DEVELOPMENT OF E-LKPD USING THE FLIPPED CLASSROOM LEARNING MODEL TO ENHANCE ELEMENTARY STUDENTS' LITERACY

Intan Susetyo Kusumo Wardhani[1*], Angga Setiawan[2], Rohmat Febrianto[3], Nanda William[4], Yesita Inka Dela[5]

[1,2,3,4,5]STKIP PGRI Trenggalek, Trenggalek, Indonesia
[1]iin.intanskw@gmail.com

Abstract

The purpose of this research is to develop a Flipped Classroom-Based e-LKPD (Electronic Student Worksheet) oriented towards the literacy of elementary school students. The Flipped Classroom-Based e-LKPD is developed to facilitate learning both at home and at school, thereby maximizing students' literacy training. The research uses the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) model of research and development. Data were collected using student literacy test instruments, questionnaires, and interview sheets with a research sample of 150 students. The results showed that the Flipped Classroom-Based e-LKPD oriented towards literacy is valid and can be used. The validation score percentages from material, media, language experts, and practitioners averaged 97%, categorized as "very valid." The increase in students' literacy skills also improved with an average N-Gain score of 0.65. Based on these results, it can be concluded that the Flipped Classroom-Based e-LKPD oriented towards the literacy of elementary school students can be used and is effective in training the literacy skills of elementary school students.

Keywords: e-LKPD; Flipped Classroom; Literacy

Abstrak

Tujuan penelitian ini yaitu untuk mengembangkan e-LKPD Berbasis *Flipped Classroom* Berorientasi Pada Literasi Siswa Sekolah Dasar. e-LKPD Berbasis *Flipped Classroom* dikembangkan untuk memfasilitasi pembelajaran di rumah dan di sekolah, sehingga dapat melatih literasi siswa secara maksimal. Penelitian menggunakan pendekatan penelitian dan pengembangan model ADDIE (*Analysis, Design, Development, Implementation and Evaluation*). Data dikumpulkan menggunakan instrument tes literasi siswa, angket, serta lembar Wawancara dengan sampel penelitian sejumlah 150 siswa. Hasil penelitian menunjukkan bahwa e-LKPD Berbasis *Flipped Classroom* Berorientasi Pada Literasi valid dan dapat digunakan. Presentase skor validasi dari ahli materi, media, bahasa dan praktisi mendapatkan rata-rata presentase skor 97% termasuk "sangat valid". Peningkatan kemampuan literasi siswa juga meningkat dengan nilai rata-rata N-Gain 0,698. Berdasarkan hasil tersebut dapat disimpulkan e-LKPD Berbasis *Flipped Classroom* Berorientasi Pada Literasi Siswa Sekolah Dasar dapat digunakan dan efektif untuk melatih kemampuan literasi siswa sekolah dasar.

Kata Kunci: e-LKPD; *Flipped Classroom;* Literasi

Introduction

Literacy is a primary focus in the development of Indonesia's human resources, especially within the education sector. This emphasis arises because literacy equips individuals with the ability to critically interpret information, enabling them to access knowledge and technology that can improve their quality of life. Literacy serves not only as a tool for understanding text but also plays a crucial role in shaping students' character and attitudes.

With strong literacy skills, students become better prepared to adapt to the evolving demands of the times and the increasingly complex global challenges. Therefore, fostering literacy among elementary school students must be approached in a structured and continuous manner, incorporating innovative teaching methods and collaborative efforts among teachers, parents, and the community (Diantono, 2023).

However, field data reveals that various national and international surveys consistently show that Indonesia's literacy rates have not experienced significant improvement over the years and, in some cases, have even declined. Findings from the Programme for International Student Assessment (PISA) reported that in 2018, Indonesia's literacy and numeracy culture ranked 74th out of 79 countries surveyed by the Organisation for Economic Cooperation and Development (OECD) (OECD, 2019).

