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Development of E-LKPD Using Canva Based on Problem-Based Learning on Respiratory Material to Improve Critical Thinking Skills and Learning Outcomes of Elementary School Students

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ABSTRACT
This study aims to develop e-LKPD based on Problem-Based Learning (PBL) using Canva on the respiratory system material of fifth grade elementary school students. The background of this study is based on the low critical thinking skills and learning outcomes of students due to the dominance of lecture methods and limited interactive digital learning media. This study uses the Research and Development (R&D) method with the ADDIE model which includes the stages of analysis, design, development, implementation, and evaluation. The validation results show that e-LKPD is declared very valid by material experts (95%), media experts (89%), and practitioners (100%). The practicality test shows the implementation of learning above 87% and very good student responses above 95%. The effectiveness of the product is evidenced by a significant increase in learning outcomes, with an N-Gain value between 0.71 and 0.73 (high category). In addition, indicators of students' critical thinking skills have increased in all aspects after the implementation of e-LKPD. Thus, the PBL-based e-LKPD using Canva that was developed is declared valid, practical, and effective in improving critical thinking skills and learning outcomes of elementary school students.

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1. INTRODUCTION

Rapid technological developments have had a positive impact on the world of education, especially in overcoming barriers to communication and information transfer between teachers and students (Widianto et al., 2021). Interesting learning media such as images, videos, and animations are considered effective in increasing students' interest and understanding (Elpira & Ghufron, 2015; Sunami & Aslam, 2021; Febriani et al., 2022). Elementary school children tend to be interested in visual media, so interactive learning media are needed that are in accordance with their characteristics, one of which is through the development of e-LKPD (Lathifah et al., 2021).

The advantages of e-LKPD are that it can be accessed anytime, utilizes gadgets, and presents interesting and varied materials (Julian, 2020). Canva as an online graphic design platform allows teachers to create interesting and interactive e-LKPD (Junaedi, 2021; Kharissidqi & Firmansyah, 2022). In addition, e-LKPD developed with Canva can contain materials in the form of videos, images, and online-based questions that are effective in improving students' cognitive abilities (Lailiah et al., 2021).

Observation results in 20 elementary schools in Lumajang Regency show that 70% of students have not achieved the learning objective achievement criteria (KKTP) in the science subject. Learning that is still centered on textbooks requires innovation through the application of the Problem-Based Learning (PBL) model to improve students' learning outcomes and critical thinking skills (Gunantara et al., 2014; Apriani, 2020).

Problem-Based Learning (PBL) is an innovative learning model that is centered on students and encourages them to solve real problems that are relevant to everyday life. This model has been proven to increase students' motivation, curiosity, and critical thinking skills (Susanti, 2019; Haeruman et al., 2017). However, the results of field observations show that the critical thinking skills of elementary school students are still low, which is supported by statements from 70% of teachers and the results of previous studies (Rofiah, 2013; Hayati & Setiawan, 2022).

Critical thinking skills and student learning outcomes are greatly influenced by internal and external factors, including the learning methods used (Ulfah & Arifudin, 2021; Wulandari & Nisrina, 2023). Therefore, the development of PBL-based e-LKPD using Canva is a strategic step to improve critical thinking skills and learning outcomes of elementary school students, especially in the respiratory system material.

Natural and Social Sciences (IPAS) is a new subject in the Independent Curriculum that integrates science and social studies to study the relationship between humans and their natural and social environment (Kemendikbudristek, 2022; Hattarina et al., 2022; Nadifah et al., 2023).

Electronic Student Worksheets (e-LKPD) are electronic learning media that contain online-based student activity guides, are easily accessible via digital devices, and encourage active and interactive learning (Putra & Aisiah, 2021; Suryaningsih & Riska, 2021). The ideal e-LKPD should be web-based, contain multimedia, be attractive, and be able to assess student results automatically (Hamalik, 2016). LKPD has various purposes, such as helping students find concepts, apply, strengthen, and guide practicums (Prastowo, 2011).

