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The Implementation of Problem Based Learning Model Supported by Audio Visual Media to Enhance Students' Learning Activities

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Abstrak: Rendahnya aktivitas belajar siswa di kelas VII MTsN 2 Banda Aceh pada materi sistem pernapasan ditandai oleh minimnya partisipasi siswa dalam bertanya, berdiskusi, dan mengemukakan pendapat selama proses pembelajaran. Kondisi tersebut menunjukkan perlunya penerapan model dan media pembelajaran yang inovatif dan berpusat pada siswa. Penelitian ini bertujuan untuk meningkatkan aktivitas belajar siswa melalui penerapan model *Problem Based Learning* (PBL) berbantuan media audio visual. Penelitian ini menggunakan desain Penelitian Tindakan Kelas (PTK) yang dilaksanakan dalam dua siklus, masing-masing meliputi tahap perencanaan, pelaksanaan tindakan, observasi, dan refleksi. Subjek penelitian terdiri dari 37 siswa kelas VII MTsN 2 Banda Aceh. Data dikumpulkan menggunakan lembar observasi aktivitas belajar yang mencakup enam indikator, yaitu *visual, oral, listening, writing, mental,* dan *emotional activities*. Hasil penelitian menunjukkan bahwa rata-rata aktivitas belajar siswa meningkat dari 79% pada siklus I dengan kategori tinggi menjadi 91% pada siklus II dengan kategori sangat tinggi. Peningkatan terjadi secara konsisten pada seluruh indikator aktivitas belajar. Dengan demikian, penerapan model PBL berbantuan media audio visual terbukti efektif dalam meningkatkan aktivitas belajar siswa pada pembelajaran Biologi.

Kata kunci: Aktivitas Belajar, Media Audio Visual, Problem Based Learning, PTK

Abstract : Low student learning activity in class VII MTsN 2 Banda Aceh on the respiratory system material was marked by minimal student participation in asking questions, discussing, and expressing opinions during the learning process. This condition indicates the need to apply innovative and student-centered learning models and media. This study aims to improve student learning activities through the application of the Problem-Based Learning (PBL) model assisted by audio-visual media. This study uses a Classroom Action Research (CAR) design carried out in two cycles, each covering the stages of planning, implementation of actions, observation, and reflection. The research subjects consisted of 37 seventh-grade students at MTsN 2 Banda Aceh. Data were collected using a learning activity observation sheet covering six indicators, namely visual, oral, listening, writing, mental, and emotional activities. The results showed that the average student learning activity increased from 79% in cycle I, which was categorized as high, to 91% in cycle II, which was categorized as very

high. The increase occurred consistently across all learning activity indicators. Thus, the application of the PBL model assisted by audio-visual media proved to be effective in increasing student learning activities in biology learning.

Keywords: Learning Activities, Problem-Based Learning, Audio-Visual Media, PTK.

1. Introduction

The quality of the learning process in the classroom is influenced by various factors, including curriculum, competence of educators, learning approaches and strategies, availability of facilities and infrastructure, and the use of teaching materials. The achievement of learning outcomes that include aspects of knowledge, attitudes, and skills is not only determined by the application of learning models and methods, but also by the availability of teaching materials that are able to support the effectiveness and smoothness of the learning process [1]. In addition, student activities and learning outcomes are not solely determined by cognitive abilities, but are also influenced by emotional intelligence. Emotional intelligence includes self-awareness, emotion management, empathy, intrinsic motivation, and social skills that play an important role in supporting students' learning success and adjustment in the educational environment [2].

Learning activities have a two-way role, namely as a means to help students understand the content of the subject matter as well as a medium in personality formation, ability development, and the cultivation of positive values. Through active involvement in the learning process, students not only gain knowledge, but also develop attitudes, social skills, and learning independence. Therefore, learning activities are seen as a fundamental component that determines the quality of the learning process and the success of achieving educational goals. Learning outcomes themselves are an important indicator to assess the extent to which students are able to understand, master, and apply the material that has been learned optimally [3].

