



# Validity of PBL-Based Interactive Multimedia Teaching Material Development Using Powerpoint in Elementary School

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**Abstract:** Education in the 21<sup>st</sup> century in the era of the industrial revolution 4.0, information technology is developing rapidly and significantly which causes the influence of technology. By using technology, the learning mindset can shift from teacher-centered to learner-centered. The purpose of this research is to develop interactive multimedia teaching materials based on the PBL model using Powerpoint and Canva in elementary school. This type of research is R&D development research with the ADDIE development model. Data collection and data analysis methods using observation sheets, interview questionnaires and validation instruments as well as qualitative and quantitative descriptive analysis methods. The results of the validation of teaching materials showed a "very valid" category in all aspects with an overall average of 91.2. The results of FGDs with teachers stated the feasibility of teaching materials, with the category "very valid" in all aspects with an overall average of 96.96. This multimedia meets the characteristics of learning multimedia that is attractive, easy to operate and very feasible to meet the needs of students.

**Keywords:** Canva; Powerpoint; Teaching Materials; Validity

## Introduction

Education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential (Cahya et al., 2023). Learning is a process of interaction between students and educators and learning resources (Manongga, 2021). The role of teachers is very important to help learners obtain education in order to achieve goals in obtaining optimal learning outcomes, so that the implementation of education must be organized in accordance with the National Education System (Setiawan, 2019). In relation to the industrial revolution 4.0, educational institutions must keep up with rapid technological developments. By using this technology, the learning mindset can shift from teacher-centered to student-centered (Arsyad, 2021).

The world of education uses technology very quickly in the current digital era in accordance with the

industrial revolution 4.0 and the need for 21st century skills (Anridzo et al., 2022). For example, the independent learning curriculum. The independent curriculum focuses on changing the paradigm of learner-centered learning (Afifah, 2019). Learners can understand the benefits and meaning of the learning process they go through, including the use of information and communication technology (Putriani & Hudaidah, 2021). This concept is made so that students can explore their respective interests and talents. Merdeka Curriculum, also known as Merdeka Belajar Curriculum, is a diverse learning program around the classroom. Learners have enough time to learn concepts and strengthen their ability to learn (Raharjo, 2020).

In an independent curriculum, learners are encouraged to explore their own interests and pursue different forms of creative expression. This helps in the development of learners' creativity and facilitates a more colorful and enjoyable learning process (Marisa, 2021).

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This will encourage schools, teachers and parents to create a more independent, innovative and creative learning environment, which will ultimately result in more confident learners (Siti Musannadah, 2022).

Digital-based teaching materials are an alternative that can help teachers and students deliver material in the learning process (Trinaldi et al., 2022). Digital teaching material is a display that has a display function to inform the message to the user (Barlian, 2022). Digital teaching materials can present material in more concrete images, text, video, animation and accompanied by customized audio. So that it can make it easier for students to carry out learning (Suryanti et al., 2021).

Based on the results of observations during face-to-face learning in two schools in Padang City, namely, SDN 33 Kalumbuk on June 05, 2023, and SDN 26 Air Tawar Timur on June 06, 2023. During the observation, it was found that the learning process at school was still one-way and only centered on the teacher. The delivery of material using the lecture method, while students only listen to what is conveyed by the teacher. From the results of observations it is known that students are less interested in participating in the learning process and most students have difficulty in understanding the material with the media that has been used by the teacher.

The thing that causes the emergence of these problems is because teachers do not use interactive learning media that integrates with technological sophistication that can support the learning process. In addition, teachers do not provide opportunities for students to do independent learning starting from observing a problem, training students to analyze, process information, do research, and make decisions experimentation, collaborating, communicating, and concluding from an object or object event (Trisiana, 2020).

Based on the problems and needs of students in the learning process, it is necessary to make updates in making a learning media. This is to improve the quality of learning. One way that can be done is by developing interactive learning multimedia, which is media that combines several components such as text, images, video, animation, graphics and sound in one unit with computer assistance (Aulia et al., 2023).

