



## The Impact of KOSICA Media (*Light Properties Box*) on the Learning Interest of Grade IV Students

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### ABSTRAK

*The low interest of students in learning science is a concern for teachers because it will have an impact on learning outcomes. This study aims to analyze the KOSICA media of light properties on science learning interests. This study includes quantitative research with a nonequivalent control design experimental approach. The sample used by grade IV students was 64 students. The data collection technique uses a questionnaire of learning interest in KOSICA media. Data analysis uses the SPSS 29 application to test normality test, homogeneity test, and independent sample t-test. The results showed that the interest in learning using KOSICA media in the experimental class was 70.44 while the control class was 63.13. This shows that students' interest in learning using KOSICA media is greater than that of classes that do not use KOSICA media. It can be concluded that the use of KOSICA media has a significant effect on the learning interest of grade IV students in studying science subjects about the properties of light. KOSICA media makes learning fun, plays an active role so that it has an impact on students' interest in learning in science subjects about the properties of light.*

**Keywords:** KOSICA media; science learning; Learning Interest

### ABSTRAK

Rendahnya minat belajar siswa pada pembelajaran IPA menjadi perhatian para guru karena akan berdampak pada hasil belajar. Penelitian ini bertujuan untuk menganalisis media KOSICA materi sifat-sifat cahaya terhadap minat belajar IPA. Penelitian ini termasuk penelitian kuantitatif dengan pendekatan eksperimen desain *nonequivalent control*. Sampel yang digunakan siswa kelas IV sebanyak 64 siswa. Teknik pengumpulan data menggunakan angket minat belajar terhadap media KOSICA. Analisis data menggunakan aplikasi SPSS 29 untuk menguji normality test, homogeneity test, and independent sample t-test. Hasil penelitian menunjukkan bahwa minat belajar dengan menggunakan media KOSICA pada kelas eksperimen sebesar 70,44 sedangkan kelas kontrol sebesar 63,13. Hal ini menunjukkan bahwa minat belajar siswa dengan menggunakan media KOSICA lebih besar dibandingkan dengan kelas yang tidak menggunakan media KOSICA. Dapat disimpulkan bahwa penggunaan media KOSICA berpengaruh secara signifikan terhadap minat belajar siswa kelas IV dalam mempelajari mata pelajaran IPA tentang sifat-sifat cahaya. Media KOSICA berperan aktif sehingga berdampak pada minat belajar siswa pada mata pelajaran IPA tentang sifat-sifat cahaya.

**Kata Kunci:** media KOSICA; pembelajaran IPA; minat belajar

## INTRODUCTION

Learning is a psychological activity that involves personality aspects and aims to achieve positive behavior change through practice or experience and involves personality aspects (Allemand et al., 2024; Suardi, 2022). Learning can also be defined as an action that causes changes in the form of knowledge, attitudes, and skills (Kougias et al., 2023; Muliani & Arusman, 2022). There is a correlation that aims at teaching and learning activities. Teachers who interpret teaching or learning by creating an environment that has educational value for the benefit of students are the cause of the correlation aimed at students (Le & Nguyen, 2024; Tumanggor, 2017). In order for the learning process to run smoothly, teachers must be active in the classroom (Kurino & Herman, 2023). The use of relevant learning media can inspire students to always be active learners and participate in meaningful learning experiences (Sari, 2018; Susanto et al., 2023).

Learning media plays an important role in the delivery of teaching materials (Daryanes et al., 2023; Harsiwi & Arini, 2020). One of the aspects of education that a teacher must take advantage of in order to successfully implement a learning strategy is learning media (Sanulita et al., 2024). The advantage of media in education in general is that it facilitates communication between teachers and students, thereby increasing the efficiency and effectiveness of learning activities (Junaidi, 2019; Xie et al., 2024). Utilizing learning media into the teaching and learning process will help students become more motivated and gain a deeper understanding of the material so that learning becomes more meaningful (Hasanah et al., 2023; Widianoro & Minsih, 2023). There are certain criteria that determine a good learning medium. However, it needs to be emphasized, "good" here does not only refer to the display of the media that has been successfully created, but also other aspects, such as quality, usability, consistency in the context of learning and others (Tobamba et al., 2019).