Biology learning at the Madrasah Tsanawiyah Negeri (MTsN) level has a strategic role in helping students understand concepts about living things and

their interaction with the environment scientifically. The Biology learning process not only emphasizes the mastery of knowledge, but also requires the active involvement of students in observing, questioning, thinking critically, and communicating learning outcomes [4]. Therefore, student learning activities are one of the main indicators in assessing the success of the Biology learning process in the classroom, because it reflects the level of student participation, understanding, and involvement during learning activities. However, in practice, student learning activities are still relatively low, which can be seen from the lack of student participation in asking questions, discussing, and expressing opinions during the learning process. This condition shows that learning still tends to be teacher-centered and has not fully encouraged active student involvement.

Based on the results of observations in class, student learning activities in Biology learning, especially respiratory system materials in grade VII MTsN 2 Banda Aceh, are still relatively low. This condition is shown by the lack of student participation in questioning, answering questions, expressing opinions, and involvement in group discussions. Most students tend to be passive and only act as listeners during the learning process. As a result, learning activities are still dominated by teachers (*teacher-centered*), so students' opportunities to be actively involved in the learning process are not optimal.

One of the factors that is suspected to contribute to the low learning activity of students is the use of learning media that is not optimal. In the Biology learning process, teachers still tend to rely on lecture methods without being supported by the use of varied and interesting media [5]. In fact, Biology materials often contain abstract concepts and processes that require visualization to help students understand the material in a more concrete and meaningful way [6]. The limitations in the use of learning media cause students to easily feel bored, less motivated, and not encouraged to actively participate in learning activities [7].

The selection of learning media needs special attention because media functions as a tool in conveying material so that students can understand learning more effectively and efficiently [8]. In this study, technology-based

learning media, namely audiovisual media, was used, which utilizes devices such as laptops, microphones, cables, and learning videos as a means of delivering material [9]. The use of audiovisual media has an important role in supporting the smooth learning process, both in the context of face-to-face and online learning [10]. This media is able to attract students' attention, clarify the delivery of concepts, and stimulate sensory involvement so that it can increase students' interest and understanding of learning [11]. However, the effective use of learning media needs to be balanced with the implementation of the right learning model, as the selection of appropriate models can be an important strategy in improving the quality of the learning process and outcomes [12].

Another factor that contributes to the low learning activity of students is the application of less varied learning models. The model used tends to be monotonous and does not provide adequate opportunities for students to interact, think critically, and collaborate in solving problems. This condition causes student involvement in the learning process to be low and the development of science process skills, which are an important component of Biology learning, is not optimal [13]. One of the models that is considered to be able to increase student activities and involvement is *Problem Based Learning* (PBL). This model emphasizes student-centered learning through the presentation of contextual problems that encourage students to think critically, collaborate, and be active in finding solutions. Therefore, the integration of PBL with audiovisual media is seen as a potential strategy to create more interactive, interesting, and meaningful learning so that it can increase student learning activities.

The right learning model can provide opportunities for students to actively participate and make it easier to understand the material. One model that can be applied is *Problem Based Learning* (PBL) [14]. PBL is a student-centered learning approach and emphasizes authentic problem solving by utilizing prior knowledge and relevant learning resources. The main goal of PBL is to develop students' critical thinking skills and problem-solving skills

[15]. In its application, PBL not only focuses on mastering procedural knowledge, but also encourages students to find solutions to real problems in the surrounding environment [16]. This model provides a more concrete and contextual learning experience through inquiry and discussion activities, so that students' understanding becomes more in-depth [17]. In addition, PBL actively involves students in the learning process so that they do not only depend on teachers as the main source of knowledge, but are able to produce valuable and useful works [18].

Based on these problems, efforts are needed to improve student learning activities in Biology learning at MTsN through the application of innovative and student-centered learning models and media. One alternative that can be applied is the Problem Based Learning (PBL) model assisted by audio-visual media which is expected to encourage active student involvement in the learning process. Therefore, the purpose of this study is to improve student learning activities through the application of *the Problem Based Learning model* assisted by audio visual media on human respiratory system materials in grade VII MTsN 2 Banda Aceh. With the application of these models and media, it is hoped that the learning process can take place more effectively, interestingly, and be able to increase students' activeness and understanding of learning materials.