The Canva application is an online design platform that provides various templates and graphic tools that make it easier for teachers to create attractive and interactive e-LKPD (Sholeh et al., 2020; Tanjung & Faiza, 2019; Siregar & Fadilah, 2024). The use of Canva has been proven effective in increasing student engagement and mastery of concepts, as well as enabling the integration of videos, animations, games, and LKPD in one platform (Meka et al., 2023).

Problem-Based Learning (PBL) is a contextual problem-based learning approach that encourages students to solve real problems and discover new knowledge independently (Marrlina et al., 2018; Meilasari et al., 2023). The characteristics of PBL include a focus on problems, structured learning, active student participation, and flexibility of solutions (Widayanti et al., 2020). The advantages of PBL include improving critical thinking, independence, and meaningful learning, although it takes longer and adequate learning resource readiness (Yulianti & Gunawan, 2019; Rakhmawati, 2021).

Critical Thinking Skills are an important part of 21st century learning. Critical thinking trains students to analyze, evaluate, and make decisions based on valid information (Putra & Sudarti, 2015; Dakabesi & Luoise, 2019). Critical thinking indicators according to Facione include interpretation, analysis, evaluation, inference, explanation, and self-regulation (Novitasari, 2023). These critical thinking skills have been shown to have an impact on improving student learning outcomes (Harefa & Telaumbanua, 2020).

Learning Outcomes are changes in student behavior after following the learning process, including cognitive, affective, and psychomotor aspects (Nana Sudjana, 2011; Rahman, 2022). Learning outcome indicators refer to Bloom's taxonomy which includes the ability to remember to create in the cognitive domain, as well as the ability to assess and organize in the affective and psychomotor domains (Faidah et al., 2023). Factors that influence learning outcomes include internal factors such as motivation and psychological health, as well as external factors such as the learning environment and learning media facilities (Salsabila & Puspitasari, 2020; Hidayah & Kuntjoro, 2022).

2. RESEARCH METHODS

The type of research used is Research and Development (R&D) with the ADDIE models which consist of 5 stages, namely: analysis, design, development, implementation, and evaluation. The first stage is Analysis. The analysis stage is a process of defining what will be learned by students. So to find out or determine what must be learned, we must do several activities, including (1) Conducting a needs assessment analysis, namely to determine the abilities or competencies that need to be learned by students to improve learning outcomes. The needs data were obtained through questionnaires distributed to teachers and students as well as classroom observations. The questionnaire aimed to identify students' difficulties in learning science, their access to digital devices, and their interest in visual and interactive learning media. Observations were conducted to support the questionnaire results and provide a deeper understanding of learning activities and media usage in the classroom. (2) Conducting a task analysis, namely to find out and clarify whether the problems faced require a solution in the form of creating learning devices.

The second stage is Design. This stage is also known as making a design. First, we formulate a design including: (1) Determining learning objectives based on CP. (2) Compiling a test, where the test must be based on the learning objectives that have been formulated. (3) Determining the right learning strategy by using e-LKPD to achieve these objectives. (4) Creating e-LKPD based on PBL.

The third stage of Development. Development is the process of realizing the design that has been made into reality, so the e-LKPD needs to be developed. One important step in the development stage is the trial before implementation, namely a limited class trial (small class, n = 9). At this stage, students work on pre-tests, post-tests and observations. Furthermore, it will be revised and given back to students at meeting 2.

The fourth stage of Implementation (Implementation) Implementation is the application of the use of PBL-based e-LKPD in a larger class. At this stage, the e-LKPD that has been developed is arranged in such a way according to its role or function so that it can be implemented according to the initial design.

Fifth Stage Evaluation Evaluation is a process to see whether the PBL-based e-LKPD being developed is successful, in accordance with initial expectations or not. The evaluation that occurs in each of the four stages above is called formative evaluation, because its purpose is for revision needs.

