attachment to something or activity, without being told. Motivation is basically the acceptance of a relationship between oneself and something outside oneself. The stronger or closer the relationship, the greater the motivation. Motivation is not innate but needs to be cultivated by someone. A person's motivation is influenced by internal factors such as concentration, desires, and needs. Until now, in the learning process motivation can influence the quality of achievement of student learning outcomes in the field of science subjects; (3) There is a simultaneous significant relationship between the question and answer method and student learning motivation in class XI SMK Jambi Medan, this can be seen from the data showing r_{count} (0.770 greater than r_{table} (0.279) at a significant level of 5%, or it can be formulated as $0.770 > 0.279$. When viewed from the interpretation table "r" the product moment r_{count} (0.770) is located at point 0.70-0.90, it can be said to have a strong and high relationship or a significant relationship.

Author Contributions

Losten Tamba, Rosma Nababan, Alim Perangin-angin, Lukman Pardede: Conceptualization, methodology, writing original draft preparation, formal analysis, investigation, and visualization.

Funding

This research received no external funding.

Conflicts of Interest

The authors declare no conflict of interest.

References

- Anggraini, I. S. (2016). Motivasi belajar dan faktor-faktor yang berpengaruh: sebuah kajian pada interaksi pembelajaran mahasiswa. *Premiere Educandum: Jurnal Pendidikan Dasar Dan Pembelajaran*, 1(02). <https://doi.org/10.25273/pe.v1i02.39>
- Arianti, A. (2019). Peranan Guru dalam meningkatkan motivasi belajar siswa. *Didaktika: Jurnal Kependidikan*, 12(2), 117-134. <https://doi.org/10.30863/didaktika.v12i2.181>
- Arikunto, S. (2010). *Prosedur penelitian: Suatu pendekatan praktik*. Rineka Cipta.
- Arikunto, S. (2021). *Dasar-Dasar Evaluasi Pendidikan Edisi 3*. Bumi Aksara.
- Ayuningsih, N. P. M., & Ciptahadi, K. G. O. (2020). Pengaruh model pembelajaran giving question and getting answer terhadap kecerdasan logis matematis. *Jurnal Pendidikan Matematika*, 11(1), 134-142. <https://doi.org/10.36709/jpm.v11i1.10208>
- Borah, M. (2021). Motivation in learning. *Journal of Critical Reviews*, 8(2), 550-552. <https://www.jcreview.com/admin/Uploads/Files/61c1ac9cfb5a1.40236533.pdf>
- Dewantara, J. A., Efriani, E., Sulistyarini, S., & Prasetyo, W. H. (2020). Optimization of Character Education Through Community Participation Around The School Environment (Case Study in Lab School Junior High School Bandung). *JED (Jurnal Etika Demokrasi)*, 5(1), 53-66. <https://doi.org/10.26618/jed.v5i1.3017>
- Emda, A. (2018). Kedudukan motivasi belajar siswa dalam pembelajaran. *Lantanida Journal*, 5(2), 172-182. <https://doi.org/10.22373/lj.v5i2.2838>
- Fajri, Z., Baharun, H., Muali, C., Farida, L., Wahyuningtiyas, Y., & others. (2021). Student's learning motivation and interest; The effectiveness of online learning during Covid-19 pandemic. *Journal of Physics: Conference Series*, 1899(1), 12178. <https://doi.org/10.1088/1742-6596/1899/1/012178>
- Handayani, D. (2022). Peningkatan Motivasi dan Hasil Belajar Siswa Melalui Metode Tanya Jawab Kritis pada Materi Listrik Dinamis. *Jurnal Penelitian Sains Dan Pendidikan (JPSP)*, 2(1), 98-105. <https://doi.org/10.23971/jpsp.v2i1.3985>
- Hildan, N. M., Susilawati, D., & Dinangsit, D. (2022). Physical Education Lecture Evaluation Studies in Cognitive, Affective, and Psychomotor in Students. *JUARA: Jurnal Olahraga*, 7(3), 589-604. <https://doi.org/10.33222/juara.v7i3.2278>
- Isnawati, R. (2020). *Cara Kreatif Dalam Proses Belajar (Konsentrasi Belajar pada Anak Gejala Gangguan Pemusatan Perhatian (ADD))*. Surabaya: Jakad Media Publishing.
- Izzatunnisa, L., Suryanda, A., Kholifah, A. S., Loka, C., Goesvita, P. P. I., Aghata, P. S., & Anggraeni, S. (2021). Motivasi belajar siswa selama pandemi dalam proses belajar dari rumah. *Jurnal Pendidikan*, 9(2), 7-14. <https://doi.org/10.36232/pendidikan.v9i2.811>
- Komalasari, K., Arafat, Y., & Mulyadi, M. (2020). Principal's management competencies in improving the quality of education. *Journal of Social Work and Science Education*, 1(2), 181-193. <https://doi.org/10.52690/jswse.v1i2.47>
- Kuhl, J., Quirin, M., & Koole, S. L. (2021). The functional architecture of human motivation: Personality systems interactions theory. In *Advances in motivation science* (Vol. 8, pp. 1-62). Elsevier. 10.1016/bs.adms.2020.06.001
- Lumbantobing, P. A. (2020). The contribution of lecturer pedagogical competence, intellectual intelligence and self-efficacy of student learning motivation. *Budapest International Research and Critics in Linguistics and Education (BirLE) Journal*, 3(1), 564-573. <https://pdfs.semanticscholar.org/f335/3b9bcbce132b88efe288667fe4abdd6e4cecc.pdf>
- Mariani, E. (2022). Hubungan Metode Tanya Jawab Guru Terhadap Minat Belajar Kelas VII SMP 1 Pulau Rakyat Asahan. *Jurnal Pendidikan Religius*, 4(1), 67-80. <https://jurnal.darmaagung.ac.id/index.php/jurnalreligi/article/view/1308>
- Mogea, T. (2019). *The effectiveness of question and answer technique in teaching reading comprehension at SMP Negeri 3 Ratahan*. [http://repository.unima.ac.id:8080/bitstream/123456789/413/5/FBS MOGEA PR Rev Jurnal 6. The Effectiveness of Questionpdf](http://repository.unima.ac.id:8080/bitstream/123456789/413/5/FBS%20MOGEA%20PR%20Rev%20Jurnal%206.%20The%20Effectiveness%20of%20Question%20....pdf)
- Moleong, L. J. (2017). *Metodologi Penelitian Kualitatif*. Bandung: Remaja Rosdakarya.
- Muhammad, M. (2017). Pengaruh motivasi dalam pembelajaran. *Lantanida Journal*, 4(2), 87-97. <https://doi.org/10.22373/lj.v4i2.1881>
- Nengsih, S., & Oktaria, R. (2019). Pengaruh Model Pembelajaran GQGA (Giving Question and Getting Answer) terhadap Hasil Belajar Siswa. *BIOEDUSAINS: Jurnal Pendidikan Biologi Dan Sains*, 2(2), 111-121. [http://repository.umsu.ac.id/bitstream/handle/123456789/2593/Pengaruh Model Pembelajaran](http://repository.umsu.ac.id/bitstream/handle/123456789/2593/Pengaruh%20Model%20Pembelajaran)