2. Research Method

This study uses the Classroom Action Research (PTK) method, which is a type of research that is carried out systematically to improve and improve the quality of the learning process in the classroom [19]. The research was carried out by referring to the Kemmis and Taggart model which consisted of four stages, namely planning, implementation of actions, observation, and reflection, which took place in a cyclical and continuous manner [20]. The four stages are interrelated and form a research cycle. Research activities were carried out in two cycles, namely cycle I and cycle II, where each cycle involved two learning meetings covering all stages of PTK [21]. This research was carried

out in the same class as the research subject until the entire cycle was completed [22]. The flow of classroom action research is shown in Figure 1.

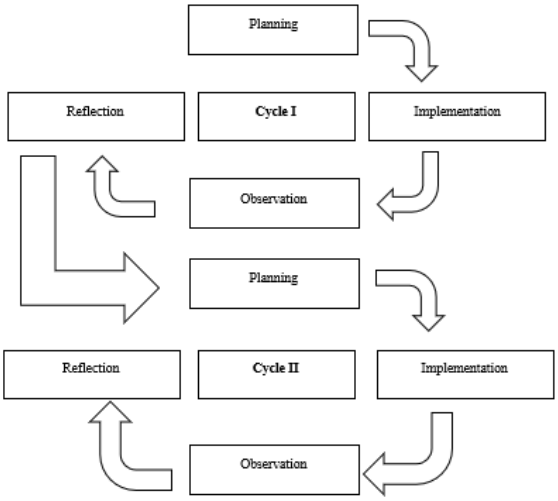

Figure 1. PTK Stages

This class action research was carried out on grade VII MTsN 2 Banda Aceh students for the 2023/2024 school year, totaling 37 students as research subjects. The research was conducted in the even semester, namely from January to February 2024, at MTsN 2 Banda Aceh which is located at Jalan Tgk. Imuem Lueng Bata, Lueng Bata District, Banda Aceh City, Aceh Province. Research activities are carried out through several learning cycles with the aim of improving the process and increasing student learning activities in Biology subjects. The analysis of student learning activities is carried out by calculating the percentage of achievement of each aspect of the activity observed during the learning process. The observation data were analyzed using a percentage formula to determine the level of student activity in each indicator that had been determined [23].

$$P = \frac{f}{N} X100\%$$

Description :
P = Percentage Number
F = Score obtained by students

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N = Maximum score obtained

The analysis was carried out by converting the value of the activity observation into the percentage of the success indicator. The indicators of the completeness criteria for student learning activities can be seen in table 1. [24] as follows:

Table 1. Criteria for completeness of learning activities

Interval	Category
81% - 100%	Very High
61% - 80%	High
41% - 60%	Moderate / Medium
21% - 40%	Fair/Sufficient
0% - 20%	Low

The expected level of student activity in learning is set in the active category, namely if the percentage of activity score obtained reaches more than 60%. Students are declared complete in learning activities if they meet these criteria. Observation of student learning activities is carried out based on six indicators, namely *visual activities*, *oral activities*, *listening activities*, *writing activities*, *mental activities*, and *emotional activities*, which are observed during the learning process.

3. Results and Discussion

a. Result

This research was carried out in two action cycles. Each cycle is designed to address the problems identified at the initial stage, namely low student activity and learning outcomes in Biology subjects, especially in the human respiratory system. The implementation of the action is focused on the application of *the Problem Based Learning* model assisted by audiovisual media as an effort to create more interesting, interactive, and meaningful learning for grade VII MTsN 2 Banda Aceh students. The results of each cycle were systematically analyzed to determine the increase in student learning activities through the application of *the Problem Based Learning* model assisted by audiovisual media.