Additionally, trends in Indonesian students' reading scores revealed a marked decline in 2018 (Puspendik, 2019), and while Indonesia's ranking improved by five positions in the 2022 PISA reading literacy results compared to 2018 (Kemendikbud, 2023), the country still remains among those with low literacy levels.

A study conducted in 2016 by Central Connecticut State University (CCSU) in New Britain, Connecticut, USA, ranked Indonesia 60th out of 61 countries in *The World's Most Literate Nations* (Meliyanti et al., 2021). UNESCO data further highlights Indonesia's concerningly low reading interest, with a reading rate of only 0.001%. This means that out of every 1.000 Indonesians, only one person actively reads. These findings underscore the significant weaknesses in Indonesia's literacy culture.

The Indonesian government has undertaken various initiatives to improve literacy rates among its citizens, one of which is *Gerakan Literasi Nasional* (Kemendikbud, n.d.). This program aims to foster a literacy culture across all levels of society, especially among students. Additionally, the implementation of the *Merdeka Curriculum* in Indonesian schools represents a strategic approach to enhancing literacy and numeracy (Wijaya & Dewayani, 2021). In this curriculum, the *Assesmen Kompetensi Minimum* (AKM) serves as a key evaluation tool, focusing on measuring students' literacy and numeracy skills. Research indicates that AKM is designed to help students develop the essential skills needed for the 21st century, aligning with international standards like the Programme for International Student Assessment (PISA) (Anwari et al., 2021; Hasanah et al., 2021; Murni et al., 2022). However, the implementation of the *Merdeka Curriculum* is not without challenges.

Since the government formally mandated the implementation of the *Merdeka Curriculum* across schools in Indonesia through *Ministerial Regulation of Education, Culture, Research, and Technology* (Permendikbudristek) Number 12 of 2024, schools newly adopting the curriculum have faced several challenges. One of the main issues for teachers has been meeting the literacy improvement targets, where results remain suboptimal. Additionally, the *Merdeka Curriculum* requires teachers to master digital technology through the *Platform Merdeka Mengajar* (PMM) (Kemendikbudristek, 2023) which supports activity reporting, curriculum study, collaborative learning, and the creation of new creative content for sharing. Many schools still struggle to adopt innovative methods to engage students and effectively integrate digital tools as learning aids. Furthermore, many of the example teaching resources available on PMM are incomplete, making it difficult for teachers to find practical examples they can apply. Teachers' difficulties in leveraging digital technology in instruction also pose a barrier to improving the quality of education under the *Merdeka Curriculum*.

Based on the issues outlined, the research question addressed in this study is how to develop learning materials "*Lembar Kerja Peserta Didik*" (LKPD) that can train students to

enhance literacy by utilizing digital technology. In this context, the development of an e-LKPD based on a flipped classroom model is highly relevant, particularly for elementary students. The flipped classroom is a learning approach that reverses traditional roles, where students first study the material at home through videos or other digital sources, then use classroom time for in-depth discussions, Q&A, and hands-on activities. This approach is expected to foster a more interactive and engaging learning environment, where students are not only recipients of information but also actively involved in the learning process (Santhalia & Sampebatu, 2020)

The development of this e-LKPD is designed to train students in independent learning, thereby enhancing their literacy skills. By leveraging digital technology, the e-LKPD can incorporate various media forms, such as videos, quizzes, and simulations, which increase students' motivation to learn and provide easier access to materials guided by their teachers. Research shows that the use of interactive multimedia in education can enhance students' conceptual understanding and make the learning process more enjoyable (Hakim & Windayana, 2016; Yuniasih et al., 2018). Additionally, this e-LKPD offers clear guidance and relevant resources for each topic, facilitating teachers in directing flipped classroom-based learning (Zahroh & Yuliani, 2021). hrough the development of a flipped classroom-based e-LKPD, it is expected that students will gain a better understanding of taught concepts and effectively build their literacy skills.