Figure 1. ADDIE models

Source: Sugiyono (2012)

Data Collection Instruments

The data collection instruments included expert validation sheets, student response questionnaires, and pre-test and post-test instruments to assess cognitive learning outcomes and critical thinking skills. The expert validation sheets were designed to evaluate the feasibility of the product in three aspects material, media, and practicality each assessed by qualified experts and practitioners. The student response questionnaires were used to determine students' perceptions of the e-LKPD's usability, visual appeal, and interactivity. Pre-test and post-test instruments were developed based on critical thinking indicators adapted from Facione and Gittens, (2016) in Rahmawati,et al., (2025), namely interpretation, analysis, evaluation, inference, and explanation.

The data obtained from the assessment during the validation process was analyzed to determine the extent of the validity of the product that had been developed. The product validity formula uses the Valpro formula (Akbar, 2016: 82).

Description:
Va = Product validity
Tse = Real score achieved
TSh = Maximum score that can be achieved
Indicators of product design validation result criteria are listed in table 1.

Table 1. Product Design Validation Result Criteria Indicators

Percentage	Categorty
81,00%– 100 %	Very valid
61,00%– 80,00%	Quite valid
41,00%– 60,00%	Less valid
21,00% – 40,00%	Not valid
0% – 20,00%	Very invalid

Source: Akbar (2016: 82)

The product development can be tested if it falls into the feasible category with a minimum score of 61. If the score was less than 61, then the product being developed must be revised before the product usage trial was resumed.

Quantitative data were analyzed using the N-Gain formula proposed by Hake (1998) to determine the level of effectiveness of the developed e-LKPD. The N-Gain was calculated using the formula:

$$< N - gain > = \frac{Sf - Si}{100 - Si}$$

Description:
<g> = Mean N-gain score
Sf = Post-test score
Si = Pre-test score

Table 2. Criteria for Effectiveness Test Results

Score N-Gain	Criteria
N-Gain > 0,70	High
0,30 ≤ N-Gain ≤ 0,70	Medium
0 < N-Gain < 0,30	Low

Source: Hake (1998)

3. RESULTS AND DISCUSSION

This study uses the ADDIE development model consisting of five stages, namely Analysis, Design, Development, Implementation, and Evaluation. The study was conducted at three Public Elementary Schools in Lumajang Regency, namely SDN Jatimulyo 01 as the location for small class trials, and SDN Kunir Lor 01 and SDN Kunir Kidul 01 as the locations for large class trials. The initial stage of the study began with an analysis of needs and problems in learning science on breathing material. The results of the questionnaire showed that 60% of students had difficulty understanding the material, teachers still relied on lectures and textbooks, 86% of students had personal cellphones, and 71% of students liked image and video media. This condition indicates the importance of developing problem-based digital media, such as e-LKPD based on Problem-Based Learning (PBL) with Canva.

At the design stage, the researcher designed an e-LKPD containing the learning outcomes of grade V science, respiratory system material based on videos, images, digital reading, and problem-based questions that develop critical thinking indicators. The structure of the e-LKPD follows the PBL syntax, namely problem orientation, student organization, independent investigation, presentation of results, and reflection. Canva was chosen as the development platform because it is flexible and supports interactive multimedia integration. The development stage was carried out by creating a digital e-LKPD based on Canva which was then validated by material experts, media experts, and education practitioners (teachers). The validation results showed that the developed e-LKPD was declared very valid with scores of 95%, 89%, and 100% respectively. Minor revisions were made to improve the appearance and align the workflow with the PBL syntax.

