BIOEDUSCIENCE
ISSN: 2614-1558
http://journal.uhamka.ac.id/index.php/bioeduscience

PBL Assisted with Al-Qur'an Integrated Audio-Visual Media: Its Effect on Student Learning Outcomes on Reproductive System Materials

Sherly Aglillah [1] , Ummi Nur Afinni Dwi Jayanti [2*]

[1] Biology Tadris Study Program, North Sumatra State Islamic University, Jl. William Iskandar Ps, V, Medan Estate, Percut Sei Tuan District, Deli Serdang Regency, North Sumatra, Indonesia, 20371.
* Correspondence: ummiafinni@uinsu.ac.id

Abstract

Background: Learning outcomes are the object of class evaluation as new abilities are obtained by students after participating in the learning process. However, the facts on the ground show that high school students learning outcomes in biology material are still low. Based on interviews with State Madrasah Aliyah teachers in Serdang Bedagai, students' learning outcomes are generally low because they do not have a strong understanding of concepts, one of which is the material on the reproductive system. So, we need a learning model to help students understand the concept and improve student learning outcomes. This study aimed to see the effect of PBL learning with the help of Al-Qur'an Integrated Audio Visual Media on Student Learning Outcomes in Reproductive System Materials. **Method:** The population in this study were all class XI IPA Madrasah Aliyah Negeri in Serdang Bedagai, which were taken using the saturated sampling technique. The type of research used is quantitative, namely quasi-experimental research with a nonrandomized control-group pretest-posttest research design. **Conclusion:** The results of data analysis obtained from the ANCOVA test obtained a calculated F value of 8.394 with sig. 0.005, where 0.005 < = 0.05 indicates that H_o is rejected and H_a is accepted. From the research data, that is the influence of student learning outcomes using the PBL model assisted by the integrated audio-visual media of the Al-Qur'an on the material of the reproductive system.

Keywords: Al-Qur'an; Audio Visual; Learning outcomes; PBL.

Article history
Received: 22 July 2022
Accepted: 14 Aug 2022
Published: 31 Aug 2022

Publisher's Note:
BIOEDUSCIENCE stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Citation: Aglillah, S. & Jayanti, U.N.A.D. (2022). PBL Assisted with Al-Qur'an Integrated Audio-Visual Media: Its Effect on Student Learning Outcomes on Reproductive System Materials. *BIOEDUSCIENCE, 6*(2), 220-227. doi: 10.22263/j.bes/629575

Introduction

Learning outcomes are the object of class evaluation as new abilities are obtained by students after following the learning process (Supratiknya, 2012). Learning outcomes in Bloom's taxonomy (1956) are divided into cognitive, affective, and Psychomotor (Sudjana, 2010). Cognitive learning outcomes are academic learning outcomes, while affective learning outcomes are in the form of attitudes, and psychomotor learning outcomes, namely skills and ability to act (Mahananingtyas, 2017). The cognitive realm related to intellectual learning outcomes consists of six aspects, namely knowledge (C1), understanding (C2), application (C3), analysis (C4), Synthesis (C5), and finally, evaluation (C6) (Daryanto, 2007).

However, facts in the field show that learning outcomes in the biology material of high school students are still low (Rahma, 2021). In addition, COVID-19 reduces activities and impacts online platforms' teaching and learning (Panjaitan et al., 2021). Zaputri & Lufri (2021) report that online learning in learning biology makes it difficult for students to learn, so they are in serious difficulty. These learning difficulties impact low student knowledge, affecting student learning outcomes (Wenno et al., 2016). Low learning outcomes are caused by internal factors, including students' lack of interest and motivation, and external factors, namely learning methods (Nabillah & Abadi, 2019).