In the first cycle, learning was carried out by applying the *Problem Based Learning* model assisted by audiovisual media, where learning videos were used as a stimulus at the problem orientation stage. The show encourages students to observe, discuss, express opinions, and complete assignments according to the PBL stages. In cycle II, actions were corrected by adding guiding questions, strengthening group discussions, and interactive quizzes that were integrated in each stage of *Problem Based Learning* assisted by audiovisual media. The improvement aims to direct student activities to be more focused, active, and participatory in observing, discussing, and thinking critically. Data obtained through student activity observation sheets showed a significant increase from cycle I to cycle II. A complete description of the results in each cycle is presented as follows.

Cycle I

a. Student Learning Activities In Cycle 1

The results of observation of student activities are obtained during the learning process by giving scores on the assessment sheet in accordance with the criteria that have been set. Observations were made using observation sheets of students' learning activities by three observers during learning activities at MTsN 2 Banda Aceh. The data from the observation of student learning activities is then presented in Table 2.

Table 2. Percentage Results of Student Learning Activities at the First Meeting in Class VII MTsN 2 Banda Aceh

No	Activity Indicators	O1	O2	O3	Average (%)
1.	*Visual Activities*	70%	75%	75%	73%
2.	*Oral Activities*	60%	80%	75%	72%
3.	*Listening Activities*	75%	100%	100%	92%
4.	*Writing Activities*	90%	75%	80%	82%
5.	*Mental Activities*	75%	85%	100%	87%
6.	*Emotional Activities*	55%	75%	75%	68%
Overall Average					**79%**

Based on Table 1, the average overall student learning activity in the first cycle reached 79% with a high category, which shows that the application of *the Problem Based Learning model* assisted by audiovisual media has been able to

activate students in the learning process. The listening *activities indicator* obtained the highest percentage of 92% in the very high category, followed by *mental activities* of 87% which was also in the very high category. *Writing activities* reached a percentage of 82% with a very high category, which shows the involvement of students in paying attention to impressions, processing information, and completing the assignments given. Meanwhile, *visual activities* obtained a percentage of 73%, *oral activities* of 72%, and *emotional activities* of 68%, all of which were in the high category. This shows that students have been engaged in observing and discussing activities, although the level of participation is not even among all students.

Cycle II

a. Student Learning Activities in Cycle II

In cycle II, action improvements were made by adding guiding questions, strengthening group discussions, and interactive quizzes that remained integrated in the *Problem Based Learning stage* with the help of audiovisual media so that student activities became more directed, especially in the aspects of observing, discussing, expressing opinions, and involvement during the learning process. The results of observations of student learning activities through the application *of the Problem Based Learning* model assisted by audiovisual media on Biology materials were obtained during the learning process at MTsN 2 Banda Aceh. Data was collected using observation sheets assessed by three observers based on predetermined criteria. The results of student learning activities in cycle II are presented in Table 3.

Table 3. Results of Student Learning Activity Percentage at the Second Meeting in Class VII MTsN 2 Banda Aceh

No	Activity Indicators	O1	O2	O3	Average (%)
1.	*Visual Activities*	80%	85%	85%	83%
2.	*Oral Activities*	90%	75%	100%	88%
3.	*Listening Activities*	80%	100%	100%	93%
4.	*Writing Activities*	75%	90%	95%	87%
5.	*Mental Activities*	100%	100%	75%	92%
6.	*Emotional Activities*	100%	100%	100%	100%
Overall Average					**91%**

Based on Table 3, the average overall student learning activity in cycle II reached 91% and was included in the very high category, which indicates an increase in student involvement compared to the previous cycle. All activity indicators were in the very high category, with the highest achievement in *emotional activities* at 100%, followed by *listening activities* at 93% and *mental activities* at 92%. Meanwhile, *oral activities* obtained a percentage of 88%, *visual activities* of 83%, and *writing activities* of 82%, all of which are also in the very high category. These results show that the application of *the Problem Based Learning* model assisted by audiovisual media is able to increase students' overall activeness in various aspects of learning activities in respiratory system materials.

Comparison Between Cycles

The results of the average differentiation of student learning activities in cycles I and II using the *audiovisual-assisted Problem Based Learning* model at MTsN 2 Banda Aceh can be seen in figure 1.