Table 3. Expert Validation Results Summary Table

No.	Validation	Score Acquisition	Maximum Score	Percentage	Criteria
1	Subject Matter Expert	46	48	95%	Very Valid
2	Members of the Media	57	64	89 %	Very Valid
3	Practitioner Expert	48	48	100 %	Very Valid

Table 4. E-LKPD After Receiving Input from Experts

Before	After
	
	

The validation results from experts indicate that the developed e-LKPD has strong content relevance, appropriate presentation, and user-friendly design. The material expert score of 95% (very valid) shows that the contents of the e-LKPD are aligned with the learning objectives and curriculum standards, especially in developing students' critical thinking through contextual problem-solving activities. The expert also noted that the learning materials were scientifically accurate and presented systematically, which supports conceptual understanding (Prihatin et al., 2024).

The media expert's score of 89% (very valid) reflects that the Canva-based interface was considered attractive, interactive, and easy to navigate. According to Kharissidqi & Firmansyah (2022), the use of clear layouts, consistent color schemes, and integrated multimedia in Canva enhances students' motivation and engagement in digital learning environments. Meanwhile, the 100% score from practitioner experts indicates that teachers found the e-LKPD highly practical and effective for classroom implementation. This result aligns with the findings of Meka et al. (2024), who stated that digital worksheets designed through Canva allow teachers to manage interactive activities efficiently and encourage active participation.

Overall, the high validation scores confirm that the developed e-LKPD meets both pedagogical and technical quality criteria. The feedback from validators mainly focused on minor layout adjustments and flow refinement within the Problem-Based Learning syntax, which were subsequently revised to improve clarity and usability. These results demonstrate that the e-LKPD has achieved an optimal balance between content validity, media feasibility, and classroom practicality, supporting its readiness for implementation.

In the implementation stage, e-LKPD is applied in small and large classes. The results of the research conducted in small and large classes can be seen in the following table.

Table 5. Small Class Cognitive Assessment Results

No.	Learning	Learning outcomes cognitive	Number of Students	Mean ± SD	*N-Gain*	Criteria
1	I	Pre Test	9	45,56 ± 8,82	0,45	Currently
		Post Test	9	70,00 ± 7,07		
2	II	Pre Test	9	57,78 ± 6,67	0,74	High
		Post Test	9	88,89±10,54		

Meanwhile, the critical thinking skills scores can be seen in the following table.

Table 6. Small Class Critical Thinking Skills Assessment Results

No.	Critical Thinking Indicators	Meeting	Mean ± SD		*N-Gain*	Criteria
			Pre-Test	Post Test		
1	*Interpretation*	I	36,11±13,18	69,44±16,67	0,52	Currently
		II	55,56±11,02	94,44±11,02	0,88	High
2	*Analysis*	I	27,78±15,02	66,67±17,68	0,54	Currently
		II	66,67±12,50	94,44±11,02	0,83	High
3	*Evaluation*	I	38,89±13,18	75,00±8,33	0,64	Currently
		II	52,78±8,33	91,67±12,50	0,82	High

No.	Critical Thinking Indicators	Meeting	Mean ± SD		*N-Gain*	Criteria
			Pre-Test	Post Test		
4	*Inference*	I	41,67±17,68	77,78±15,02	0,62	Currently
		II	55,56±11,02	91,67±12,50	0,81	High
5	*Explanation*	I	38,89±13,18	75,00±17,68	0,59	Currently
		II	69,44±11,02	94,44±11,02	0,82	High

Meanwhile, in the large class, the following results were obtained:

Table 7. Cognitive Learning Outcomes Table in Large Classes

No	Meeting When	SDN Kunir Lor 01				SDN Kunir Kidul 01			
		Pre-Test Rerata±SD	Recursive Post Test±SD	N-Gain	Criteria	Pre-Test Rerata±SD	Recursive Post Test±SD	N-Gain	Criteria
1	I	48,46±9,67	70,77±7,44	0,43	Currently	45,43±8,17	70,86±5,62	0,47	Currently
2	II	58,08±8,01	88,08±9,81	0,72	High	57,71±8,43	88,57± 9,12	0,73	High