Interactive multimedia is a learning tool that can cause interaction between students and subject matter so that they have an impact and influence on each other (Wahyugi & Fatmariza, 2021). Interactive multimedia is very useful as a comprehensive tool in the teaching and learning process because it can present information that can be seen, heard and done (Apriati et al., 2021). The benefits that can be obtained by using interactive multimedia are that learning becomes more effective,

learning can be done anywhere and anytime, and can increase motivation and critical thinking skills in students. One application that can be used to design this interactive multimedia is Powerpoint combined with Canva. (Caesariani, 2018).

In the learning process Microsoft Powerpoint is very useful and can help students in understanding the concepts taught (Hidayat & Soleh, 2022). In addition, Microsoft Powerpoint can be used to create interactive learning as a learning tool that can present material and encourage learners to participate in learning (Puspita et al., 2020). Visualization for learning can be communicated with graphics or images. In addition, powerpoint also has menus, active buttons, sounds, and evaluation exercises, so that this learning media can make students interested and challenged to take part in learning (Gulo & Harefa, 2022).

The benefits of using information technology-based learning media in supporting learning activities (Hasan, 2021). Teachers know about media learning using the Canva application to attract students' attention and provide motivation to learn and help students understand what the teacher is teaching, by showing motivational videos and learning videos and through the presentation of powerpoints related to the material discussed (Rahmawati & Atmojo, 2021).

Powerpoint and Canva based on the Problem-Based Learning (PBL) model is the novelty of this research as a differentiator from research that has been done. Problem-Based Learning (PBL) uses an authentic problem learning approach to provide students with opportunities to improve their skills, increase their independence, and increase their own confidence (Anggraeni et al., 2021).

One of the materials that can be developed with the problem-based learning (PBL) model is the material for building identity in diversity in Class IV Elementary School. The essence of learning to build identity in diversity is that students can master and apply the concept of cultural diversity found in the surrounding environment. Learning materials are developed with interactive multimedia, namely Powerpoint and Canva (Latip, 2022).

It can be concluded from the description above that teachers play an important role in understanding the conditions of students and are more creative and innovative in making learning media, so researchers are interested in developing interactive multimedia language based on Powerpoint combined with Canva in elementary schools.

## Method

The type of research used in this study is development research or research and development (R&D) (Anisah & Amreta, 2023). The educational research and development approach in this study is utilized to produce Interactive Multimedia Teaching Materials on the Problem-Based Learning (PBL) Based Merdeka Curriculum for Grade IV Elementary Schools. This development research uses the ADDIE model. The steps for implementing the ADDIE development model, namely Analysis (analysis), Design (design), Development (development), Implementation (application), and Evaluation (evaluation) (Oktavia & Desyandri, 2021). However, in this study, researchers limit it to the development stage only. The implementation and evaluation stages will be carried out in further research.

The stages of research carried out are, namely, the analysis stage, the design stage and the development stage (Mella et al., 2022). The analysis stage where researchers carry out a needs analysis by collecting information through interviews, observations, questionnaires analyzing the needs of teachers and students (Permatasari et al., 2020). This is with the aim of obtaining information related to the problems experienced by the school to be studied and the solution to solving the problem from the school to be studied. The design stage, namely the product development project. Furthermore, the development stage, namely at this stage the feasibility test of the product being made is carried out, by validating the product developed to material, language, and media expert validators (Wahyugi & Fatmariza, 2021).

The steps that can be taken at this stage of development are: Validation Stage, where at this stage the developed product will be validated by validators of teaching materials and teaching modules using validation sheet instruments that researchers have previously prepared. Input and suggestions from validators of teaching materials and teaching modules will be used for product revision or improvement. After obtaining validation from the validators, data analysis is then carried out from the results of the validation sheet instrument to determine whether the product developed is valid or invalid. Revision Stage, where at this stage the researcher makes improvements or revisions to the development product based on the results of the instrument in the form of a validation sheet that has been given suggestions, input, criticism from the validator. Focus Group Discussion (FGD), Where at this stage FGD is a discussion method carried out by teachers and researchers which contains the use of media developed by researchers during learning. This FGD aims to

discuss and obtain feedback input from teachers on the operationalization of the media developed by researchers. The results of data validation and reviews from validators of teaching materials and teaching modules as well as FGD participants are processed to determine the validity of the teaching materials can obtain information related to the product so that the level of quality and feasibility of interactive learning multimedia is known.

