

E-FLASHCARD MEDIA DEVELOPMENT USING APPLICATION OF ASSEMBLR EDU ON THE MATERIAL ON THE RELATIONSHIP OF PANCASILA VALUES IN DAILY LIFE PRACTICE

Mira Mirawati ^{a*)}, Wawan Syahiril Anwar ^{a)}, Jaja Sudarjat ^{a)}, Tiara Yuniar Christin ^{a)},
Cindy Aulia Ramita ^{a)}, Finna Rizkia Maulidya ^{a)}

^{a)} Universitas Pakuan, Bogor, Indonesia

**)Author Correspondence: mira.mirawati.@unpak.ac.id*

Article history: received 02 June 2026; revised 26 June 2026; accepted 27 July 2026

DOI: <https://doi.org/10.33751/jhss.v10i92..222>

Abstract. This research aims to develop E-Flashcard media using the Assemblr EDU application and test its feasibility on material on the relationship between Pancasila values in daily life practice. The research uses the Research and Development (R&D) method with the ADDIE model, but the implementation is limited to the implementation stage. The research subjects consisted of three expert validator lecturers (media, language, and materials) and one teacher of material experts and 23 students of grade VI of SD Negeri Lawanggantung 2 Bogor City. Data collection techniques were carried out through questionnaires, interviews, and documentation, while data analysis used qualitative and quantitative approaches with a Likert scale. The results of the study showed that the developed media obtained a very decent category with a validation percentage above 90%. The response of students was 87% and the teacher's response of 92.18% was in the very good category. This media also shows a high level of interest, ease of use, interactivity, and motivation to learn so that the E-Flashcard media using the Assemblr EDU application is declared suitable for use in learning on the material on the relationship between Pancasila values in daily life practice.

Keywords: E-Flashcard, Augmented Reality (AR), EDU Assembly, Pancasila Education, ADDIE Model

I. INTRODUCTION

Background of Study

Education in the era of society 5.0 does not only focus on digitalization, but on humanistic collaboration between humans and technology. In this context, teachers are no longer just material presenters, but role facilitators, innovators, and agents of change in designing creative and meaningful learning experiences [1][2]. The use of technology is an important means to expand access and improve the quality of learning, including in Pancasila Education learning.

The use of technology-based learning media allows students to have a more interactive, dynamic, and collaborative learning experience. Learning media also plays a role in helping to convey Pancasila values in a more interesting way, so that it can increase students' motivation and understanding [3]. Based on the results of interviews with grade IVB teachers at SD Negeri Lawanggantung 2 Bogor City, it is known that the use of digital learning media in learning Pancasila Education has been carried out, but it has not varied. The results of the observation were found that it was seen that there were still some students who were less enthusiastic and had low motivation to learn in learning material related to Pancasila values in daily life practice so that varied, more interesting and interactive learning media innovations were needed. One of the learning media that can be used is E-Flashcard, which is an interactive digital card media that can help the process of understanding and remembering learning materials more effectively [4]. A form of visual learning media that functions to make it easier for students to understand and remember information through simple presentations [5].

In the development process, this media can be integrated with the Assemblr EDU application based on Augmented Reality (AR) technology that allows the presentation of interactive learning content through the incorporation of two-dimensional (2D) and three-dimensional (3D) objects into the real environment. The use of AR technology in learning has been proven to be able to improve the quality of material visualization to be more concrete, interesting, and interactive [6]. In addition, the characteristics of AR that enable the real-time integration of the virtual and real world provide a more contextual and meaningful learning experience for learners [7].

Problem of Study

Based on these conditions, the problem formulation in this study focuses on how the process of developing E-Flashcard media using the Assemblr EDU application on the material on the relationship of Pancasila values in daily life practice for VIB class students at SD Negeri Lawanggintung 2 Bogor City, as well as how the level of feasibility of the developed media is expected to increase the enthusiasm and motivation of students in the process learning.

Research's State of the Art

Several studies on the development of E-Flashcard media have been conducted and shown positive results. Bio Research [8] shows that the validity test of material experts obtained a score of 92%, included in the "Very Feasible" category, the validity test of media experts obtained a score of 86.67% including the "Very Feasible" category, and the validity test of grade IV teachers received a score of 90% including the "Very Feasible" category, the Small Group Student Trial received a score of 90.13% including the "Very Interesting" category while the trial of Large Group Education participants received a score of 88% including category "Very Interesting". Further research was conducted by Wangi & Agung in [9]. The results of the data analysis were obtained, namely the results of the subject content expert test obtained a score of 100, the results of the learning design expert test obtained a score of 80.00 with the good category, the results of the learning media expert test obtained a score of 89.33, the results of the individual trial obtained a score of 92.72 and the results of the small group trial obtained a score of 92.00. However, the two studies have not clearly explained the applications used in media development.