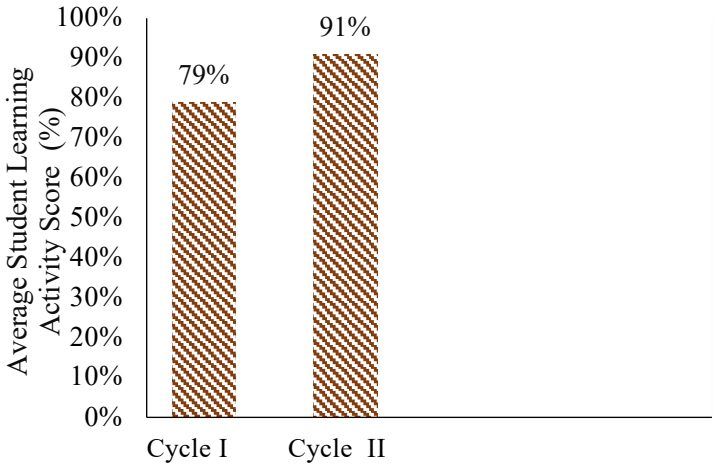

Figure 1. Comparative Chart of Student Activity in Cycles I & II

Based on Figure 1, it can be seen that there is a difference in the percentage of student learning activities in cycles I and II. The average percentage of student learning activities in the first cycle is 79%, including the high category. In the second cycle, there was an increase, namely the average percentage of student learning activities was 91% with a very high category

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b. Discussion

This study applies Classroom Action Research (PTK) as a method designed to overcome learning problems in the classroom and improve student learning activities on respiratory system materials. In the first cycle, the application of *the Problem Based Learning* (PBL) model assisted by audiovisual media showed that *listening activities* obtained the highest percentage of 92%. This condition is influenced by the characteristics of PBL which begins with the presentation of contextual problems as an initial cognitive stimulus. Presenting problems through audiovisual media about the respiratory system requires students to listen to information intensively as a basis for analysis and problem-solving, so that listening activities become more dominant. According to Yuliana Septi Wahyuni, *listening activities* are one of the effective ways to attract attention and help students stay focused during learning [25]. Meanwhile, *emotional activities* obtained the lowest percentage of 68% because students are still adapting to the demands of PBL which requires the courage to actively participate.

In the second cycle, the application of the PBL model assisted by audiovisual media on human respiratory system material has increased significantly. Based on the observation results, the improvement of each indicator of learning activities can be explained pedagogically. *Visual Activities* increased from 73% to 83% because the presentation of problems through audiovisual media was accompanied by more directed guiding questions so that students' attention was more focused. *Oral Activities* increased from 72% to 88% due to strengthening group discussions and more structured presentation opportunities. *Listening Activities* increased from 92% to 93% showing the consistency of students' attention in understanding the problem. *Writing Activities* increased from 82% to 87% due to more systematic assignments at the investigation and reporting stages. *Mental Activities* increased from 87% to 92%, reflecting an increasingly directed thought process. *Emotional Activities* increased significantly from 68% to 100% because students were more confident and comfortable collaborating.

The increase in student learning activities was seen from 79% in the first cycle to 91% in the second cycle. This shows that the application *of Problem Based Learning* (PBL) assisted by audiovisual media plays an important role in creating a more interesting and interactive learning atmosphere. This finding is in line with Zatriany's research which states that the use of audiovisual media effectively increases social studies learning activities, from 53.6% in the first cycle to 78.6% in the second cycle after the improvement of the action. Relevant impressions are able to attract students' attention and encourage them to be more active in listening, discussing, and completing assignments [26]. In addition, educators are not only required to master the material, but also digital technology because audiovisual media is able to explain complex concepts [27]. In Biology learning at MTsN 2 Banda Aceh, the problem-focused PBL structure encourages students to actively identify issues, explore information, discuss, and design solutions.