In this study, the subjects consisted of teaching material validators, teaching module validators, and FGD participants. Teaching material validators consisted of 3 material experts, 1 language expert, and 1 media expert. Module validators consisted of 3 experts. Expert experts from teaching material and module validators are lecturers from Universitas Negeri Padang (UNP). Meanwhile, FGD participants were 12 elementary school teachers (3 grade IV teachers who were representatives from each elementary school and 9 teacher experts who were experts in making teaching modules). The object of this research is learning media in the form of interactive multimedia based on Powerpoint combined with Canva in the independent curriculum for grade IV SD CHAPTER 3 Building Identity in Diversity, a unit on cultural diversity in the surrounding environment.

The data collection methods used in this study were observation sheets, interview questionnaires and validation instruments. The instrument used in the validation of teaching materials is a validation sheet to see the validity of the teaching materials developed. The teaching material validation sheet consists of material validation, language validation, and media validation. The material validation instrument contains the suitability of interactive multimedia developed with learning materials that have been adapted to the curriculum. The language validation instrument consists of the linguistic aspects of the interactive multimedia developed to be easily understood by students. The media validation instrument consists of an interactive multimedia design that has been developed which includes the suitability of the use of letters, layouts, images, and colors used in learning media. The measurement scale uses a 5 (five) scale, namely, 5 = very good, 4 = good, 3 = sufficient, 2 = less good, and 1 = very poor.

While the instrument used in teaching module validation is a validation sheet to see the validity of the teaching module that has been designed. The validation sheet is made based on the variables to be assessed in the teaching module. The variables assessed in the teaching module contain general information, core components, selection of learning materials, methods and details of learning steps with demonstration method steps,

selection of learning resources and teaching modules Assessment. Each variable assessed in the teaching module has several corresponding indicators. Assessment of the teaching module validity score using the impulse buying scale. The assessment of each variable given for statement indicators which are favorable is 4 = very suitable, 3 = suitable, 2 = less suitable, 1 = not suitable and 0 = very unsuitable.

This teaching material development research uses qualitative and quantitative analysis methods (Buyung, 2022). This qualitative descriptive analysis method is used to analyze and process data from the review results of teaching material and module validators and FGD participants in the form of responses, criticisms and input suggestions given to interactive learning multimedia. Quantitative descriptive analysis is used to process data obtained from validity instruments in the form of data in the form of numbers or scores. Furthermore, the scores obtained for each aspect of the assessment will be summed up and calculated the average. The average score of the validation results will be obtained from the total score of the validation results divided by the number of aspects assessed, using the formula (Sunarto, 2015) as follows:

$$x = \frac{\sum xi}{n} \tag{1}$$

Description:

- X : Average validation score.
- $\sum xi$  : The sum of the scores from the validation results.
- n : Number of aspects assessed.

To find out the validation scoring presentation, researchers used the following formula 2:

$$\frac{\text{sum of the scores}}{\text{maximum score}} \times 100\% = \text{Final percentage result.} \tag{2}$$

**Table 1.** Categories of Validation Test Results

Interval	Category	Description
81-100%	Very valid	Very valid no revision needed
61-80%	Valid	Valid needs minor revision
41-60%	Fairly valid	Valid can be used with medium revision
21-40%	Less valid	Needs major revision
1-20%	Invalid	Unusable

## Result and Discussion

The development of interactive multimedia teaching materials aims to assist students in understanding learning materials and inspire them to

learn more enthusiastically. In addition, it can also motivate teachers to create more creative learning media.