The learning process in schools today often has problems related to the use of learning media (Hobbs et al., 2024). Learning media in schools are only oriented to assignments and media delivery through the media, but in reality they are not in accordance with the material presented (Buchner & Kerres, 2023; Gui et al., 2022). Often the atmosphere of the learning environment is relatively rigid, causing boredom, fatigue, and also lethargy in students, thus affecting students' interest in learning and learning outcomes, so that variations in the use of learning media will make students interested and happy to learn (Sartika & Bahri, 2022).

Aspects that have an impact on student learning outcomes such as interest in learning (Harjanto et al., 2021; Wei et al., 2022). The results of research show Harefa et al (2023) that students' interest in learning has an impact on science learning outcomes because having a high sense of pleasure, comfort, interest, and desire to learn can provide benefits and satisfaction for students. In line with the results of the study (Harefa, 2023) that there is a positive and significant relationship between learning interest and student learning outcomes. Students who have a high interest in learning will lead to improved learning outcomes. Interest is a feeling of liking and being interested in a certain activity without coercion, interest can also be shown through students' participation in an activity (Bautista & Bantulo, 2024). Students will pay more attention than other things if they have an interest (Mawadah et al., 2022).

The experience of interest is a current psychological state characterized by feelings such as pleasure and focus (Neher-Asylbekov & Wagner, 2023). The learning process in general is the effect of various internal and external factors. Physical, psychological and fatigue factors are

included in internal factors. Meanwhile, family, school and community factors are external factors. An internal factor that has the potential to affect the learning process is interest in learning (Harefa et al., 2023). The difficulty of students in understanding the material of science learning concepts is due to a lack of interest in the subject (Azizah et al., 2022).

A subject described in elementary school is Natural Sciences or Science (Agustin & Winanto, 2023; Valente et al., 2024). In general, natural sciences are related to the universe and all its contents (Fadlillah et al., 2023). Natural Sciences is a component of science that uses science to investigate a phenomenon (Durrotunnisa & Nur, 2020; Wu & Erduran, 2024). Students' skills in building, mastering, and implementing the concepts pursued in science learning must be improved through direct experience (Darling-Hammond et al., 2024; Firmansyah et al., 2023). In fact, in Indonesia, science subjects are not so much in demand and received little attention (Astuti, 2017). Students' interest in learning science is low so that student learning outcomes are poor and have not met the Minimum Completeness Criteria (KKM) (Meidawati, 2019). In science learning, students must be given the opportunity to develop their own knowledge through observation and experiment activities (Amini & Saniyah, 2021).

The results of observation on learning activities at SDN Pinang Ranti 05 Morning show that teachers in delivering teaching materials do not use relevant media. The learning process uses textbooks as the only learning reference. The learning carried out in science learning looks monotonous and reduces the interaction between teachers and students. Students also seem to be busy with their own activities because they are bored with the learning done by their teachers. This indicates that students' interest in learning science is low.

Low student interest in learning certainly requires a strategy so that it can foster students' interest in learning. One of the strategies that can be done is to use learning media that attracts students' interest. The results of research show Magyaroza & Angreni (2022) that the use of KOSICA 3D media (*Light Properties Box*) is valid and very practical to use in science learning in grade IV of SD Negeri 26 Sigiran, Agam Regency. Kosica Media (*Light Properties Box*) is a visual media made based on four properties of light that display attractive shapes and colors and can be practiced directly by students so that they can increase students' interest in learning.

The research Prasetya & Muhroji (2022) that students' knowledge of the properties of light increases when the medium of the light properties box (*kosifacay*) is used in science learning. Faradhita (2022) that the use of light box media is able to maximize students' knowledge and learning outcomes. Sholiha et al (2018) that the light box media shows the feasibility in science learning so that it can be used in classroom learning. The direct involvement of students in learning science material of light properties can increase students' interest in learning so that it has an impact on improving student learning outcomes in cognitive, affective, and psychomotor aspects (Mulyani, 2022).

Penelitian ini berbeda dengan penelitian sebelumnya dimana media Kosica digunakan pada pembelajaran IPA materi sifat-sifat cahaya berbantuan power point yang menarik bagi siswa. Pembelajaran IPA bukan hanya tentang konsep, fakta, dan teori, tetapi melibatkan inovasi dan aktivitas siswa dalam belajar (Indriani, 2023). Penelitian ini bertujuan untuk menganalisis pengaruh media Kosica (*Light Properties Box*) terhadap minat belajar siswa pada pembelajaran IPA materi sifat-sifat cahaya.