The support of audiovisual media strengthens learning stimulation because complex biological phenomena can be visualized, heard, and analyzed more really, making it easier to understand and helping to maintain students' focus. The combination of *the Problem Based Learning* (PBL) model and audiovisual media creates an interactive learning environment, where students play an active role and are involved in every stage of learning activities. This condition significantly increases the intensity and quality of learning activities in the classroom. Therefore, PBL is very appropriate to be combined with audiovisual media because it utilizes the elements of sight and hearing at the same time, so that it is able to arouse students' motivation and involvement in learning. These findings are in line with research by Puput (2022) which shows that the application of the PBL model assisted by audiovisual media, such as Animaker, has a positive effect on improving students' critical thinking skills, activities, and learning outcomes [28].

Overall, the increase in student learning activities from cycle I to cycle II shows that the improvement in the implementation of *the Problem Based*

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Learning (PBL) model assisted by audiovisual media contributes significantly to the optimization of student involvement. Improvements in actions in cycle II, such as presenting guiding questions, strengthening group discussions, and using interactive quizzes, make students more active in observing, discussing, expressing opinions, and thinking critically. Thus, the implementation of PBL assisted by audiovisual media not only increases the intensity of participation, but also the quality of student involvement in all indicators of learning activities, creating a more interactive, interesting, and meaningful learning process.

4. Conclusion

The application of *the Problem Based Learning* (PBL) model assisted by audiovisual media on Biology materials at MTsN 2 Banda Aceh has been proven to increase student learning activities. This is shown by an average increase from 79% in cycle I with the high category to 91% in cycle II with a very high category. Improvements occurred in all activity indicators, namely visual, oral, listening, writing, mental, and emotional. These results show that the improvement of actions in cycle II, such as guide questions, reinforcement of group discussions, and interactive quizzes, is able to optimize student involvement more systematically, consistently, and thoroughly throughout the entire learning process, so that learning becomes more effective and meaningful.

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6. Reference

[1]Almainah, Ulfa R, Hader AE. (2021).“Media Audio Visual Terhadap Hasil Belajar Siswa Di Kelas IV SDN 06 Sitiung Pada Mata Pelajaran IPA Materi Gaya Dan Gerak”. *INNOVATIVE*. Vol.1. pp. 55-60. DOI: https://doi.org/10.31004/innovative.v1i2

[2]Nova, Oktavia, Rini. (2026). “Pengaruh Kecerdasan Emosional Terhadap Aktivitas dan Hasil Belajar”. *IKRAITH-HUMANIORA*. Vol.10. pp. 115-116. DOI: https://doi.org/10.37817/ikraith-humaniora.v10i1

[3]lasmaria, Simbolon, Natalina, P., Radode, K, Simarmata. (2022). “ Pengaruh Model Index Card Match Pada Pembeljaran Tematik Terhadap Belajar Siswa Kelas IV”. *Jurnal Ilmu Pendidikan.* Vol. 4. pp. 311. DOI:https://doi.org/10.31004/edukatif.v4i5.4050

[4]Akbar, Fathuraahman, Nala, Ranelia, P.,Bagus, Pratomo, N., Putri, N. (2023).“Studi Literatur : Penggunaan Model PBL Terhadap Kemampuan Berpikir Kritis Peserta Didik Pada Materi Pencemaran Lingkungan”. *Biogenerasi Jurnal Ilmu Pendidikan.* Vol.8. pp. 7243. DOI:10.30605/biogenerasi.v8i1.2192

[5]Fitri, Arsih., Muhyiatul, F., Heffi, A., Aisiah. (2024). “Penguatan Kompetensi Profesional Dan Pedagogik Guru MGMP Biologi Dalam Mengembangkan Pembelajaran Inovatif Untuk Mendukung Pemberdayaan Keterampilan Abad-21 Siswa”.*E-DIMAS: Jurnal Pengabdian Kepada Masyarakat.* Vol.15. pp. 7. DOI:10.26877/e-dimas.v15i1.14056

[6]Arsad, Bahri., Asham., Wahyu, Hidayat, M., Sutrisno, Nurhadi, A., Aulia, D,H., Nur, Aisyah, A. (2024). “Pengembangan Pembelajaran Berdiferensi Berbantuan Virtual Reality Pada Pembelajaran Biologi”.*Jurnal Sainsmat*. Vol.12. pp. 89. DOI:10.35580/sainsmat131540402024