Based on the results of interviews by teachers of Madrasah Aliyah Negeri in Serdang Bedagai, the low learning outcomes of students generally do not have a strong understanding of the concepts in the reproductive system material. Hairy et al. (2018) reported that there were students who did not understand concepts in the reproductive system material by 51% and misconceptions by 38%, and who understood concepts only by 11%. Another factor that causes the material of the reproductive system to be difficult is its characteristics. According to Henno & Reiska (2008); Raida (2018), it is challenging to learn reproductive system material because it discusses internal organs such as organ systems and mechanisms that occur in the body. In addition, the ability of teachers in Madrasah Aliyah Serdang Bedagai to manage learning in the classroom only teaches with the old method of speaking. Teachers' ability to manage classroom learning that involves teachers and students in the learning process is one of the determining factors for the success of the teaching and learning process in schools (Purwati, 2018). In the learning process on the reproductive system material, there are verses of the Qur'an, for example, QS Al-Mu'minun verses 12-14, QS Al-isra'a verse 32, and QS Al-Hajj verse 5 (Puspita & Irwansyah., 2018). Ihsani et al. (2020) state that in integrated biology learning, Islamic values are declared valid, practical, and effective to improve students' mastery of the concept of biology in MA.

Ahmadi (1993); Damayanti & Jirana (2018) interpret that the direct learning model based on expository methodology is a model that places the educator's situation as the central controller of student learning implementation. One learning model that involves educators in the educational experience is Problem Based Learning (PBL). Based on the hypothesis of Liu (2005), understand the quality of PBL, specifically student-focused educational experiences and problem-based learning, then create small groups, and educators act as facilitators. Suryani et al. (2012) show that the Problem Based Learning model is used to develop student learning outcomes further. In addition, the use of problem-based learning also has a positive impact and is highly utilized to obtain student learning outcomes (Prasasti et al., 2019).

The use of media in learning is expected to help during learning. Nadhifah & Agustin (2020), reports that using learning media on appropriate materials can improve learning outcomes. One of the learning media used is audio-visual media. Audio-visual media can affect student understanding and learning outcomes (Mohd et al., 2018). Syamsu & Susanti (2019) said that there was a significant influence on learning outcomes from the use of audio-visual media. The use of media and technology can trigger the potential sense of learning to be accommodated so that learning outcomes will increase (Purwanto et al., 2016). Rusman (2012) interprets that one of the elements of learning media is to provide messages or material to be conveyed and grow students' abilities. Based on the interview results, it turns out that the teacher has not used audio-visual media in learning.

Various studies have been conducted to determine the influence of the PBL model on student learning outcomes. Hikmi et al. (2019) reported increased student learning outcomes using PBL models with audio-visual media in acid-base material. In addition, applying the PBL model can improve student learning activities and biology learning outcomes (Subekti et al., 2019). The problem-based learning model also affects student learning outcomes and science process skills (Janah et al., 2018). From some of the results of this study, research that examines the influence of PBL assisted by integrated audio-visual media of the Qur'an on student learning outcomes on reproductive system material has not been widely carried out.

Based on the background of the problems described above, the problem in this study is whether there are differences in learning outcomes in the reproductive system material taught using PBL Assisted by Integrated Audio-Visual Media of the Qur'an with conventional models. This study aims to determine the influence of student learning outcomes on reproductive system material using PBL assisted by an integrated audio-visual Qur'an. This research is expected to provide information on the influence of the use

of PBL assisted by the integrated audio-visual Qur'an on student learning outcomes. In addition, the findings obtained can be the basis for development research in biology learning. Teachers can also use the results to compare student learning outcomes with other biological materials using PBL Assisted by Integrated Audio-Visual Media of the Qur'an.

Method

Design Penelitian

The type of research used is quantitative research, namely Quasi-experimental with a nonrandomized control-group pretest-postest research design (Sugiono, 2019). The research design is listed in Table 1. The following is the research design of the Quasi-Experimental method.

Table 1. Research design

Group	Pretest	Perlakuan	Posttest
Experiment	O_1	X_1	O_2
Control	O_3	X_2	O_4

(Source: Sugiono, 2019)

Description:
O_1 = Pretest on the experiment class
O_2 = Posttest on experiment class
O_3 = Pretest on control class
O_4 = Posttest on control class
X_1 = PBL Assisted by Qur'an Integrated Audio Visual Media
X_2 = Conventional Learning

Sample or Participant

This research was conducted at a State Aliyah Madrasah school in Serdang Bedagai Regency. The population in this study is the entire class XI science for the 2021/2022 school year totaling two classes. The sample in this study was 70 students consisting of Class XI IPA-1, totaling 35 students, and class XI IPA-2 totaling 35 students, taken with saturated sampling techniques. The saturated sampling technique is a sample determination technique where all population members are used as samples (Sugiono, 2019). Furthermore, an equality test was carried out based on student report card score data to determine the population in an equivalent state using the t-test. This needs to be done to ensure that the increase in the study results is indeed due to the treatment given, not because of differences in population conditions at the beginning. The results of the t-test showed that the IPA-1 and IPA-2 class equality tests obtained a significance value of 0.113 > 0.05, which means that the two classes are homogeneous. The experiment class is given the PBL model treatment assisted by the Qur'an Integrated Audio Visual Media, while the control class uses a conventional model.