## METHOD

### Types and Designs

This research includes quantitative type research using the nonequivalent control design experimental method. This study was conducted in the experimental class and the control class where the experimental class was given treatment while the control class was not treated (Hasdiana, 2018). The design of this study was used because the sample used was not randomly selected. The experimental class in the process of learning science of light properties using Kosica media (Light Properties Box) while the control class without using Kosica media in learning science of light properties. For more details, please see Table 1 of the following research design.

Table 1. Research Design

Class	PreTest	Method	PostTest
Experiment	$O_1$	Treatment	$O_2$
Control	$O_3$	-	$O_4$

Table 1 above shows that  $O_1$  is the interest in learning the experimental class before using Kosica media in learning science material on the properties of light,  $O_2$  is the interest in learning the experimental class after using Kosica media in learning science material on the properties of light in grade IV students.  $O_3$  is the interest in learning the control class before using media in learning science material of light properties,  $O_4$  is the interest in learning the control class after using media in the learning of science material of light properties in grade IV students.

### Data and Data Sources

The data used in this study were all students of grades IV A and IV B at SDN Pinang Ranti 05 Pagi as many as 64 students. The sampling technique applies *Non-probability sampling type purposive sampling* (Amin et al., 2023). Sampling is determined by the researcher by considering the accreditation value of A. The research was conducted on Tuesday and Wednesday, May 14 and May 15, 2024. The data source was taken from the results of the KOSICA media questionnaire score and learning interest.

### Data collection techniques

In this study, a questionnaire was used to unite data with a closed questionnaire type. The following is a grid of KOSICA media questionnaire instruments and a learning interest questionnaire can be seen in Table 2 below.

Table 2. Questionnaire Instrument Grid for the Use of KOSICA Media

Variable	Indicator	Questionnaire Items	Number of Questions
	KOSICA can encourage students to learn science.	1,3,7,13,14	5

KOSICA media influence	KOSICA media can be used effectively and efficiently.	9	1
	KOSICA media presents an attractive display.	2,8	2
	Students are more enthusiastic about learning if they use KOSICA as a science learning medium.	4,10,11,16,19	5
	Students feel interested when learning science because they use KOSICA media.	8,12,15,20	4
	Students' curiosity is aroused when KOSICA media is used as a learning medium.	5,6,7	3
Hanifah & Setyasto (2024)			

Table 3. Student Learning Interest Questionnaire Instrument Grid

Variable	Indicator	Questionnaire Items	Number of Questions
Learning Interest	Feeling of pleasure	1,2,3,4,5,6	6
	Student interest	7,8,9,10,11	5
	Student attention	12,13,14,15	4
	Student engagement	16,17,18,19,20	5

Harefa et al (2023)

### Data analysis

Data analysis techniques are divided into normality test, homogeneity test, and *independent sample t-test*. The validity test and reliability test on the questionnaire were tested first by the researcher before conducting a study with 20 questions each tested on 32 respondents. The normality test and homogeneity test are very important to be fulfilled because on the initial assumption of a linear regression equation is said to be good if the regression error/error is normally and homogeneously distributed (Sari et al., 2017). The data results showed that all valid and reliable questionnaires as evidenced by a sig of  $> 0.05$  and a reliable test for the learning interest questionnaire of 0.842 and for the KOSICA media questionnaire of 0.804. Testing was carried out using *SPSS 29* software.

### RESULTS AND DISCUSSION

The research was held in two classes in the category of experimental class and control class. Class IV B as an experimental class is treated using KOSICA media and class IV A is a control class treated using Power Point media. The following are the results of pretest and

posttest of the use of KOSICA media in science learning, the properties of light in the experimental class, and the control can be seen in Figure 1 below.

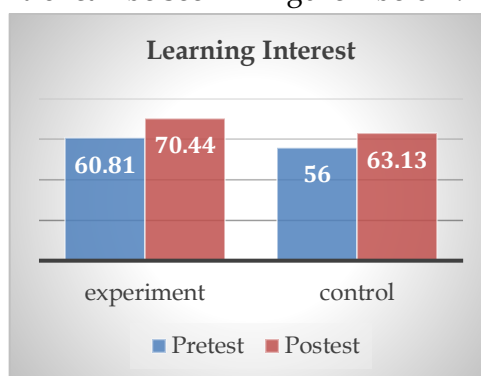


Figure 1. Comparison of Student Learning Interests

In order to determine the influence of KOSICA media on students' interest in learning, the next step is to calculate the prerequisites for data analysis, namely *the Kolmogorov Smirnov* normality test assisted by SPSS 29 software. The results of the normality test calculation can be seen in table 4.