Previous research indicates that interactive learning media, when developed with an appropriate approach, can significantly improve student learning outcomes (Azni & Jailani, 2015). hus, the implementation of this e-LKPD is expected not only to enhance student literacy but also to prepare them for challenges in an increasingly digital era. It is therefore essential for educators to continue innovating in creating engaging and effective learning methods, allowing students to learn in a more enjoyable and meaningful way (Purwoko, 2023). Building on this, the present study aims to develop an e-LKPD that teachers can use to facilitate instruction and improve student literacy by utilizing electronic media, ultimately providing an engaging learning experience that fosters literacy skills among students.

Research Methods

This study employs the Research and Development (R&D) methodology using the ADDIE development model. According to Hamzah (2019) the stages in the ADDIE model include analyze, design, development, implementation, and evaluation. The Development stages are as follows: (1) the analysis phase involves needs analysis, learning material analysis, environmental analysis, and instructional tool analysis; (2) the design phase includes gathering material resources and creating the product design; (3) the development phase involves creating the E-Flashcard learning media product, expert validation, and conducting a small-scale trial with 30 respondents representing Phase A, Phase B, and Phase C at different knowledge levels; (4) the implementation phase entails a large-scale trial and data collection on students' literacy skills, along with teacher and student responses; (5) the evaluation phase includes analyzing the collected data and revising the product based on the study's findings.

The sample consists of 150 elementary students, with 50 students in each of Phase A, Phase B, and Phase C. The study variables, data, research instruments, and analyses are detailed in the following table.

Table 1. Variabel, data, instrument, and data analysis

Variabel	Data	Instrument	Analisys
Media	Media Validation Results	Validation Sheet	Description of validation criteria
	Content Validation Results	Validation Sheet	Description of validation criteria
	Language Validation Results	Validation Sheet	Description of validation criteria
	Practitioner Validation Results	Validation Sheet	Description of validation criteria
Student Literacy	Differences in literacy skills after using e-LKPD	Literacy Skills Test	Pretest-posttest analysis
	Improvement in students' literacy skills	Literacy Skills Test	Description of gain scores

Results and Discussion

The development of the e-LKPD using a flipped classroom model, oriented towards enhancing elementary students' literacy skills, was created with Canva and integrated into Liveworksheets to ensure ease of access and interactivity for students. The purpose of this development is to improve literacy skills among elementary school students. The results of the flipped classroom-based e-LKPD development, focused on literacy, are presented in Figures 1, 2, and 3 below.

Figure 1. Introductory Section of the e-LKPD for Phase A, Phase B, and Phase C

The introductory section of the e-LKPD includes the cover, student identification page, learning outcomes, and learning objectives. The content section is divided into two parts as follows:

Figure 2. Content Section 1 of the e-LKPD for Phase A, Phase B, and Phase C

The first content section consists of prompt questions, material in the form of videos and readings, and a quiz. This section is intended for students to study and complete at home, aligning with the flipped classroom learning model.

Figure 3. Content Section 2 of the e-LKPD for Phase A, Phase B, and Phase C

The second content section includes "Ayo Berdiskusi" and "Ayo Presentasi" activities. This section represents the in-class learning stage within the flipped classroom design.

Table 2. Expert Content Validation

Aspect	Criteria	Score
Content	Relevance	19
	Content Feasibility	30
	Presentation Feasibility	14
Total Score		63
Percentage		97%
Remarks		Very Valid

Table 3. Expert Media Validation

Aspect	Criteria	Score
Design	Presentation	29
	Attractiveness	10
	Design	10
	Layout	28
	Usability	10
Total Score		87
Percentage		97%
Remarks		Very Valid

Table 4. Expert Language Validation

Aspect	Criteria	Score
Language	Clarity	10
	Communicative	10
	Coherence and Logical Flow	9
	Accuracy in Language Usage	10
	Sentence Accuracy	10
Total Score		49
Percentage		98%
Remarks		Very Valid