### Analysis Stage

The analysis stage of the development of interactive multimedia teaching materials on the Problem-Based Learning (PBL) based Merdeka curriculum for grade IV elementary school CHAPTER 3 Building Identity in Diversity pays attention to analysis, namely:

#### Needs Analysis

The needs analysis was conducted in three elementary schools, namely in class IV of SD Pembangunan Laboratorium UNP, SDN 26 Air Tawar Timur, and SDN 33 Kalumbuk Padang City. Information that researchers get from preliminary studies that have been carried out that in learning teachers only use printed books from publishers and LKS that have been provided by schools without any variation by utilizing technology. Even in schools there are facilities and infrastructure that can be used by teachers to vary teaching methods such as infocus, available internet networks, but the facilities and infrastructure provided have not been maximally utilized.

#### Curriculum Analysis

At the curriculum analysis stage, there are several steps taken as follows: (1) Stabilizing Learning Outcomes (2) Analyzing Learning Objectives and developing them (3) Creating interactive multimedia Civics teaching materials on an independent curriculum based on Problem-oriented learning.

Based Learning (PBL) in Elementary Schools (4) Calculating the time allocation required in applying the product to the learning of the independent learning curriculum. (5) Developing teaching modules for grade IV Civics subject CHAPTER 3 Building Identity in Cultural Diversity units. The teaching materials developed are adjusted to the curriculum analysis mapping as a basis for developing interactive multimedia teaching materials on the Merdeka curriculum based on the Problem-Based Learning (PBL) model.

#### Analysis of Learner Characteristics

This research was conducted in class IV of SD Pembangunan Laboratorium UNP, SDN 26 Air Tawar Timur and SDN 33 Kalumbuk Padang City in the 2023/2024 academic year. The three schools consisted of 58 students. For the small group test, the researchers conducted the UNP Laboratory Development Elementary School, while the large group test was conducted at SDN 26 Air Tawar Timur and SDN 33

Kalumbuk. The source of information that researchers obtained from the fourth grade teacher of each school. The results obtained by researchers through observation, interviews, teacher questionnaires and student questionnaires: 1) Learners are interested in teaching materials that have an attractive appearance. 2) Learners are interested in teaching materials that present images, videos and animations. 3) Students are happy to learn using teaching materials that can be used on laptops, cellphones or infocus in class.

Based on the conclusions of the evaluation carried out on the three aspects above, the design of teaching materials is then carried out in accordance with what has been obtained at the analysis stage.

*Design Stage*

This design stage is carried out to design teaching materials sourced from each data analysis in the preliminary study. Interactive multimedia Civics teaching materials are designed using the application Canva's Powerpoint combination can be stored on computers, laptops and flash drives. Which makes teachers and students can use it. At this stage, it is carried out by compiling the framework of the media to be developed, namely cover page, menu page, learning outcomes (CP), learning objectives (TP), materials, learning videos, lkpd, and evaluation.

*Development Stage*

The development stage carried out is the validation of teaching materials developed and teaching modules as a teacher's alloy in presenting the material to be delivered. Furthermore, a Focus Group Discussion (FGD) was held to add input for improving teaching materials from teachers, the discussion in the FGD was related to the operational methods of teaching materials that had been designed, at the end of the meeting a validation questionnaire was distributed as well as suggestions, comments and input to improve teaching materials, then the researcher revised the teaching materials in accordance with the suggestions or input obtained from FGD participants.

*Teaching Material Validation*

Interactive multimedia teaching materials on the independent curriculum based on the Problem-Based Learning (PBL) model using the Canva combination Powerpoint application in grade IV elementary school are validated by experts in their respective fields. The teaching materials that the researchers developed were validated by five validators including four validators from universities and one validator from elementary schools. For the validated aspects, there are three aspects, namely material aspect validators, language

aspect validators, and presentation/graphic aspect validators, each of which provides an assessment and suggestions for improvement of teaching materials.