Table 4. Kolmogorov Smirnov *normality test*

Test of Normality				
Kolmogorov Smirnov				
	Kelas	Statistic	Df	Sig.
Learning Interest	Pretest Experiment (KOSICA)	0,142	32	0,101
	PostTest Experiment (KOSICA)	0,130	32	0,181
	PreTest Control (PowerPoint)	0,144	32	0,091
	PostTest Control (PowerPoint)	0,139	32	0,122

Based on the table 4 above, it is known that the significance values of the results of the PreTest and PostTest data normality test results of the experimental class were obtained with significance numbers of 0.101 and 0.181. However, the PreTest and PostTest data of the control class obtained significance numbers of 0.091 and 0.122 using a significance level of 5% ( $\alpha = 0.05$ ), so that it can be known if the value is  $0.101 > 0.05$ ;  $0.181 > 0.05$ ;  $0.091 > 0.05$ ; and  $0.122 > 0.05$ . So, the conclusions obtained from all the data are normally distributed. The homogeneity test was carried out by applying *the Levene* test assisted by SPSS 29 software. The results of the homogeneity test calculation can be seen in table 5.

Table 5. Levene *Homogeneity Test*

Test of Homogeneity of Variance					
Class		Levene Statistic	Df	Df	Sig.
Based on Mean		0,057	1	62	0,812

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Learning  
Interest

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Based on the table 5 above, it is known that the results of the PostTest data processing of the experimental class and the control class through the *Levene* test obtained a significance value of 0.812 at the significance level ( $\alpha = 0.05$ ), so it can be known if it is  $0.812 > 0.05$ . So, it can be concluded if the experimental class and the control class obtain the same or homogeneous variance.

After being declared to be normally distributed and homogeneous, it was continued with a hypothesis test using an *independent test of the t-test sample* assisted by SPSS 29 software. The results of the homogeneity test calculation can be seen in table 6.

Table 6. *Independent Test Sample T-test*

$t_{hitung}$	$t_{tabel}$	Information
6,274	2,042	$t_{hitung} > t_{tabel}$

Based on the table 6 above, it is known that the results of the *Independent T-test Sample* test were obtained 6.274 which was greater than the value of 2.042 and also produced Sig. (2-tailed) of 0.000  $t_{tabel}$  where the provision of the significance level  $< 0.05$ , so it can be concluded that  $H_1$  was accepted and  $H_0$  was rejected. This proves that there is an impact of the use of KOSICA media on the learning interest of grade IV students in the material of light properties.

Table 7. *Average PostTest Score*

Group Statistic					
	Class	N	Mean	Std.Deviation	Std.Error Mean
Learning Interest	PostTest Experiment	32	70,44	4.765	0,842
	PostTest Control	32	63,13	4.556	0,805

Based on the table 7 above, it can be seen that the number of respondents in the experimental class and the control class is the same, such as 32 students. However, there was a difference in the final score in the two groups. The experimental group scored 70.44 and the control group scored 63.13. Thus, it was concluded that the final value of the experimental group was greater than that of the control group such as  $70.44 > 63.13$ .

As seen in the results of the calculation above, it can be seen that the use of KOSICA media in the experimental classroom has an impact on the learning interest of grade IV students in light properties. This is reinforced by research Fadhillah et al (2020) which indicates that the increase in learning outcomes of grade IV students is due to the use of light box media where good learning outcomes are related to students' learning interests. The use of KOSICA media applied to the experimental class has significantly changed students' learning interest in learning science material of light properties. The use of technology in learning has an impact on improving the material delivered using moving images and interactive sounds so that learning attracts students' interest in learning (Metasari & Amalia, 2024).

The KOSICA media used by researchers when learning science related to the properties of light consists of various objects that show the four properties of light such as light propagating straight, light penetrating clear objects, light can be reflected and light can be refracted. In between the explanation of the material, several students were asked to come forward to practice the medium and the student was asked to call his friend to determine what nature of the light they were doing. Students were seen participating in learning with enthusiasm, showing a happy and interested attitude in learning as well as active communication between teachers and students. This shows that students' interest in learning about light properties is increasing (Sari et al., 2022). In addition, KOSICA Media designs with attractive colors and shapes to look at to attract attention.