Instrument

This research involves tools in learning, including learning implementation plans (RPP), audio-visual media, student worksheets (LKPD), and instruments in the form of different tests, as many as 15 items of multiple-choice questions that have been tested for validity and reliability with the help of SPSS 23. The validity test obtained a value with Person Correlation 1. Meanwhile, in the reliability test, Cronbach's Alpha score was obtained at 0.854, representing 34 respondents. The validity test results mean that the instrument is valid, and the reliability test results mean that the instrument questions multiple choices reliably or reliably with high criteria.

Procedure

The research procedure is in the early stages of preparing the introduction and research methods in November 2021, then preparing research instruments and instrument validation. The implementation stage applies PBL learning assisted by

integrated audio-visual media of the Qur'an and control classes with conventional models. Students of the experimental class and the control class are given a pretest before conducting a learning of reproductive system material to measure initial knowledge. In the final stage, analysis of research data, discussion, and conclusions is carried out. The PBL syntax is listed in Table 2.

Table 2. Syntax of Problem-Based Learning

Phase	Teacher Activities
Phase 1 Orientation of students on the problem	They conveyed learning objectives, provided problems that students would solve, and motivated students to be involved effectively with the selected problem-solving exercises.
Phase 2 Organizing students to learn	Organizing students to study is related to the main problem.
Phase 3 Directs individual or group investigations	Get students to collect the appropriate data, then complete the test, find clarification and solve the problem
Phase 4 Developing and presenting results	Ask students to present appropriate work, such as reports, videos, and models, and help them to share assignments with their peers.
Phase 5 Analyze and evaluate the troubleshooting process	Ask students to reflect on or evaluate the investigation and problem-solving process.

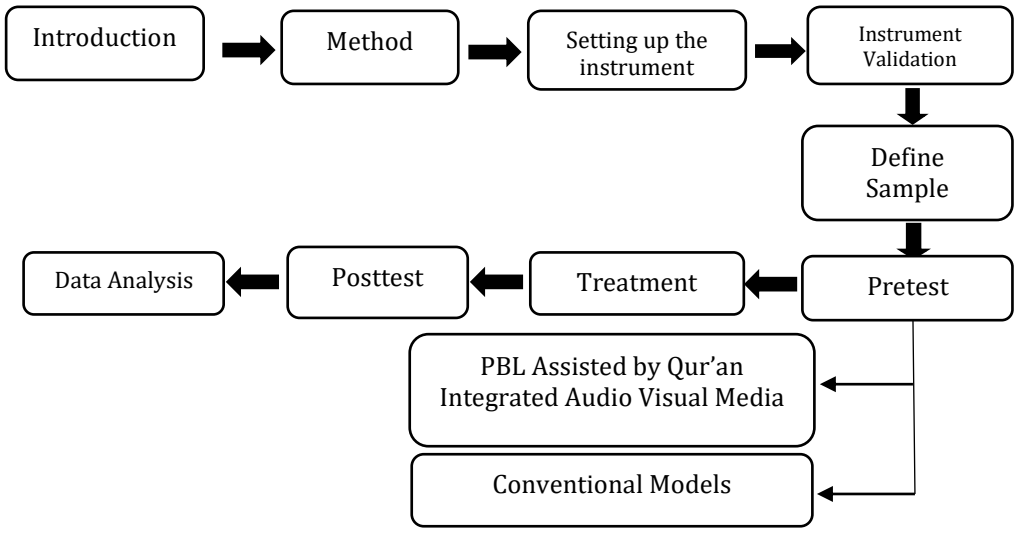

Figure 1. Research procedure

The learning activities carried out initially provided Pretest in the form of multiple-choice questions of 15 questions which were then distributed to students. After that, is continued with the learning process in the experiment class with the PBL model assisted by audio-visual media integrated with the Qur'an and in the control class with the conventional model (lecture). In the experiment class, researchers divided the students into several groups, and then each group was given student worksheets (LKPD) for them to discuss. In line with the group discussion they conducted, the researchers provided an impression with audio-visual media in the form of a learning video about the integrated reproductive system material of the Qur'an, which is expected to help students answer the student worksheets (LKPD) that has been given.