**Table 2.** Teaching Material Validation Results

Assessed Aspect	Validation Value	Category
Feasibility of Content (Material)	95.42	Very valid
Grammar	94.00	Very valid
Presentation	93.00	Very valid
Graphics	92.00	Very valid
Average	93.6	Very valid

From the results of the validation test on the four aspects, an average score of 93.6 was obtained, which is in the very valid category. Overall, the validation test of interactive multimedia teaching materials on the independent curriculum based on the Problem-Based Learning (PBL) model using the Canva combination Powerpoint application in grade IV elementary school is in the very valid range. The following is a display of interactive multimedia based on Powerpoint combined with Canva.



**Figure 1.** Main page



**Figure 2.** Second page



Figure 3. Profile page



Figure 4. Information button



Figure 5. National song



Figure 6. Menu page

*Teaching Module Validation*

The validation of the teaching module was validated by three Higher Education validators, each of whom provided an assessment and suggestions for improvement of the teaching module.

**Table 3.** Teaching Module Validation Results

Assessed Aspect	Validation Value	Category
General Information	98.6	Very valid
Core Components	94.4	Very valid
Material Selection	87.5	Very valid
Learning Methods and Details	87.5	Very valid
Selection of Learning Resources	91.67	Very valid
Assessment	87.5	Very valid
Average	91.2	Very valid

From the results of the validation test on the six aspects, an average score of 91.2 was obtained, which is in the very valid category. Overall, the validation test of the interactive multimedia teaching module on the independent curriculum based on the Problem-Based Learning (PBL) model using the Canva combination Powerpoint application in grade IV elementary school is in the very valid range.

*Focus Group Discussion (FGD)*

This FGD stage is carried out to provide teachers with an understanding of the teaching materials that have been designed and to validate the teaching materials. This activity was carried out at one elementary school, namely SDN 26 Air Tawar Timur was attended by 12 teachers as participants and researchers as presenters. The FGD discussed the operational ways of using teaching materials that have been designed to be used in learning. At the end of the lesson, a validation questionnaire was distributed to 12 teachers who participated in the FGD. Validation is carried out on four aspects, namely material aspects, language aspects, presentation aspects and graphical aspects.

**Table 4.** Results of Focus Group Discussion (FGD)

Assessed Aspect	Validation Value	Category
Feasibility of Content (Material)	96.53	Very valid
Grammar	95.41	Very valid
Presentation	97.5	Very valid
Graphics	98.4	Very valid
Average	96.96	Very valid

From the results of the FGD test on the aspects, an average score of 96.96 was obtained, which is in the very valid category. Overall, the validation test of teaching materials with the PBL model based on the Powerpoint

application combined with Canva is in the very valid category range.

## Conclusion

It can be concluded that the learning process of a teacher needs to use interactive learning strategies and media to improve the quality of learning and motivate students. Based on the results of the assessment of teaching material validators, teaching modules and Focus Group Discussions, interactive multimedia based on Powerpoint combined with Canva is declared very valid and effective. This multimedia meets the characteristics of learning multimedia that is attractive, easy to operate and very feasible to meet the needs of students.

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## Conflicts of Interest

The authors declare no conflict of interest.