The findings Syaipul et al (2023) state that with the help of SICABOX media, students can better understand the material of light properties. In addition, because SICABOX media can arouse students' enthusiasm in learning, this media can increase effectiveness and efficiency in learning. In addition, the results of the study are reinforced by research Purba & Anas (2024) which states that there is an increase in student reactions during learning due to the use of light box media which is characterized by a high enthusiasm in finding intelligent ways to master, creating functional and practical learning situations that then motivate students to think.

The use of KOSICA media in science learning material of light properties has an effect on the learning interest of grade IV students at SDN Pinang Ranti 05 Morning. Thus, the use of KOSICA media on students' learning interests is a new finding that can be used by teachers in the classroom as a medium to motivate students and actively involve them in learning, because the media is effective in connecting abstract materials with students' real experiences, so that it can trigger higher students' interest in learning

## CONCLUSION

Hasil penelitian dapat disimpulkan bahwa terdapat pengaruh yang signifikan terhadap minat belajar antara kelas eksperimen yang menggunakan media KOSICA dibandingkan dengan kelas kontrol yang tanpa menggunakan media KOSICA pada pembelajaran IPA materi sifat-sifat cahaya bagi siswa kelas IV SDN Pinang Ranti 05 Morning. Penggunaan media KOSICA membuat pembelajaran bermakna dan menyenangkan, memicu siswa untuk berpartisipasi aktif dalam pembelajaran dan mampu membangkitkan minat siswa untuk belajar. Oleh karena itu, peneliti merekomendasikan kepada guru untuk menggunakan media KOSICA dalam pembelajaran IPA materi sifat-sifat cahaya.

## REFERENCE

- Agustin, P., & Adi Winanto. (2023). Pengaruh Media Pembelajaran KIT IPA Terhadap Motivasi dan Hasil Belajar Siswa Kelas IV. *Jurnal Elementaria Edukasia*, 6(2), 800-813. <https://doi.org/10.31949/jee.v6i2.5471>
- Allemand, M., Olaru, G., Stieger, M., & Flückiger, C. (2024). Does realizing strengths, insight, and behavioral practice through a psychological intervention promote personality change? An intensive longitudinal study. *European Journal of Personality*, 0(0), 1-19. <https://doi.org/10.1177/08902070231225803>