Table 5. Practitioner Validation

Aspect	Criteria	Score
e-LPKD	Content	9
	Media Feasibility	10
	Media Implementation	10
Total Score		29
Percentage		97%
Remarks		Very Valid

The flipped classroom-based e-LKPD has been declared valid, practical, and engaging following assessments by media experts, content experts, language experts, and practitioners. Table 2 shows that the total percentage score for content validation is 97%, indicating that the material aligns with the learning outcomes and the Merdeka Curriculum. Based on expert validation, the flipped classroom-based e-LKPD received a percentage score of 97%, categorizing it as "very valid." The language used in the e-LKPD is clear and easily comprehensible for students, with a validation score of 98% from language experts. Additionally, the practitioners' assessment yielded a percentage of 97%, placing it in the "very practical" category.

The effectiveness of the flipped classroom-based e-LKPD focused on student literacy is evaluated through the analysis of pretest and posttest literacy skills, which were subsequently analyzed using statistical methods and gain analysis. The results of the effectiveness tests are presented in Tables 5 and 6 below.

Table 5. Hypothesis Test Results

Literacy Score	Fase A			Fase B			Fase C		
	Pretest	Posttest	Sign.	Pretest	Posttest	Sign.	Pretest	Posttest	Sign.
Highest Score	55	80		55	84	**0.000**	56	80	**0.000**
Lowest Score	61	91	**0.000**	61	91		62	90	
Average Score	58,60	87,60		58,55	87,61		58,77	86,74	

Table 6. Hasil Uji N-Gain

	Fase A	Fase B	Fase C	Average Score
N	55	52	50	0,698
Average N-Gain	0,70	0,71	0,68	

Based on the table above, there is a significant difference in literacy levels before and after using the flipped classroom-based e-LKPD focused on literacy across all phases. Table 6 also indicates an average N-gain score of 0.698, which falls into the high category, signifying a substantial improvement in students' literacy skills.

The development of the Electronic Student Work Sheet (E-LKPD) based on a flipped classroom model, focused on literacy, represents an innovative step in enhancing the quality of education in the digital age. This E-LKPD is designed for digital accessibility through computers, notebooks, and smartphones, facilitating students' engagement in learning activities (Ismawati, 2023). The E-LKPD serves as a structured guide for students, presented in electronic form, which allows for independent and interactive learning. It is systematically organized into specific learning units and can incorporate various media such as videos, images, texts, and questions, all aimed at optimizing the teaching and learning process (Rachmasari et al., 2019).

In the development of the flipped classroom-based E-LKPD, students are expected to learn at home before progressing to classroom activities. This flipped classroom method not only encourages students to be more active in the learning process but also enables them to comprehend the material more effectively. The E-LKPD is designed using the Canva application, with activity stages tailored to the principles of the flipped classroom, allowing students to study independently at home and then engage in discussions in class. Once the E-LKPD design is completed, the file is downloaded in PNG format and uploaded to the Liveworksheets platform. The purpose of using Liveworksheets is to facilitate students in accessing and completing the E-LKPD directly on the website, thereby enhancing student engagement and interaction during the learning process. Research by Wirawan (2023) indicates that the use of platforms like Liveworksheets can significantly increase student engagement and interaction in learning.

The flipped classroom-based E-LKPD focused on literacy is a well-designed educational tool that is deemed appropriate for use. This E-LKPD features a good presentation, appealing design, and precise layout arrangement, with excellent educational validity. The material aligns with the curriculum and is consistent with the flipped classroom model oriented towards literacy. The language used is clear, communicative, and logically structured. Based on expert validation results, it can be concluded that the flipped classroom-based E-LKPD is valid and suitable for enhancing students' literacy skills. Additionally, the results from pretests and posttests indicate a significant improvement due to the implementation of this E-LKPD in enhancing students' literacy capabilities.