Meanwhile, the critical thinking skills scores can be seen in the following table:

Table 8. Large Group Critical Thinking Skills Assessment Results Table

No	Critical Thinking Indicators	Meeting When	SDN Kunir Lor 01				SDN Kunir Kidul 01			
			Pre-Test Rerata±SD	Recursive Post Test±SD	N-Gain	Criteria	Pre-Test Rerata±SD	Recursive Post Test±SD	N-Gain	Criteria
1	*Interpretation*	I	38,5±12,71	73,1±14,01	0,56	Currently	51,9±14,02	77,9±15,78	0,54	Currently
		II	52,9±10,79	93,3±13,34	0,86	High	52,9±8.07	95,0±11,82	0,89	High
2	*Analysis*	I	32,7±15,44	60,6±12,60	0,41	Currently	36,5±12,43	74,0±16,59	0,59	Currently
		II	57,7±15,44	95,2±10,05	0,89	High	54,3±11,32	92,1±14,57	0,83	High
3	*Evaluation*	I	52,9±12,90	80,8±14,68	0,59	Currently	48,1±17,66	80,8±9,56	0,63	Currently
		II	52,9±16,32	91,3±12,13	0,82	High	47,1±14,57	89,3±12,55	0,80	High
4	*Inference*	I	50,0±14,14	81,7±13,34	0,63	Currently	46,2±16,93	73,1±11,32	0,50	Currently
		II	57,7±13,73	91,3±12,13	0,80	High	48,6±14,78	90,7±13,67	0,82	High
5	*Explanation*	I	36,5±12,71	79,8±10,05	0,68	Currently	43,3±13,24	77,9±8,07	0,61	Currently
		II	49,0±14,97	96,2±9,20	0,92	High	58,6±13,48	95,7±9,56	0,90	High

The improvement dynamics observed in each meeting indicate a gradual adaptation process of students to the Problem-Based Learning (PBL) syntax. During the first meeting, students were still adjusting to problem identification and group collaboration, which resulted in moderate improvement in both learning outcomes and critical thinking indicators. This condition aligns with findings from Widayanti & Nur'aini (2020), who explained that initial exposure to PBL often requires students to shift from passive to active learning roles, which may temporarily limit performance gains. In the second meeting, however, students became more familiar with analyzing problems, conducting investigations, and presenting solutions. The integration of Canva-based e-LKPD, which combines text, visuals, and interactive elements, also increased engagement and facilitated better understanding (Kharissidqi & Firmansyah, 2022; Meka et al., 2024). These factors collectively contributed to the higher N-Gain values and stronger critical thinking performance observed in the second session. The results are consistent with Susanti (2019) and Haeruman et al. (2017), who found that repetitive application of PBL stages supports students' logical reasoning and self-regulated learning, leading to sustained improvement over time.

Furthermore, the findings of this study are in line with Rahmawati, Suratno, and Wardani (2025), who reported that the use of interactive digital e-modules effectively enhances elementary students' critical thinking skills through structured, contextual, and engaging learning experiences. Digital media can stimulate analytical, evaluative, and logical reasoning abilities, reinforcing the notion that technology-based learning innovations function not merely as content delivery tools but as transformative platforms for developing critical thinking in the digital era. In this regard, both the Canva-based e-LKPD developed in this study and other validated digital learning media have shown great potential to foster higher-order thinking skills (HOTS) and promote learner autonomy at the elementary level.

The implementation results showed a significant increase in students' learning outcomes and critical thinking skills. The following is a table of assessment results in small classes. In the small trial, the N-Gain of cognitive learning outcomes reached 0.73, and in the large trial the average N-Gain exceeded 0.70 in two schools. All indicators of students' critical thinking increased significantly, especially in the second meeting. Students' responses to e-LKPD were very positive with a percentage above 95%, and the implementation of learning

exceeded 87%, indicating that learning was in accordance with the designed PBL syntax. Research evaluation was carried out formatively during the development process as well as summatively through analysis of pretest and posttest results, student response questionnaires, and teacher observations.