- Amin, N. F., Garancang, S., Abunawas, K., Makassar, M., Negeri, I., & Makassar, A. (2023). *KONSEP UMUM POPULASI DAN SAMPEL DALAM PENELITIAN*. 14(1), 15–31.
- Amini, R., & Saniyah, S. (2021). Pengembangan Modul Pembelajaran IPA Berbasis Picture And Picture di Sekolah Dasar. *Jurnal Basicedu*, 5(2), 835–841. <https://doi.org/10.31004/basicedu.v5i2.769>
- Astuti, L. S. (2017). Penguasaan Konsep IPA Ditinjau dari Konsep Diri dan Minat Belajar Siswa. *Formatif: Jurnal Ilmiah Pendidikan MIPA*, 7(1), 40–48. <https://doi.org/10.30998/formatif.v7i1.1293>
- Azizah, N., Zmaroni, M., & Ginanjar, R. R. (2022). Analisis Kesulitan Belajar dalam Pemahaman Konsep Pembelajaran IPA Kelas IV di MI Hidayaturohman Kecamatan Teluknaga Kabupaten Tangerang. *Jurnal Pendidikan Dan Konseling*, 4(5), 1707–1715.
- Bautista, A. L., & Bantulo, J. S. (2024). Personal Values, Attitudes and Interests As Predictors of the Academic Performance of Ip Learners: Bases for a Proposed Fostering Yield in Education Program. *European Journal of Education Studies*, 11(3), 173–223. <https://doi.org/10.46827/ejes.v11i3.5236>
- Buchner, J., & Kerres, M. (2023). Media comparison studies dominate comparative research on augmented reality in education. *Computers & Education*, 195, 104711. <https://doi.org/https://doi.org/10.1016/j.compedu.2022.104711>
- Darling-Hammond, L., Schachner, A. C. W., Wojcikiewicz, S. K., & Flook, L. (2024). Educating teachers to enact the science of learning and development. *Applied Developmental Science*, 28(1), 1–21. <https://doi.org/10.1080/10888691.2022.2130506>
- Daryanes, F., Darmadi, D., Fikri, K., Sayuti, I., Rusandi, M. A., & Situmorang, D. D. B. (2023). The development of articulate storyline interactive learning media based on case methods to train student's problem-solving ability. *Heliyon*, 9(4), 1–14. <https://doi.org/10.1016/j.heliyon.2023.e15082>
- Durrotunnisa, & Nur, H. R. (2020). Jurnal basicedu. Jurnal Basicedu. *Jurnal Basicedu*, 5(5), 3(2), 524–532.
- Fadhilah, E., Subari, I., & Kirana, A. R. (2020). Penggunaan Media Kotak Sifat Cahaya Dalam Meningkatkan Hasil Belajar Siswa Kelas IV SD Negeri 2 Gedong Air. *Jurnal Ilmiah Mahasiswa Guru Sekolah Dasar*, 473–484.
- Fadlillah, M., Bohri Rahman2, Nurul Istiq'Faroh, Ayik Fena Emilda, & Debby Rahmawati. (2023). Analisis Bahan Ajar Berwawasan Agraris untuk Pembelajaran IPA di Sekolah Dasar. *Jurnal Elementaria Edukasia*, 6(3), 1118–1127. <https://doi.org/10.31949/jee.v6i3.6356>
- Firmansyah, H., Wuryandini, E., & Pitarti, I. O. (2023). *Model Problem Based Learning Berbantu Media Kotak Sifat Cahaya untuk Meningkatkan Hasil Belajar IPAS Kelas Va*. November, 2534–2539.
- Gui, M., Gerosa, T., Argentin, G., & Losi, L. (2022). Mobile media education as a tool to reduce problematic smartphone use: Results of a randomised impact evaluation. *Computers & Education*, 194, 104705. <https://doi.org/10.1016/j.compedu.2022.104705>
- Hanifah, C. S., & Setyasto, N. (2024). 3D Diorama Learning Media on the History of the Independence of Indonesia to Improve Learning Outcomes in Social Studies Learning. *MIMBAR PGSD Undiksha*, 12(1), 47–56. <https://doi.org/10.23887/jjpgsd.v12i1.72828>
- Harefa, D. (2023). The Relationship Between Students Interest In Learning and Mathematics