In explaining the material using audio-visual media by showing learning videos explaining the structure and function of organs in the reproductive system integrated with the Qur'an. In the Qur'an, verses discuss the structure and function of organs. In the Qur'an, there is a verse that deals with sperm cells, namely in surah Al-Mursalat verse 20, "Did we not create you from weak water?" as well as in the letter At-Thoriq verse 6, "He was created from the water emitted." Furthermore, the verse of the Qur'an that deals with fertilization is contained in surah Al-Insan verse 2 "Verily We have created man from a drop of mixed seminal which We are going to test him (with commandments and prohibitions); therefore We make him hear and see," then the verse of the Qur'an which

disputes about pregnancy contained in the surah Al-Mu'minun verse 12 "And indeed We have created man from a quintessence (derived) from the ground" and Al-Mu'minu verse 13 "Then We make the essence semen (which is stored) in a solid place (womb)."After the students have finished the discussion, the representatives of each group are selected to convey the results of their discussions. Meanwhile, in the control class, researchers only use conventional models, namely the lecture method, in delivering learning materials. After the two classes' learning is completed, students are given the final test questions as a Posttest, which aims to determine student learning outcomes.

Data analysis

Data analysis techniques using ANCOVA. This analysis technique is used because there is a covariate in the form of Pretest at the beginning. Before conducting the ANCOVA test, the data obtained in the test first of its normality and homogeneity. Normality Test with Liliefors Test and Homogeneity Test with Fisher Test. The test results show that the data is distributed normally and homogeneously, so an ANCOVA test can be carried out. The ANCOVA test in this study was carried out using SPSS 23. The study data are said to be normal and homogenous if the value of P>0.05. Research data that has met the prerequisite test is continued to the ANCOVA test; if the results of data analysis have a p< 0.05, then the data has a significant difference (Field, 2009).

Result

The data is obtained by comparing pretest-posttest results based on the average value, or the frequency and percentage contained in Table 3.

Table 3. Descriptive Statistical Results

Data	*Pretest*		*Post-test*	
	Experiment	**Control**	**Experiment**	**Control**
Mean	44,57	37,51	83,40	75,77
Standard Deviation	7,871	7,131	11,225	10,801
Variance	61,958	50,845	126,012	116,652
Minimum	27	27	60	53
Maximum	47	53	100	93

Based on table 3, the pretest result data shows differences from the experimental class with a mean pretest score of 44.57, a standard deviation of 7,871, a variance of 61,958, a minimum of 27, and a maximum of 147. While in the control class, the mean pretest score is 37.51, the standard deviation is 7.131, the variance is 50.845, the minimum is 27, and the maximum is 53. Furthermore, the post-test data of learning outcomes showed that there were differences from the post-test learning outcomes of the experimental class, which applied the PBL learning model assisted by integrated audio-visual media of the Qur'an with a mean post-test score of 83.40, a standard deviation of 11.225, variance 126.012, minimum 60, and maximum 100. While in the control class with conventional models, the mean score is 75.77, the standard deviation is 10.801, the variance is 116.625, the minimum is 53, and the maximum is 93. The results obtained from the results of the descriptive statistical analysis are then tested for normality and homogeneity.

Table 4. Normality Test

	Kolmogorov-Smirnov[a]			**Shapiro-Wilk**		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
Experiment	,137	35	,094	,925	35	,020
Control	,142	35	,070	,940	35	,057

a. Lilliefors Significance Correction

Based on table 4, the normality test results were obtained with the liliefors test with a degree of significance if the value of the α > 0.05, then the data were normally distributed. For the experiment class 0.094 > 0.05 and the control class 0.070 > 0.05. It can be concluded that the data is normally distributed. Then a homogeneity test is carried out in Table 5.

Table 5. Homogeneity Test

Statistics	Learning Outcomes
P-Value	0,860
Homogeneity	P – Value > 0,05
Conclusions	Homogeneous

Based on table 5, on the homogeneity test it is seen that p-Value = 0.860 > α = 0.05. It can be concluded that the data are homogeneous. Furthermore, because the data is normally distributed, a hypothesis test is carried out, namely: Ha: μ1 > μ2 (There is an influence of using the PBL model assisted by the Qur'an's integrated audio-visual media on student learning outcomes on reproductive system materials).