The flipped classroom-based E-LKPD effectively boosts students' literacy skills as it contains learning resources and practice questions specifically designed to develop literacy in line with the material being studied. The implementation of this E-LKPD can be accessed through the Liveworksheets website. Both teachers and students can utilize the E-LKPD by logging in with their Liveworksheets accounts or directly using the provided link. To access the E-LKPD developed by the researcher, users can employ a Liveworksheets code. However, a limitation of the flipped classroom-based E-LKPD is that it requires digital devices, along with the necessary skills to operate these devices for both teachers and students. The interface and operation of the E-LKPD on Liveworksheets may not be as user-friendly when accessed on mobile phones, although it remains relatively easy for students to navigate.

Conclusion

The results of the conducted research indicate that, based on expert validation, the flipped classroom-based E-LKPD focused on literacy meets the criteria of being valid and suitable for use. This E-LKPD has also demonstrated the ability to enhance students' literacy skills, as evidenced by the N-Gain scores. The flipped classroom-based E-LKPD serves as an alternative for teachers to implement engaging learning experiences while leveraging digital tools within the framework of a flipped classroom design. Additionally, it provides students with the convenience of studying independently at home.

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References

Anwari, M. R., Yunus, M., Istiqamah, I., Syakir, A., & Hamidah, J. (2021). Pelatihan PKB Berbasis Peserta Didik Bagi Guru Bahasa Indonesia SMA. *Jurnal Abdidas*, *2*(3), 627–633. https://doi.org/10.31004/abdidas.v2i3.334

Azni, T. N., & Jailani, J. (2015). Pengembangan Perangkat Pembelajaran Trigonometri Berbasis Strategi Pembelajaran Inkuiri Melalui Model Pembelajaran Kooperatif Tipe Stad. *Jurnal Riset Pendidikan Matematika*, *2*(2), 284. https://doi.org/10.21831/jrpm.v2i2.7347

Diantono, D. (2023). Analisis Pengembangan Budaya Literasi Dalam Meningkatkan Kemampuan Verbal Siswa Di SDN 63 Bengkulu Selatan. *Jurnal Locus Penelitian Dan Pengabdian*, *2*(6), 517–528. https://doi.org/10.58344/locus.v2i6.1174

Hakim, A. R., & Windayana, H. (2016). Pengaruh Penggunaan Multimedia Interaktif Dalam Pembelajaran Matematika Untuk Meningkatkan Hasil Belajar Siswa SD. *Eduhumaniora | Jurnal Pendidikan Dasar Kampus Cibiru*, *4*(2). https://doi.org/10.17509/eh.v4i2.2827

Hamzah, A. (2019). *Metode Penelitian Pengembangan*. CV Literasi Nusantara.

Hasanah, U., Edwita, & Januar, A. (2021). Pendampingan Guru Mengembangkan Assesment Kompetensi Minimum (Akm) Berorientasi Pisa Untuk Meningkatkan Kualitas Hasil Pembelajaran Di Sekolah Dasar Wilayah Kabupaten Bogor. *Jurnal Abadimas Adi Buana*, *5*(01), 90–99. https://doi.org/10.36456/abadimas.v5.i01.a3634

Ismawati, E. Y. (2023). Pengembangan E-LKPD Berbasis Problem Based Learning Untuk Meningkatkan Kemampuan Pengambilan Keputusan Peserta Didik. *Jurnal Inovasi Pembelajaran Di Sekolah*, *4*(2), 712–720. https://doi.org/10.51874/jips.v4i2.174

Kemendikbud. (n.d.). *Pedoman Penilaian dan Evaluasi Gerakan Literasi Nasional*. https://repositori.kemdikbud.go.id/15987/1/Pedoman Penilaian dan Evaluasi Gerakan Literasi Nasional 2017.pdf