- Learning Outcomes. *AFORE: Jurnal Pendidikan Matematika*, 2(2), 1–11.
- Harefa, D., Sarumaha, M., Telaumbanua, K., Telaumbanua, T., Laia, B., & Hulu, F. (2023). Relationship Student Learning Interest To The Learning Outcomes Of Natural Sciences. *International Journal of Educational Research & Social Sciences*, 4(2), 240–246. <https://doi.org/10.51601/ijersc.v4i2.614>
- Harsiwi, U. B., & Arini, L. D. D. (2020). Pengaruh Pembelajaran Menggunakan Media Pembelajaran Interaktif terhadap Hasil Belajar siswa di Sekolah Dasar. *Jurnal Basicedu*, 4(4), 1104–1113. <https://doi.org/10.31004/basicedu.v4i4.505>
- Hasanah, U., Astra, I. M., & Sumantri, M. S. (2023). Exploring the Need for Using Science Learning Multimedia to Improve Critical Thinking Elementary School Students: Teacher Perception. *International Journal of Instruction*, 16(1), 417–440. <https://doi.org/10.29333/iji.2023.16123a>
- Hasdiana, U. (2018). *METODE PENELITIAN KUANTITATIF* (Vol. 11, Issue 1).
- Hobbs, R., Moen, M., Tang, R., & Steager, P. (2024). Measuring the implementation of media literacy instructional practices in schools: community stakeholder perspectives. *Learning, Media and Technology*, 49(2), 170–185. <https://doi.org/10.1080/17439884.2022.2151621>
- Indriani, P. (2023). *Pengembangan Alat Peraga Kotak Sifat Cahaya ( Kosica ) Pada Pembelajaran Ilmu Pengetahuan Alam Fakultas Tarbiyah Dan Ilmu Keguruan Juni 2023 Pen Pengembangan Alat Peraga Kotak Sifat Cahaya ( Kosica ) Pada Pembelajaran Ilmu Pengetahuan Alam Kelas Iv Mi Ma.*
- Junaidi. (2019). *Peran Media Pembelajaran Dalam Proses Belajar Mengajar*. 3(14), 12.
- Kougias, K., Sardianou, E., & Saiti, A. (2023). Attitudes and Perceptions on Education for Sustainable Development. *Circular Economy and Sustainability*, 3(1), 425–445. <https://doi.org/10.1007/s43615-022-00174-w>
- Kurino, Y. D., & Herman, T. (2023). *Pengaruh Model Discovery Learning Terhadap Pemecahan Masalah Matematis Siswa Sekolah Dasar Berdasarkan hal tersebut , kegiatan belajar matematika mesti disajikan dalam menyapaikan suatu permasalahan , Sehingga proses kegiatan belajar matematika peserta di.* 6(1), 181–186. <https://doi.org/10.31949/jee.v6v1.4181>
- Le, H. Van, & Nguyen, L. Q. (2024). Promoting L2 learners' critical thinking skills: the role of social constructivism in reading class. *Frontiers in Education*, 9(June), 1–12. <https://doi.org/10.3389/educ.2024.1241973>
- Magyarozza, M., & Angreni, S. (2022). Pengembangan Media 3d Kosica (Kotak Sifat Cahaya) Dalam Pembelajaran Ipa Kelas Ivdi Sekolah Dasar Negeri 26 Sigirankabupaten Agam. *Jurnal Fakultas Keguruan Dan Ilmu Pendidikan*, 15(1).
- Mawadah, N., Kasiyun, S., Ghufro, S., Syamsul, & Widiyana, D. R. (2022). Pengaruh Minat Baca terhadap Hasil Belajar IPS Siswa Kelas V Sekolah Dasar. *PTK: Jurnal Tindakan Kelas*, 3(1), 33–38. <https://doi.org/10.53624/ptk.v3i1.113>
- Meidawati, S. A. N. B. R. (2019). Persepsi Siswa Dalam Studi Pengaruh Daring Learning Terhadap Minat Belajar Ipa. *SCAFFOLDING: Jurnal Pendidikan Islam Dan Multikulturalisme*, 1(2), 30–38. <https://doi.org/10.37680/scaffolding.v1i2.117>
- Metasari, A., & Amalia, N. (2024). Analytical Study : the Use of Digital Technology-Based Learning Media at Alam Surya Mentari Elementary School. *Jurnal Elementaria Edukasia*, 7(2), 2724–2735. <https://doi.org/10.31949/jee.v7i2.9302>
- Muliani, R. D., & Arusman, A. (2022). Faktor - Faktor yang Mempengaruhi Minat Belajar Peserta Didik. *Jurnal Riset Dan Pengabdian Masyarakat*, 2(2), 133–139.