[7]Dinda, El, Maskhuri., Triman, Juniarso, Amelia, Widya, Hanindita. (2024). “Pengaruh Media Pembelajaran Video Animasi Terhadap Pemahaman Konsep IPAS Siswa Kelas V”. *Jurnal Sekolah.* Vol.8. pp. 707.DOI: https://doi.org/10.24114/js.v8i4.62548

[8]Lestari, K.I., Dewi, N. K. & Hasanah, N. (2021).“Pengembangan Media Pembelajaran Permainan Monopoli Pada Tema Perkembangan Teknologi Untuk Siswa Kelas III Di SDN 8 Sokong”. *Jurnal Ilmiah Profesi Pendidikan*. Vol.6. pp. 275-282. DOI:https://doi.org/10.29303/jipp.v6i3.219 .

[9]Munisatul Munawarah, M, Khoirul, Amirullah., M. Alfan., Khorunnisa., Nusrotus, Sai’idah. (2024).“Efektivitas Penerapan Media Audio Visual Terhadap Pengaruh Motivasi Belajar Pendidikan Agama Islam Pada Anak Usia Sekolah Dasar”. *Jurnal BASIDECU*. Vol.8. pp. 287-288.DOI : https://doi.org/10.31004/basicedu.v8i1.6969

[10]Watini, dkk. (2025).“Implementasi Penggunaan Media Audio Visual Dalam Pembelajaran Matematika Bagi Siswa Disabilitas Intelektual”. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini.* Vol.9. pp. 1946-1947.DOI: 10.31004/obsesi.v9i5.6997

[11]Hamida Azzahra, dkk. (2025).“Pemanfaatan Media Audio Visual Sebagai Sarana Pembelajaran Interaktif Di Sekolah Dasar: Strategi, Manfaat Dan Implementasinya”. *Jurnal Riset Ilmu Pendidikan.* Vol.3. pp. 134-136. DOI: https://doi.org/10.54065/jld.5.2.2025.668

[12]Nur Wahyuningsih Ibrahim, dkk. (2025).“Peran Media Pembelajaran dalam Meningkatkan Efektivitas Pembelajaran”. *Jurnal Literasi.* Vol.5. pp. 114. DOI: https://doi.org/10.61132/semantik.v3i2.1621

[13]Muh,Nasir, dkk. (2023). “Implementasi Model Pembelajaran Problem Based Learning Untuk Meningkatkan Keterampilan Proses Sains Siswa SMAN 5 Kota Bima”. *Jurnal Ilmiah Ilmu Pendidikan (JIIP).* Vol.6. pp. 289-290.DOI: https://doi.org/10.54371/jiip.v6i1.1370

[14]Disya Ananda N,M,. Rosdiana, Ngitung,. Syamsiah. (2023). “Penerapan Model Problem Based Learning Untuk Meningkatkan Aktivitas Dan Hasil Belajar Siswa Kelas X Mipa 1 Di SMA Negeri 8 GOWA”. *Jurnal Pendidikan Biologi.* Vol.8. pp. 516-521.DOI: https://doi.org/10.30605/biogenerasi.v8i2.2878

[15]Helfa, Durasa,. Ni, Made, Sri, Mertasari., I, Gusti, Ngurah, P. (2024). “Implementasi Problem Based Learning Berdasarkan Independensi Belajar Untuk Meningkatkan Kemampuan Pemecahan Masalah Dengan Mengontrol Kecemasan Matematis”. *Jurnal Program Studi Pendidikan Matematika.* Vol.13. pp.629. DOI: https://doi.org/10.24127/ajpm.v13i2.7102

[16]Olivia, Widiwati., Ahmad, Suriansyah., Cinantya, C. (2024). “Model Pembelajaran Project Based Learning Dalam Meningkatkan Kemampuan Kritis Pada Siswa Sekolah Dasar”. *Jurnal Penelitian Multidisiplin.* Vol.2. pp.2062-2064. DOI: https://doi.org/10.60126/maras.v2i4.555