Kemendikbud. (2023). *Peringkat Indonesia pada PISA 2022 Naik 5-6 Posisi Dibanding 2018*. https://www.kemdikbud.go.id/main/blog/2023/12/peringkat-indonesia-pada-pisa-2022-naik-56-posisi-dibanding-2018

Kemendikbudristek. (2023). *Peran Platform Merdeka Mengajar dalam Impelemnatsi Kurikulum Merdeka*. https://kurikulum-demo.simpkb.id/platform-merdeka-belajar/

Meliyanti, Raraswati, P., Nuruddin Hidayat, D., & Aryanto, S. (2021). Kajian Literatur: Perkembangan Literasi dan Numerasi di Lingkungan Keluarga. *Jurnal Pendidikan Tambusai*, *5*(3), 6504–6512. https://jptam.org/index.php/jptam/article/view/1973

Murni, V., Nendi, F., Jundu, R., Men, F. E., Pantaleon, K. V, Jehadus, E., & Jeramat, E. (2022). Pelatihan Penyusunan Instrumen Asesmen Kompetensi Minimum (AKM) Di SMK Bina Kusuma Ruteng. *Jurnal Kreativitas Pengabdian Kepada Masyarakat (Pkm)*, *5*(8), 2694–2715. https://doi.org/10.33024/jkpm.v5i8.6031

OECD. (2019). *PISA 2018 Assessment and Analytical Framework*. https://doi.org/https://doi.org/10.1787/b25efab8-en

Purwoko, N. E. (2023). Aplikasi Pembelajaran Bangun Ruang Menggunakan Augmented Reality Marker Based Tracking. *Jurnal Ilmiah Media Sisfo*, *17*(2), 302–312. https://doi.org/10.33998/mediasisfo.2023.17.2.1407

Puspendik. (2019). *Pendidikan Di Indonesia Belajar dari Hasil PISA 2018*.

Rachmasari, M., Serevina, V., & Budi, A. S. (2019). *Lembar Kerja Elektronik Peserta Didik Dengan Model Pembelajaran Berbasis Masalah Untuk Meningkatkan Kemampuan Berpikir Tingkat Tinggi*. https://doi.org/10.21009/03.snf2019.01.pe.28

Santhalia, P. W., & Sampebatu, E. C. (2020). Pengembangan Multimedia Interaktif Dalam Membantu Pembelajaran Fisika Di Era Covid-19. *Jurnal Inovasi Pendidikan Ipa*, *6*(2). https://doi.org/10.21831/jipi.v6i2.31985

Wijaya, A., & Dewayani, S. (2021). Framework Asesmen Kompetensi Minimum (AKM). *Badan Penelitian Dan Pengembangan Dan Perbukuan Kementerian Pendidikan Dan Kebudayaan*, 1–108.

Wirawan, D. O. (2023). E-LKPD Berbasis HOTS Materi Pecahan Berbantu Liveworksheets Berorientasi Pada Pemahaman Konsep Matematika Siswa Kelas V. *Jurnal Educatio Fkip Unma*, *9*(4), 2011–2021. https://doi.org/10.31949/educatio.v9i4.5998

Yuniasih, N., Aini, R. N., & Widowati, R. (2018). Pengembangan Media Interaktif Berbasis Ispring Materi Sistem Pencernaan Manusia Kelas v Di SDN Ciptomulyo 3 Kota Malang. *Jurnal Inspirasi Pendidikan*, *8*(2), 85–94. https://doi.org/10.21067/jip.v8i2.2647

Zahroh, D. A., & Yuliani, Y. (2021). Pengembangan E-LKPD Berbasis Literasi Sains Untuk Melatihkan Keterampilan Berpikir Kritis Peserta Didik Pada Materi Pertumbuhan Dan Perkembangan. *Berkala Ilmiah Pendidikan Biologi (Bioedu)*, *10*(3), 605–616. https://doi.org/10.26740/bioedu.v10n3.p605-616