<https://doi.org/10.22373/jrpm.v2i2.1684>

- Mulyani, D. (2022). Improving Science Learning Outcomes Material Properties of Light (Principle Lup Work) with Experimental Methods in Class IV A Students SDN Tempel Semester 1 Academic Year 2021/2022. *Social, Humanities, and Education Studies (SHEs): Conference Series*, 5(5), 362–366.
- Neher-Asylbekov, S., & Wagner, I. (2023). Modelling of interest in out-of-school science learning environments: a systematic literature review. *International Journal of Science Education*, 45(13), 1074–1096. <https://doi.org/10.1080/09500693.2023.2185830>
- Prasetya, S. R., & Muhroji, M. (2022). Penggunaan Alat Peraga Kotak Sifat Cahaya (Kosifacay) dalam Penguasaan Pembelajaran IPA di Sekolah Dasar. *Jurnal Basicedu*, 6(3), 4848–4854. <https://doi.org/10.31004/basicedu.v6i3.2959>
- Purba, N. A., & Anas, N. (2024). Pengaruh Media Kotak Sifat Cahaya ( Kosica ) terhadap Kemampuan Berpikir Kritis Peserta Didik Pada Mata Pelajaran IPA di Kelas IV Sekolah Dasar. 13(2), 2717–2728.
- Sanulita, H., Hendriyanto, D., Citrawati Lestari, N., Ramli, A., & Arifudin, O. (2024). Analysis Of The Effectiveness Of Audio Visual Learning Media Based On Macromedia Flash Usage On School Program Of Increasing Student Learning Motivation. *Journal on Education*, 6(2), 12641–12650. <https://doi.org/10.31004/joe.v6i2.5121>
- Sari, A. Q., Sukestiyarno, Y. L., & Agoestanto, A. (2017). Batasan Prasyarat Uji Normalitas dan Uji Homogenitas Pada Model Regresi Linear. *Unnes Journal of Mathematics*, 6(2), 168–177.
- Sari, F. P., Mahmood, D. D., Subroto, S. H., Nursuhud, P. I., & Prasetyo, H. (2022). Development of physic learning video properties of light with colaboration teacher and student as learning media in new normal era. *Gravity: Jurnal Ilmiah Penelitian Dan Pembelajaran Fisika*, 08(01), 12–24. <https://doi.org/10.30870/gravity.v8i1.11584>
- Sari, N. I. (2018). Pengaruh Media Gambar Terhadap Minat Belajar Siswa Pada Mata Pelajaran Ipa.
- Sartika, A. D., & Bahri, S. (2022). Pengembangan Media Magic Box Pada Pembelajaran IPA Di SD Negeri 105359 Sumberjo. *Journal Ability : Journal of Education and Social Analysis*, 3(1), 82–91.
- Suardi, M. (2022). Belajar Dan Pembelajaran. *Uwais Inspirasi Indonesia*, March, 175.
- Susanto, Desrani, A., Ritonga, A. W., Ramli, Lubis, M., & Nurdin. (2023). Learning by doing: A teaching paradigm for active learning in Islamic high school. *Journal of Education and E-Learning Research*, 10(4), 793–799. <https://doi.org/10.20448/jeelr.v10i4.5224>
- Syaipul, A., Yusuf, R. N., Munte, S. S., & A. Hrp, W. A. (2023). Pengembangan Media Pembelajaran Sicabox Materi Sifat-Sifat Cahaya untuk Meningkatkan Kemampuan Berpikir Ilmiah Siswa. *El-Mujtama: Jurnal Pengabdian Masyarakat*, 4(1), 126–136. <https://doi.org/10.47467/elmujtama.v4i1.3207>
- Tobamba, E. K., Siswono, E., & Khaerudin, K. (2019). Pengaruh Media Pembelajaran Terhadap Hasil Belajar Ips Ditinjau Dari Minat Belajar Siswa Sekolah Dasar. *Taman Cendekia: Jurnal Pendidikan Ke-SD-An*, 3(2), 372–380. <https://doi.org/10.30738/tc.v3i2.5210>
- Tumanggor, N. E. (2017). PENGARUH METODE PEMBELAJARAN DAN GAYA BELAJAR TERHADAP HASIL BELAJAR IPA. *Jurnal Teknologi Pendidikan (JTP)*, 10(2), 189. <https://doi.org/10.24114/jtp.v10i2.8731>
- Valente, B., Maurício, P., & Faria, C. (2024). The Influence of Real-Context Scientific Activities on Preservice Elementary Teachers' Thinking and Practice of Nature of Science and

- Scientific Inquiry. *Science & Education*, 33(1), 5–27. <https://doi.org/10.1007/s11191-022-00377-5>
- Wei, X., Saab, N., & Admiraal, W. (2022). Do learners share the same perceived learning outcomes in MOOCs? Identifying the role of motivation, perceived learning support, learning engagement, and self-regulated learning strategies. *The Internet and Higher Education*, 56, 100880. <https://doi.org/10.1016/j.iheduc.2022.100880>
- Widiantoro, D., & Minsih. (2023). Pemanfaatan Sampah Organik Menjadi Media Pembelajaran Pada Sekolah Adiwiyata. *Jurnal Elementaria Edukasia*, 6(4), 1658–1670. <https://doi.org/10.31949/jee.v6i4.6958>
- Wu, J.-Y., & Erduran, S. (2024). Investigating Scientists' Views of the Family Resemblance Approach to Nature of Science in Science Education. *Science & Education*, 33(1), 73–102. <https://doi.org/10.1007/s11191-021-00313-z>
- Xie, Z., Chiu, D. K. W., & Ho, K. K. W. (2024). The Role of Social Media as Aids for Accounting Education and Knowledge Sharing: Learning Effectiveness and Knowledge Management Perspectives in Mainland China. *Journal of the Knowledge Economy*, 15(1), 2628–2655. <https://doi.org/10.1007/s13132-023-01262-4>