H0: μ1 ≤ μ2 (There is no influence on using the PBL model assisted by the Qur'an's integrated audio-visual media on student learning outcomes on reproductive system material). The results of the hypothesis test are listed in Table 6.

Table 6. ANCOVA test

Tests of Between-Subjects Effects

Dependent Variable: Posttest value

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1018,414[a]	1	1018,414	8,394	,005	,110
Intercept	443372,014	1	443372,014	3654,207	,000	,982
Class	1018,414	1	1018,414	8,394	,005	,110
Error	8250,571	68	121,332			
Total	452641,000	70				
Corrected Total	9268,986	69				

a. R Squared = ,110 (Adjusted R Squared = ,097)

Based on table 6, the results of the ANCOVA test using the PBL learning model assisted by integrated audio-visual media of the Qur'an obtained a calculated F value of 8,394 with a sig. 0.005, where 0.005 < α = 0.05 indicating that Ho rejects and Ha is accepted. This shows an influence on the PBL model assisted by the Qur'an's integrated audio-visual media on learning outcomes. So, it can be concluded that there are significant differences in learning outcomes between students who use the PBL model assisted by audio-visual media integrated with the Qur'an and those who do not.

Discussion

Research shows that there is an increase in learning outcomes from the data of Pretest and post-test results that have been carried out. The results showed that the average learning outcomes of students with the PBL model assisted by integrated audio-visual media of the Qur'an increased from 44.57 to 83.40, and in conventional classes increased from 37.51 to 75.77. ANCOVA's results show that the improved learning outcome scores in the PBL model assisted by the Qur'an's integrated audio-visual media is significantly higher than conventional methods.

This influence is due to the treatment with the PBL model assisted by the integrated audio-visual media of the Qur'an contained in the phase 3 syntax section. Where phase 3, there is a group discussion on problem-solving. Dividing students into several study groups is based on Vygotsky's theory of learning, namely that learning will have better results if done with joint or group exercises (Trianto, 2015). The PBL syntax does this in the study by distributing student worksheets (LKPD) to students and providing opportunities for students to share knowledge through group discussion activities. In addition, in the discussion process, students were also given learning videos related to the integrated reproductive system of the Qur'an. The Qur'an and biology study are closely related to systematic discovery and understanding of the universe and life. So the Qur'an and biological materials have a strong relationship, and when they are integrated, they will produce meaningful learning (Nurasni et al., 2015). In line with this, integrating Qur'anic verses can improve learning outcomes in the biology learning process (Nurika et al., 2021).

The use of audio-visual media not only results in an effective way of learning in a shorter time but also what is received through audio-visual media longer in memory

(Firdaus, 2016). Media use in learning is beneficial in delivering learning materials, and the learning process becomes more explicit and more interesting, more interactive, efficient in time and energy, and improves the quality of student learning outcomes (Wahid, 2018). Learning media is often also used to overcome the limitations of the learning process (Puspitarini & Hanif, 2019). Thus, from the results of research that has been carried out, it shows that learning the PBL model assisted by the Qur'an's integrated audio-visual media is better than the conventional model, so the PBL model assisted by the Qur'an's integrated audio-visual media can improve student learning outcomes on reproductive system material.

Conclusions

The results showed a significant influence on classes using the PBL model assisted by audio-visual media integrated with the Qur'an on student learning outcomes with control classes using conventional models. This study provides empirical evidence related to applying PBL assisted by audio-visual media to student learning outcomes in reproductive material that can be used as an alternative in biology learning.

The limitation of the study is that each learner's learning outcomes and ability to understand the concept of the subject matter are highly dependent on several factors, such as the learning environment, learning models, learning media, and school support. Based on these limitations, further research is essential to investigate the effects of these factors on learner learning outcomes, concept understanding, and problem-solving. In the same way, further research is essential to make variations in using learning models as well as learning media whether it can facilitate all the needs of students during the learning process. Likewise, an investigation is still needed into how the Qur'an's integrated learning model can always be linked to science and biology.

Declaration statement

The authors reported no potential conflict of interest.