[17] Cinantya,C.,Maimunah, Ni’mah, A., & Melinda, N. (2024).”Sticker Board Activity" to develop fine motor aspects for early childhood.Journal of Early Childhood Care and Education”.Vol.7. pp. 20–33.DOI: https://doi.org/10.26555/ jecce.v7i1.8641

[18] sasmiza, E., Wardiah, D., & Puspita,Y. (2023). “Pengaruh Model Pembelajaran Project Based Learning (PjBL) terhadap Kemampuan Menulis Teks Prosedur Siswa”. *JOURNAL ON TEACHER EDUCATION*, Vol.4, pp. 91–96. DOI:https://doi.org/https:/doi.org/10.31004/jote.v4i4.14424

[19] Radiansyah, Sari, R., Jannah, F., Kamina, T., Azizah, N., Puspita, P. M., & Zefri, M. (2022). “Development of Project Learning Model Based on H OTS d i S D Wetlands Banjar Regency”. *International Journal of*

Social Science and Human Research, Vol. 5. pp. 4280–4287. DOI:https://doi.org/10.47191/ijsshr/v5-i9-40

[20] Amir, M, F., Sartika, S, B. (2017). *Metodelogi Penelitian Dasar Bidang Pendidikan*. Sidoarjo : Umsida Press.

[21] Anisatur, Rohmaniyah., Mei Fita, A, U., Nani, K. (2024). "Penerapan pembelajaran berdiferensi dalam peningkatan hasil belajar IPAS kelas 5 SDN Sawah Besar 01 Semarang". *Journal on Education*. Vol. 5. pp. 19885-19886.DOI: https://doi.org/10.31004/joe.v6i4.6009

[22] Nur, Ajizatul,M., M, Faizal, Amir. (2021). "Peningkatan Aktivitas Dan Hasil Belajar Siswa Sekolah Dasar Melalui DAKONMATIKA Berbasis Teknologi Visual". *Jurnal Riset Pendidikan Dasar (JRPD)*. Vol. 4. pp. 101. DOI: https://doi.org/10.26618/jrpd.v4i2.5988

[23] Sudijono, Annas. (2008). *Pengantar Evaluasi Pendidikan*. Jakarta : Raja Grafindo Persada.

[24] Arikunto, Suharsimi. (2012). *Penelitian Tindakan Kelas*. Jakarta : Bumi Aksara

[25] Yulia, Septi, W., Jepri, N., Sekar, Harum, P., Vini, W, S. (2023). "Penerapan listening team untuk meningkatkan aktivitas belajar siswa pada mata pelajaran ilmu pengetahuan alam kelas V sekolah dasar negeri 03 sungai angek". *Journal of social science research*. Vol. 3. pp. 13229-13238. DOI: Https://Dor Org/10.55748/Mjtl V312.158

[26] Edi, Santoso, M., Subhanadri, Zulqoidi, R. H. (2025). "Peningkatan Proses Dan Hasil Belajar IPAS Menggunakan Model Problem Based Learning Berbantuan Media Wordwall". *Master Of Innovation And Education Technology*. Vol. 1. pp. 8-10. DOI:https://doi.org/10.63461/civic-edutech.v12.215

[27] Agustin, K., Septie, Putri, I., Fitria, Ainun, N., Regita, D, W. (2023). "Pengembangan Media Audio Visual Sebagai Model Pembelajaran Problem Based Learning Di Sekolah Dasar Pada Era 5.0". *Jurnal Pendidikan Ibtidaiyah*. Vol. 4. pp. 188. DOI:https://doi.org/10.19105/mubtadi.v4i2.7719

[28] Puput, Apriyanti., Kristiani., Leny, Noviani. (2022). "Pengaruh Model PBL Berbantuan Media Animaker Terhadap Keterampilan Berpikir Kritis Ekonomi". *Jurnalon Education*. Vol. 5. pp. 1175-1176. DOI: https://doi.org/10.31004/joe.v5i1.736