## References

- Apriati, L., Mulawarman, W. G., & Ilyas, M. (2021). Pengembangan Bahan Ajar Menyenak Berbasis Multimedia Interaktif pada Pelajaran Tematik dengan Tema “Indahnya Kebersamaan” untuk Siswa Kelas IV Sekolah Dasar. *Diglosia: Jurnal Kajian Bahasa, Sastra, Dan Pengajarannya*, 4(1), 13–22. <https://doi.org/10.31004/basicedu.v6i5.3990>
- Arsyad, M. (2021). *Teori Belajar dan Peran Guru pada Pendidikan di Era Revolusi Industri 4.0*. Lambung Mangkurat University Press.
- Aulia, D., Firman, F., & Desyandri, D. (2023). Pengaruh Multimedia Interaktif Berbasis Canva Terhadap Kemampuan Membaca Permulaan Siswa Sekolah Dasar. *Alpen: Jurnal Pendidikan Dasar*, 7(1), 32–41. <https://doi.org/10.24929/alpen.v7i1.181>
- Buyung, B. (2022). Pengembangan Bahan Ajar Mata Kuliah Kurikulum dan Pembelajaran Untuk Meningkatkan Prestasi Belajar. *Jurnal Ilmiah Universitas Batanghari Jambi*, 22(3), 1775. <https://doi.org/10.33087/jiubj.v22i3.2953>
- Caesariani, N. A. (2018). Pemanfaatan Multimedia Interaktif pada Model Problem Based Learning dalam Pembelajaran Matematika. *Jurnal Pendidikan Tambusai*, 4(11), 832–840. Retrieved from <https://www.jptam.org/index.php/jptam/article/view/30>
- Cahya, M. D., Priantari, I., Pamungkas, Y., Sri, N., Utami, A., & Hernowo, B. (2023). Improving Collaboration and Cognitive Learning Outcomes of Biology Students using PBL through Lesson Study. *International Social Sciences and Humanities*, 2(2), 386–393.
- Barlian, U. C., & Solekah, S. (2022). Implementasi kurikulum merdeka dalam meningkatkan mutu pendidikan. *JOEL: Journal of Educational and Language Research*, 1(12), 2105–2118. <https://doi.org/10.21608/psjh.2022.250026>
- Gulo, S., & Harefa, A. O. (2022). Pengembangan Media Pembelajaran Interaktif Berbasis Powerpoint. *Educativo: Jurnal Pendidikan*, 1(1), 291–299. <https://doi.org/10.56248/educativo.v1i1.40>
- Hasan, M. M. D. H. K. T. (2021). *Media Pembelajaran*. In Tahta Media Group (Issue Mei).
- Hidayat, O. S., & Soleh, D. A. (2022). Pendampingan Pemanfaatan Media Multimedia Interaktif Berbasis Powerpoint Pada Pembelajaran Ppkn Di Sd Kecamatan Mustikajaya Kota Bekasi Jawa Barat. *BERNAS: Jurnal Pengabdian Kepada Masyarakat*, 3(1), 100–105. <https://doi.org/10.31949/jb.v3i1.1482>
- Latip, A. (2022). Penerapan Model Addie Dalam Pengembangan Multimedia Pembelajaran Berbasis Literasi Sains. *DIKSAINS: Jurnal Ilmiah Pendidikan Sains*, 2(2), 102–108.
- Afifah, U. (2019). *Kurikulum Merdeka dan Penerapannya Dalam Kegiatan Pembelajaran*. Thesis Commons. Retrieved from [osf.io/preprints/thesiscommons/hab7y](https://osf.io/preprints/thesiscommons/hab7y)
- Anggraeni, S. W., Alpian, Y., Prihamdani, D., & Winarsih, E. (2021). Pengembangan Multimedia Pembelajaran Interaktif Berbasis Video untuk Meningkatkan Minat Belajar Siswa Sekolah Dasar. *Jurnal Basicedu*, 5(6), 5313–5327. <https://doi.org/10.31004/basicedu.v5i6.1636>
- Anisah, G., & Amreta, M. Y. (2023). Pengembangan Instrument Assessment as Learning Berbasis Projek untuk Pembelajaran Menyenak dan Berbicara Monologis Dialogis Bermuatan karakter Bhineka Tunggal Ika. *KEMBARA: Jurnal Keilmuan Bahasa, Sastra, Dan Pengajarannya*, 9(1), 76–88.
- Anridzo, A. K., Arifin, I., & Wiyono, D. F. (2022). Implementasi Supervisi Klinis dalam Penerapan Kurikulum Merdeka di Sekolah Dasar. *Jurnal Basicedu*, 6(5), 8812–8818.