4. CONCLUSION

Conclusion

The developed e-LKPD has proven to be very valid in terms of content, presentation, and language. The validation results of material experts (95%), media experts (89%), and practitioners/teachers (100%) show that the content, PBL structure, and digital display are in accordance with academic standards and are easy for students to understand. E-LKPD is very practical to use in class, it is known that in its implementation teachers and students can operate e-LKPD without significant difficulty. Observation of implementation shows an average percentage above 87%, while the student response questionnaire reaches an average of 95-100% for the aspects of ease, visual, and graphics.

The use of e-LKPD significantly effectively improves students' cognitive learning outcomes and critical thinking skills. The average N-Gain value from 3 schools reached 0.71–0.73 (high category) in both small and large group trials. All critical thinking indicators (interpretation, analysis, evaluation, inference, explanation) showed an increase from pre-test to post-test. Although this study did not employ inferential statistical tests such as a paired t-test, the use of N-Gain analysis provides sufficient evidence of meaningful improvement. According to Hake (1998), an N-Gain value above 0.70 represents a high level of learning effectiveness and can be interpreted as a substantial improvement in students' understanding. Therefore, the consistently high N-Gain values across different classes indicate that the developed e-LKPD not only enhances cognitive outcomes but also strengthens students' critical thinking skills through the integration of problem-based learning and interactive digital media. Similar interpretations have been reported in previous studies that used N-Gain to measure effectiveness without additional inferential testing (e.g., Harefa et al., 2020; Prihatin et al., 2024; Widayanti & Nur'aini, 2020).

Implications

The results of this study have both theoretical and practical implications. Theoretically, this research contributes to the growing body of evidence that technology-based learning innovations such as Canva-based e-LKPD, can serve as transformative tools to cultivate higher-order thinking skills (HOTS) in elementary education. Practically, it provides an applicable model for integrating digital worksheets within the PBL framework to promote student-centered, inquiry-based learning. The findings also imply that the use of validated digital media not only enhances learning outcomes but also develops students' metacognitive and collaborative skills in solving contextual problems.

Recommendations

Based on the study results, several recommendations are proposed.

- For teachers: It is recommended to integrate Canva-based e-LKPD or similar digital learning tools in classroom instruction to increase student motivation, creativity, and critical thinking engagement.
- For schools and policymakers: Adequate support should be provided through digital infrastructure, professional development programs, and teacher training on designing and implementing technology-integrated PBL activities.
- For future researchers: Subsequent studies may apply inferential statistical methods (e.g., t-test or ANCOVA) to measure the significance of learning gains, expand the implementation to different subjects and grade levels, and conduct longitudinal research to analyze the long-term impact of digital media on students' critical thinking transformation.

Overall, the development and implementation of the Canva-based e-LKPD contribute to the advancement of innovative, technology-driven learning that supports 21st-century education goals, particularly in nurturing critical, creative, and independent learners.

5. REFERENCE

Akbar, S. (2016). *Instrumen Perangkat Pembelajaran.* Bandung: PT. Remaja Rosdakarya Offset

Apriani, R., Irwandi, I., & Pariyanto, P. (2019). Students' Critical Thinking Skills in Biology Subjects Using Problem-Based Learning (PBL) and Project-Based Learning (PjBL) at SMAN 2 Bengkulu Tengah. In National Seminar on Science & Entrepreneurship (Vol. 1, No. 1).

Dakabesi, D.-, & Luoise, I. S. Y. (2019). The Effect of Problem-Based Learning Model on Critical Thinking Skills in the Context of Chemical Reaction Rate. Journal of Education and Learning (EduLearn), 13(3), 395–401. https://doi.org/10.11591/edulearn.v13i3.13887

Elpira, N., & Ghufron, A. (2015). The Effect of Using Powerpoint Media on the Interest and Science Learning Outcomes of Grade IV Elementary School Students. Journal of Educational Technology Innovation, 2(1), 94-104.