- Giving Question and Getting Answer terhadap Hasil Belajar Akuntansi Siswa Kelas XI-IPS SMA.pdf?sequence=1
- Pratomo, R. Y., & Shofwan, I. (2022). Implementation of Education and Training Program Evaluation. *Edukasi*, 16(2). <https://doi.org/10.15294/edukasi.v16i2.39863>
- Prijanto, J. H., & De Kock, F. (2021). Peran guru dalam upaya meningkatkan keaktifan siswa dengan menerapkan metode tanya jawab pada pembelajaran online. *Scholaria: Jurnal Pendidikan Dan Kebudayaan*, 11(3), 238–251. <https://ejournal.uksw.edu/scholaria/article/view/4318>
- Rafiola, R., Setyosari, P., Radjah, C., & Ramli, M. (2020). The effect of learning motivation, self-efficacy, and blended learning on students' achievement in the industrial revolution 4.0. *International Journal of Emerging Technologies in Learning (IJET)*, 15(8), 71–82. <https://www.learntechlib.org/p/217073/>.
- Rahman, S. (2022). Pentingnya motivasi belajar dalam meningkatkan hasil belajar. *Prosiding Seminar Nasional Pendidikan Dasar*. <https://ejournal.pps.ung.ac.id/index.php/PSNPD/article/view/1076>
- Reardon, M., & Derner, S. (2023). *Strategies for great teaching: Maximize learning moments*. Taylor & Francis.
- Wardani, A. D., Gunawan, I., Kusumaningrum, D. E., Benty, D. D. N., Sumarsono, R. B., Nurabadi, A., & Handayani, L. (2020). Student learning motivation: A conceptual paper. *2nd Early Childhood and Primary Childhood Education (ECPE 2020)*, 275–278. <https://doi.org/10.2991/assehr.k.201112.049>
- Yuniastuti, Miftakhuddin, & Khoiron, M. (2021). *Media Pembelajaran Untuk Generasi Milenial Tinjauan Teoritis dan Pedoman Praktis*. Surabaya: Scopindo Media Pustaka.
- Zembylas, M., & Isenbarger, L. (2002). Teaching science to students with learning disabilities: subverting the myths of labeling through teachers' caring and enthusiasm. *Research in Science Education*, 32, 55–79. <https://doi.org/10.1023/A:1015050706407>
- Zuo, C., Qian, J., Feng, S., Yin, W., Li, Y., Fan, P., Han, J., Qian, K., & Chen, Q. (2022). Deep learning in optical metrology: a review. *Light: Science & Applications*, 11(1), 39. <https://doi.org/10.1038/s41377-022-00714-x>