More recent developments are shown in the research of Khoirunnisa et al. [10] who began to integrate the Assemblr EDU application in the development of flashcard media based on Augmented Reality (AR) technology. The results of the study showed that in the "Valid" category, media experts got a percentage score of 75%, material experts got a score of 95%, and linguists got a score of 85.7% in the "Very Valid" category. With a percentage score of 97.5% in the "Highly Effective" category, teachers evaluated the effectiveness of the media. Students evaluated the appeal of the media, and they gave it a score of 96.6% in the "Very Interesting" category. The latest research was conducted by Selang et.al. [11] reinforcing the findings. The results of the study showed that the validation score of media feasibility and material feasibility obtained 95% of the very feasible category and the results of the teacher response questionnaire of 87.5% were very practical, the results of the student response questionnaire obtained an average of 91.92%.

Gap Study and Objective

Based on the results of previous research, there are still gaps in the development of E-Flashcard media. Some initial research has not clearly mentioned the platform or application used in the development process, so the technological aspects that support the media have not been optimally depicted. Meanwhile, in studies that have utilized the EDU Assemblr application, the validation results obtained are still not fully optimal in all aspects of assessment. In addition, most previous studies have tended to focus on measuring the level of feasibility and appeal of media alone. More in-depth aspects, such as the effectiveness of media in increasing students' motivation and learning comprehension, have not been comprehensively studied.

The research conducted by the researcher aims to develop E-Flashcard media using the Assemblr EDU application that utilizes Augmented Reality (AR) technology and tests the feasibility level of the generated media. This research is expected to fill the gaps contained in previous research and contribute to the development of more innovative digital learning media.

II. METHOD

Type and Design

This research uses the Research and Development (R&D) method with the ADDIE (Analysis, Design, Development, Implementation, Evaluation) model, but the implementation is limited to the implementation stage. The analysis stage is carried out to identify the needs and characteristics of students, the design stage includes the

design of media and materials, the development stage includes the creation of E-Flashcard media using the Assemblr EDU application and validation by experts, and the implementation stage is carried out through trials to students and teachers to find out the response to the level of media eligibility. Restrictions to the implementation stage are carried out because the research is focused on product development and initial feasibility testing, so that the evaluation carried out is formative during the development process. Nevertheless, this study still provides an empirical picture of the quality and potential use of media in learning.

Data and Data Sources

The research subjects consist of validators and learners. First, the validators consist of three lecturers as media experts, linguists, and material experts and one teacher as material experts. Second, 23 students in grade VI of SD Negeri Lawanggintung 2 Bogor City.

Data Collection Technique

Data collection using questionnaires, interviews, and documentation. Questionnaires are used to obtain expert validation data and learner responses, interviews are used to strengthen the data, while documentation is used as evidence of research implementation.

Data Analysis

Data analysis includes qualitative and quantitative analysis. Qualitative analysis is used to describe the results of observations, interviews, and documentation. Quantitative analysis was carried out using the Likert scale (1–5) for expert validation and student responses as well as teacher responses. The results of the analysis are used to determine the feasibility level of the developed media.

III. RESULTS

Discussions

This research was conducted to develop and produce appropriate learning media in learning on the material on the relationship of Pancasila values in daily practical life. The research has been carried out through several stages as follows.

At the analysis stage, data was obtained through interviews with class IVB teachers and observation activities carried out in grade VI of SD Negeri Lawanggintung 2 Bogor City. The results of the analysis show that the use of digital learning media in schools has actually been implemented. However, the variety of media used is still limited, causing students to be less enthusiastic in participating in learning. As a result, students' motivation to learn tends to be low and affects their understanding of the material on the relationship between Pancasila values in daily life that is not optimal. This condition shows the importance of technology-based learning media innovation to increase student involvement. This is supported by Bahari et al. [3] who stated that the use of technology in Pancasila education can strengthen values that instill value through more interesting and contextual learning.

The next stage is design. This stage is carried out to design learning media in the form of E-Flashcards using the Assemblr EDU application which is tailored to learning outcomes and learning objectives that have been set. Media design includes several main components, namely a cover display that contains attractive titles and images, instructions for use that guide users in accessing Augmented Reality (AR) media and features, material cards that contain the precepts of Pancasila along with their meanings and application examples, AR barcodes or markers to display three-dimensional objects through the EDU Assembly, 3D visualization and audio to support understanding, as well as the conclusion section to strengthen students' understanding. The design components that have been designed are presented in the following table.