Faidah, N. N., Listiawati, M., & Yamin, I. M. 2023. The Effect of Using Liveworksheet Learning Media in Improving Students' Cognitive Learning Outcomes on Global Warming Material. Jurnal Kiprah Pendidikan, 2(2), 194-208.

Febriani, F. A., Turista, D. D. R., & Trimas, F. (2022, December). The Effect of Learning Videos on Student Learning Outcomes on Heredity Material. In Proceedings of the National Seminar on Mathematics, Science, Geography, and Computer Education (Vol. 3, pp. 119-123).

Gunantara, G., Suarjana, I. M., & Riastini, P. N. (2014). Application of Problem Based Learning Model to Improve Mathematics Problem Solving Ability of Fifth Grade Students. Mimbar PGSD Undiksha, 2(1).

Haeruman, L. D., Rahayu, W., & Ambarwati, L. (2017). The Influence of Discovery Learning Model on Improving Critical Thinking Ability in Mathematics and Self-Confidence Reviewed from Initial Mathematical Ability of High School Students in East Bogor. Journal of Mathematics Research and Learning, 10(2).

Harefa, D., Telaumbanua, T., Sarumaha, M., Ndururu, K., & Ndururu, M. (2020). Improving Science Learning Outcomes in the Creative Problem Solving (CPS) Learning Model. Musamus Journal of Primary Education, 3(1), 1-18.

Hattarina, S., Saila, N., Faradilla, A., Putri, D. R., & Putri, R. G. A. 2022. Implementation of Independent Learning Curriculum in Educational Institutions. In National Seminar on Social, Science, Education, Humanities (SENASSDRA) (Vol. 1, No. 1, pp. 181-192).

Hayati, N., & Setiawan, D. (2022). The Impact of Low Language and Reasoning Skills on Critical Thinking Skills of Elementary School Students. Basicedu Journal, 6(5), 8517-8528.

Hidayah, I. N., & Kuntjoro, S. (2022). Development of E-LKPD Environmental Change Based on Science Literacy to Train Critical Thinking Skills of Grade X High School Students. Scientific Periodical of Biology Education (BioEdu), 11(2), 384-393.

Junaedi, S. (2021). Canva Application as an Online Learning Media to Improve Students' Creativity Skills in the English for Information Communication and Technology Course. Bangun Rekaprima, 7(2), 80-89.

Kharissidqi, M. T., & Firmansyah, V. W. (2022). Canva Application as an Effective Learning Media. Indonesian Journal Of Education and Humanity, 2(4), 108-113.

Lailiah, I., Wardani, S., Sudarmin, S., & Sutanto, E. (2021). Implementation of Guided Inquiry Assisted by E-LKPD on Students' Cognitive Learning Outcomes on Redox and Chemical Compound Nomenclature Materials. Journal of Chemical Education Innovation, 15(1), 2792-2801.

Nadhifah, Y., Zannah, F., Fauziah, N., Pikoli, M., Asyhar, A. D. A., Yanti, M., ... & Hizqiyah, I. Y. N. (2023). Natural and Social Sciences (IPAS) Learning. Global Technology Executive.

Novitasari, K. W. A. (2023). Analysis of Critical Thinking Skills According to Facione Indicators in Online and Offline Chemistry Learning. Journal of Research Science, 13(3), 839-849.

Marlina, R., Nurjahidah, S., Sugandi, A. I., & Setiawan, W. (2018). Implementation of Problem-Based Learning Approach to Improve Mathematical Problem Solving Ability of Grade VII MTs Students on Comparison and Scale Material. JPMI (Journal of Innovative Mathematics Learning), 1(2), 113-122.