References

Ahmadi. (1993). *Strategi Pembelajaran Sekolah Terpadu*. PT Prestasi Pustakarya.

Bloom, B. S. (1956). *Taxonomy of Educational Objectives : The Classification of Educational Goals, Handbook I Cognitive Domain*. Longmans, Green and Co.

Damayanti, M., & Jirana, J. (2018). Pengaruh Model Pembelajaran dan Minat Belajar Terhadap Hasil Belajar Kimia Peserta Didik Kelas XI IPA SMAN 1 Tinambung. *Saintifik*, *4*(1), 47–53. https://doi.org/10.31605/saintifik.v4i1.143

Daryanto. (2007). *Evaluasi Pendidikan*. Rineka Cipta.

Field, A. (2009). *Discovering Statistics Using SPSS (3th edition)*. Sage Publication, Inc.

Firdaus, F. (2016). Efektivitas Penggunaan Media Audio-Visual Dalam Pembelajaran Sains. *SPEKTRA : Jurnal Kajian Pendidikan Sains*, *2*(01), 46. https://doi.org/10.32699/spektra.v2i01.6

Hairy, M. R., Kusmiyati, & Yamin, M. (2018). Analisis Penguasaan Konsep Materi Sistem Reproduksi Pada Siswa SMA Negeri Di Kota Mataram. *Pijar MIPA*, *13*(2), 119–123.

Henno, I., & Reiska, P. (2008). Using concept mapping as assessment tool in school biology. Concept Mapping: Connecting Educators. *Of the 3rd International Conference on Concept Mapping*.

Hikmi, R., Hasanah, F., & Sutiani, A. (2019). Pengaruh Model Problem Based Learning Dengan Media Audio Visual dan Laboratorium Riil Materi Asam Basa Terhadap Hasil Belajar. *Talent Conference Series: Science and Technology (ST)*, *2*(1), 289– 292. https://doi.org/10.32734/st.v2i1.360

Ihsani, N., Idrus, A. A., & Jamaludin, J. (2020). Perangkat Pembelajaran Biologi Berbasis Masalah Terintegrasi Nilai-Nilai Islami Untuk Meningkatkan Penguasaan Konsep Peserta Didik. *Jurnal Pijar Mipa*, *15*(2), 103–109. https://doi.org/10.29303/jpm.v15i2.1326

Janah, M. C., Widodo, A. T., & Kasmui. (2018). Pengaruh Model Problem Based Learning Terhadap Hasil Belajar Dan Keterampilan Proses Sains. *Jurnal Inovasi Pendidikan Kimia*, *12*(1). https://doi.org/10.15294/jipk.v12i1.13301

Liu, M. (2005). *Motivating Students Through Problem-based Learning*. University of Texas.

Mahananingtyas, E. (2017). Hasil Belajar Kognitif, Afektif dan Psikomotor melalui penggunaan jurnal belajar bagi mahasiswa PGSD. *Prosiding Seminar Nasional HDPGSDI Wilayah IV*, 192–200.

Mohd, S., Thaariq, H., Saliti, R., & Yanda, N. (2018). *Analisis Tingkat Efektivitas Penggunaan Media Audio Visual Terhadap Pemahaman Siswapada Materi Sistem Peredaran Darah Manusia di Kelas XI SMA Negeri 1 Kuala Nagan Raya*. *IX*(2), 32–43.

Nabillah, T., & Abadi, P. A. (2019). Faktor Penyebab Rendahnya Hasil Belajar Siswa. *Sesiomadika*, *2*(3), 659–663.

Nadhifah, U., & Agustin, H. Y. (2020). Meta Analisis Pengaruh Media Pembelajaran Biologi Terhadap Hasil Belaj Ar Kognitif Siswa Jenjang SMA Se-Jawa Timur. *Al-Hikmah: Jurnal Studi Islam*, *8*(2).

Nurasni, Darmawati, & Yustini. (2015). Students 'Perception Of Class X2 MA Darul Hikmah Pekanbaru Toward Iqro Learning Model Implementation In Biology Subject Academic Year. *Jurnal Online Mahasiswa (JOM): Bidang Keguruan Dan Ilmu Pendidikan*, *Vol 2*, *No*, 1–15.