Based on the table 1, the E-Flashcard media developed is able to present learning materials in a more concrete form through the integration of Augmented Reality (AR) technology. Each card not only presents text, but also comes with 3D visualizations and audio that can be displayed directly through an AR barcode scan. This allows abstract concepts, such as the values of Pancasila, to be displayed in a more tangible visual form and examples of application. Thus, learners can more easily understand the material because they gain a clearer, real, and contextual learning experience. This is relevant to the results of Wangi and Angung [9] research which states that E-Flashcard media can increase students' understanding of concepts because of its systematic and interesting presentation. In addition, Khoirunnisa et al. [10] suggest that the use of AR in learning media has also been shown to increase the attractiveness and interactivity of learning.

Table 1. Design Media E-Flashcard

Yes	Stages	Remarks
1	Cover Flashcard	Display of the AR Pancasila Flashcard media cover.
2	Instructions for Use	Guide to using the AR Pancasila Flashcard.
3	Learning Outcomes and Objectives	Contains the learning outcomes and objectives to be achieved.
4	First Precept Card	AR barcode, audio, and material meaning and application of the first precept.
5	Second Precept Card	AR barcode, audio, and material meaning and application of the second precept.
6	Third Precept Card	AR, audio, and material meaning and application of the third precept.
7	Fourth Precept Card	AR barcode, audio, and material meaning and application of the fourth precept.
8	Fifth Precept Card	AR barcodes, audio, and material meaning and application of the fifth precept.

In the development stage, E-Flashcard media products are validated by experts consisting of media experts, linguists, and material experts which are carried out in two stages of validation. After obtaining the average value of the overall validity, then the data is analyzed and recapitulated as presented in the following table

Table 2. Results Of Expert Validation Recapitulation

Validator	Stage 1	Stage 2
Media Member	93,21%	83,64%
Linguist	96%	96%
Materials Expert	96%	100%
Average	95,07% (very decent)	93,21% (very decent)

Based on this data, E-Flashcard media is stated to be very feasible for use in learning. This shows that the E-Flashcard media has met the aspects of content quality, display, and language optimally. In terms of content, the material presented is in accordance with the learning outcomes and objectives and is arranged systematically and contextually. Judging from the aspect of display, the media is designed with attractive, interactive visuals, and is supported by the integration of Augmented Reality (AR) technology which is able to increase the attractiveness and involvement of students. Meanwhile, from the aspect of language, the use of language in this media has been adjusted to the level of development of students so that it is easy to understand and communicative. This finding is in line with Hayati's research [8] which states that flashcard media that is developed in a well-developed and structured manner can be an effective learning tool and suitable for use for elementary school students.

The implementation stage, the stages in this study were carried out through the trial of E-Flashcard media to students and teachers of class VIB of SD Negeri Lawanggintang 2 Bogor City. At this stage, the evaluation stage is not carried out specifically, but is focused on limited trials as part of the implementation to see the use of media in real learning situations and obtain initial responses from users, namely students and teachers. The results of the trial showed that the response of students and teachers was in the very good category as presented in table 3.

Based on the table, it can be seen that students experience increased involvement in learning. This is shown by their activeness in responding to the material and participating in interactive activities, so that E-Flashcard media can increase interest and learning participation. Meanwhile, teachers consider this media to be suitable for use because it is easy to operate, attractive, and effective in supporting more interactive learning. These results are in line with previous research which stated that digital flashcard media is able to provide a positive response, as well as increase student satisfaction and engagement due to the presentation of concise, interesting, and interactive material [5],

[12]. Thus, E-Flashcard media not only gets a positive response from students, but also gets very good assessments from teachers, so it is suitable for use in the learning process.

Table 3. Summary of Student and Teacher Responses to E-Flashcard Media

Respondents	Acquisition Score	Maximum Score	Percentage	Categories
Students	1001	1150	87%	Excellent
Teacher	92	100	92%	Excellent

Novelty and contribution

The novelty of this research lies in the development of E-Flashcard media using the Assemblr EDU application with a clearer and measurable AR integration than previous research. In addition, the novelty of this research is also seen from the media feasibility test which shows very high results, which are above 90%, and supported by positive responses from users, both teachers by 92.18% and students by 87%, both of which are in the very good category. These findings provide empirical evidence that E-Flashcard media using the Assemblr EDU application is feasible to be used in the learning process.

This research hopes to make some important contributions. First, enriching the study of the development of digital learning media in Pancasila Education. Second, providing alternative innovative learning media based on AR technology that can increase students' enthusiasm and motivation. Third, providing empirical evidence that the E-Flashcard media using the Assemblr EDU application is suitable for use as an effective, interactive, and relevant learning media for 21st century learning needs.