Meka, I. Y., Wardani, S., Subali, B., Lestari, W., Sukasih, S., & Aeni, K. (2024). Analysis of E-LKPD Needs Assisted by Canva to Improve Reading Concept Mastery and Independence of Elementary School Students Randugunting 6 Tegal City. Pendas: Scientific Journal of Elementary Education, 9(3), 234-248.

Meilandari, A., Loliyana, L., Perdana, D. R., & Surahman, M. (2023). The Influence of Critical Thinking Skills and Logical Thinking Skills on Learning Outcomes of Grade V Elementary School Students. Edukatif: Journal of Educational Sciences, 5, 1443-52.

Prihatin, J., Siswati, B. H., Suratno, S., Hariyadi, S., Wahono, B., & Febrianti, I. (2024). Development of Digital Textbooks Based on Brain-Based Learning on Digestive System Material Equipped with Story Picture Media and Flash Cards to Improve Critical Thinking Skills and Biology Learning Outcomes of High School Students. Journal of Biology Learning Innovation, 5(1), 1-11.

Putra, A. S., & Aisyah, N. (2021, October). Online Learning System Using Virtual Reality. In Proceedings of the National Seminar on Education (Vol. 3, pp. 295-303).

Putra, P. D. A., & Sudarti, S. (2015). Real Life Video Evaluation with E-learning System to Improve Critical Thinking Skills of Physics Students.

Rahman, S. (2022, January). The Importance of Learning Motivation in Improving Learning Outcomes. In Proceedings of the National Seminar on Elementary Education.

Rakhmawati, D. (2021). Advantages and Disadvantages of Problem-Based Learning Models. In Social, Humanities, and Educational Studies (SHES): Conference Series (Vol. 4, No. 5, pp. 550-554).

Salsabila, A., & Puspitasari, P. (2020). Factors Affecting Elementary School Students' Learning Achievement. Pandawa, 2(2), 278-288.

Sholeh, M., Rachmawati, R. Y., & Susanti, E. (2020). Using the Canva Application to Create Image Content on Social Media as an Effort to Promote MSME Product Results. SELAPARANG: Journal of Progressive Community Service, 4(1), 430-436.

Sunami, M. A., & Aslam, A. (2021). The Effect of Using Zoom Meeting-Based Animated Video Learning Media on Elementary School Students' Science Learning Interests and Outcomes. Jurnal basicedu, 5(4), 1940-1945.

Suryaningsih, S., & Nurlita, R. (2021). The Importance of Innovative Electronic Student Worksheets (E-LKPD) in the 21st Century Learning Process. Indonesian Journal of Education, 2(7), 1256-1268.

Tanjung, R. E., & Faiza, D. (2019). Canva as a Learning Media in Basic Electrical and Electronics Subjects. Voteteknika (Vocational Electronic Engineering and Informatics), 7(2), 79-85.

Ulfah, U., & Arifudin, O. 2021. The Influence of Cognitive, Affective, and Psychomotor Aspects on Student Learning Outcomes. Al-Amar Journal: Islamic Economics, Islamic Banking, Islamic Religion, Management and Education, 2(1), 1-9.

Widayanti, R., & Nur'aini, K. D. (2020). Application of Problem Based Learning Model to Improve Mathematics Learning Achievement and Student Activity. Mathema: Journal of Mathematics Education, 2(1), 12-23.

Widianto, E. (2021). Utilization of Information Technology-Based Learning Media. Journal of Education and Teaching, 2(2), 213-224.

Wulandari, H., & Nisrina, D. A. Z. 2023. The Relationship between Teacher Creativity and Innovation in Teaching in Class to Increasing Student Motivation and Interest in Learning. Wahana Pendidikan Scientific Journal, 9(16), 345-354.

Yulianti, E., & Gunawan, I. (2019). Problem-Based Learning (PBL) Learning Model: Its Effect on Concept Understanding and Critical Thinking. Indonesian Journal of Science and Mathematics Education, 2(3), 399-408.