Nurika, N., Chandra, E., & Mulyani, A. (2021). Development of the Religious Values Model to Improve Learning Outcomes of the Digestive System Subject. *Scientiae Educatia*, *10*(1), 29. https://doi.org/10.24235/sc.educatia.v10i1.7661

Panjaitan, R. G. P., Shidiq, G. A., Titin, T., & Wahyuni, E. S. (2021). Discovering the Views of Indonesian Students' Responses to Use the Booklet During the Covid-19 Pandemic Situation. *Jurnal Pendidikan Sains Indonesia*, *9*(4), 620–630. https://doi.org/10.24815/jpsi.v9i4.21416

Prasasti, D. E., Koeswanti, H. D., & Giarti, S. (2019). Peningkatan Keterampilan Berpikir Kritis dan Hasil Belajar Matematika melalui Model Discovery Learning di Kelas IV SD. *Jurnal Basicedu*, *3*(1), 174–179.

Purwanto, W., W, E. T. D. R. W., & Hariyono, H. (2016). Penggunaan Model Problem Based Learning dengan Media Powerpoint untuk Meningkatkan Minat Belajar Siswa. *Jurnal Pendidikan: Teori, Penelitian, Dan Pengembangan.*, *1*(9), 1700–1705.

Purwati. (2018). Meningkatkan Hasil Belajar Biologi Pada Materi Sistem Reproduksi Pada Manusia Berjamaah Melalui Model Pembelajaran Kooperatif Tipe Jigsaw. *Pendidikan Tambusai*, *2*(5), 1318–1333.

Puspita, G. A., & Irwansyah. (2018). Pergeseran Budaya Baca dan Perkembangan Industri Penerbitan Buku di Indonesia: Studi Kasus Pembaca E-Book Melalui Aplikasi iPusnas. *BIBLIOTIKA : Jurnal Kajian Perpustakaan Dan Informasi*, *2*(1), 13–20. https://doi.org/10.17977/um008v2i12018p013

Puspitarini, Y. D., & Hanif, M. (2019). Using Learning Media to Increase Learning Motivation in Elementary School. *Anatolian Journal of Education*, *4*(2), 53–60.

Raida, S. A. (2018). Identifikasi Materi Biologi SMA Sulit Menurut Pandangan Siswa dan Guru SMA se-Kota Salatiga. *Journal of Biology Education*, *1*(2), 209–222.

Rusman. (2012). *Model-model Pembelajaran: Mengembangkan Profesionalisme Guru,*. Raja Grafindo Persada.

Subekti, Suwarto, T., & Nugroho, A. A. (2019). Implementation Of Problem Based Learning To Improve Learning Activities And Biology Learning Outcomes Of High Schoo Students. *Bio-Pedagogi: Jurnal Pembelajaran Biologi*, *8*(2), 83–88.

Sudjana, N. (2010). *Penilaian Hasil Proses Belajar Mengajar*. Remaja Rosdakarya.

Sugiono. (2019). *Metode Penelitian & Pengembangan (Research and Development)*. Alfabeta.

Supratiknya, A. (2012). *Penilaian Hasil Belajar Dengan Teknik Nontes*. Universitas Sanata Dharma.

Syamsu, F. D., & Susanti, R. (2019). Pengaruh Penggunaan Media Audio Visual Terhadap Hasil Belajar Siswa Pada Materi Virus Kelas X IPA di SMA Negeri I Meureubo Aceh Barat. *Genta Mulia : Jurnal Ilmiah Pendidikan*, *10*(2).

Trianto. (2015). *Model Pembelajaran Terpadu* (F. Yustianti (ed.)). Bumi Aksara.

Wahid, A. (2018). Pentingnya Media Pembelajaran dalam Meningkatkan Prestasi Belajar. *Istiqra*, *5*(2), 1–11.

Wenno, I. H., Esomar, K., & Sopacua, V. (2016). Analisis Kesulitan Belajar Dan Pencapaian Hasil Belajar Siswa Melalui Strategi Pembelajaran Inkuiri. *Jurnal Cakrawala Pendidikan*, *35*(3), 378–385. https://doi.org/10.21831/cp.v35i3.10706

Zaputri, N. S., & Lufri, L. (2021). Kesulitan dalam Belajar Biologi saat Pembelajaran Daring. *Journal for Lesson and Learning Studies*, *4*(3), 396–403. https://doi.org/10.23887/jlls.v4i3.38567