Limitation and Future Study

This research has several limitations that were found during the implementation process. First, the unstable internet network during the implementation process also affects the smooth use of the EDU Assemblr application, especially in accessing the Augmented Reality (AR) feature. This condition causes some students to experience obstacles when using media optimally. Second, supporting devices such as compatible smartphones are also a factor that affects the effectiveness of media use. Not all learners have devices with adequate specifications to run AR-based applications, such as memory capacity, camera quality, and processor capabilities. This results in a difference in media user experience, where some learners can access features optimally, while others experience limitations such as slow running applications, less than optimal displays, or even not being usable. This condition has an impact on the disparity in the level of involvement and understanding of students during the learning process.

With these limitations, it is necessary to further study through future research to develop more adaptive and lightweight media to be accessible on various devices, optimization of features for offline use, and testing of media on more diverse conditions and means to obtain more comprehensive results.

Implication and Suggestions

Based on the results of the research, there are several suggestions that can be submitted. Teachers, it is recommended to integrate E-Flashcard media in learning. The use of this media encourages teachers to be more innovative in learning. Schools are expected to be able to support through the provision of adequate technological facilities and infrastructure. Furthermore, other researchers are advised to develop similar media on different materials and test their effectiveness with experimental designs on a wider sample so that results are more valid and generalizable.

IV. CONCLUSION

Based on the results of the research, the development of E-Flashcard media using the Assemblr EDU application was carried out through the ADDIE model, but the implementation was limited to the implementation stage. At each stage, the media was developed systematically starting from identifying needs, designing attractive and interactive designs based on Augmented Reality (AR), to testing to students. This process produces learning media that is in accordance with the learning goals and characteristics of elementary school students.

In terms of product feasibility, E-Flashcard media using the Assemblr EDU application was declared very feasible based on the results of validation by experts with an average percentage of over 90%. In addition, the results of the trial showed that the student response with a percentage of 87% (the very good category) and supported by the teacher's response of 92.18% (the very good category) so that it can be concluded that the E-Flashcard media developed is suitable for use in the material on the relationship between Pancasila values in daily life practice.

REFERENCES

- [1] Y. Sari, J. S. Pusaka, F. Al-Ashil, R. Hidayatullah, and H. Hadel, "A Study of Teachers' Duties and Responsibilities in the Era of Society 5.0," *Elita Education: Journal of Educational Innovation*, vol. 2, no. 3, pp. 72–85, May 2025.
- [2] B. Purwoko and L. H. Susarno, "Philosophy of education in the age of technology: Changing the values and methods of learning," *Adijaya Multidisciplinary Journal*, vol. 2, no. 6, pp. 938–947, 2025.
- [3] I. Bahari et al., "The use of technology for the implementation of Pancasila education in strengthening values in the digital era," *Badge: Journal of Educational Science Innovation*, vol. 2, no. 3, pp. 209–215, May 2024.
- [4] D. M. Sari, P. Afriandi, E. Simanungkalit, E. Mailani, and I. F. Manurung, "The influence of Assemblr Edu learning media on social science learning outcomes," *Journal of Education and Learning*, vol. 3, no. 2, pp. 291–300, August 2024.
- [5] A. Pratama, "The use of digital flashcard media as a visual learning medium in improving student understanding," *Journal of Education*, vol. 11, no. 2, pp. 120–128, 2023.
- [6] A. Rahman and D. Putri, "The use of augmented reality-based applications in interactive learning," *Journal of Educational Innovation*, vol. 12, no. 1, pp. 55–63, 2024.
- [7] I. Mustaqim, "The use of augmented reality in learning to improve students' learning experience," *Journal of Educational Technology*, vol. 13, no. 1, pp. 45–53, 2021.
- [8] L. Hayati, "Development of flashcard learning media in elementary schools," *Journal of Social Science Research and Education*, vol. 15, no. 2, pp. 197–208, Oct. 2021.
- [9] I. D. Wangi and A. A. Angung, "Development of E-flashcard learning media in the content of science lessons in class V," *Mimbar PGSD Undiksha*, vol. 9, no. 1, pp. 150–159, Mar. 2021.
- [10] S. Khoirunnisa, M. Fatih, and K. Wafa, "Development of augmented reality-based flashcard media for solar system materials for grade V students of SDN Sumberdiren 01 Garum," *Al-Madrasah: Scientific Journal*, vol. 8, no. 4, pp. 1818–1825, Oct.–Dec. 2024.
- [11] Z. Selang, M. Tahir, and M. I. Zain, "Development of augmented reality flashcard learning media based on EDU Assemblr application on Indonesian cultural diversity materials," *Scientific Journal of Education Professions*, vol. 10, no. 2, pp. 1540–1545, May 2025.
- [12] F. Angreany and S. Saud, "The effect of flashcard media use on student engagement in learning," *Journal of Education*, vol. 18, no. 2, pp. 123–130, 2017.