- <https://doi.org/10.33369/diksains.2.2.102-108>
- Manongga, A. (2021). Pentingnya teknologi informasi dalam mendukung proses belajar mengajar di sekolah dasar. *Pascasarjana Univearsitas Negeri Gorontalo Prosiding Seminar Nasional Pendidikan Dasar*, 978, 1-7. Retrieved from <https://ejurnal.pps.ung.ac.id/index.php/PSNPD/article/view/1041>
- Marisa, M. (2021). Inovasi Kurikulum “Merdeka Belajar” di Era Society 5.0. *Santhet: (Jurnal Sejarah, Pendidikan Dan Humaniora)*, 5(1), 72. <https://doi.org/10.36526/js.v3i2.e-ISSN>
- Mella, B., Wulandari, I. G. A. A., & Wiarta, I. W. (2022). Bahan Ajar Digital Interaktif Berbasis Problem Based Learning Materi Keragaman Budaya. *Jurnal Penelitian Dan Pengembangan Pendidikan*, 6(1), 127-136. <https://doi.org/10.23887/jppp.v6i1.46368>
- Oktavia, N., & Desyandri, D. (2021). Validitas dan Praktikalitas Pengembangan Multimedia Interaktif Berbasis Macromedia Flash 8 Pada Pembelajaran Tematik di Kelas IV Sekolah Dasar Kota Padang. *Jurnal Inovasi Pendidikan Dan Pembelajaran Sekolah Dasar*, 4(2), 58. <https://doi.org/10.24036/jppsd.v4i2.112704>
- Permatasari, K., Setiawan, Y., Guru, P., Dasar, S., Kristen, U., & Wacana, S. (2020). Meningkatkan Minat dan Berpikir Kritis Siswa Kelas 6 SD melalui Pengembangan Game The Rotation. *Jurnal Pendidikan Tambusai*, 4(2), 1408-1418. Retrieved from <https://jptam.org/index.php/jptam/article/view/606>
- Puspita, A. M. I., Puspitaningsih, F., & Diana, K. Y. (2020). Keefektifan Media Pembelajaran Powerpoint Interaktif untuk Meningkatkan Hasil Belajar Siswa Sekolah Dasar. *Jurnal Riset Dan Inovasi Pendidikan Dasar*, 1(1), 49-54. Retrieved from <https://jurnal.stkipgtritrenggalek.ac.id/index.php/tanggap/article/view/42>
- Putriani, J. D., & Hudaidah, H. (2021). Penerapan Pendidikan Indonesia Di Era Revolusi Industri 4.0. *Edukatif: Jurnal Ilmu Pendidikan*, 3(3), 830-838. Retrieved from <https://edukatif.org/index.php/edukatif/article/view/407>
- Rahmawati, F., & Atmojo, I. R. W. (2021). Analisis Media Digital Video Pembelajaran Abad 21 Menggunakan Aplikasi Canva Pada Pembelajaran IPA. *Jurnal Basicedu*, 5(6), 6271-6279. <https://doi.org/10.31004/basicedu.v5i6.1717>
- Setiawan, A. R. (2019). Pembelajaran Tematik Berorientasi Literasi Sainifik. *Jurnal Basicedu*, 4(1), 51-69. <https://doi.org/10.31004/basicedu.v4i1.298>
- Siti Musannadah, S. N. J. (2022). *The Application of Canva as Interactive Media in 21st Century Learning*. 5(6), 72-80.
- Sunarto, R. (2015). *Pengantar Statistika Untuk Penelitian Pendidikan, Sosial, Ekonomi, Komunikasi, dan Bisnis*. Cetakan Ke-4. Alfabeta.
- Suryanti, A., Putra, I. N. A. S., & Nurrahman, F. (2021). Pengembangan Media Pembelajaran Energi Alternatif Berbasis Multimedia Interaktif. *Jurnal Teknologi Pembelajaran Indonesia*, 11(2), 147-156. [https://doi.org/10.23887/jurnal\\_tp.v11i2.651](https://doi.org/10.23887/jurnal_tp.v11i2.651)
- Trinaldi, A., Bambang, S. E. M., Afriani, M., Rahma, F. A., & Rustam, R. (2022). Analisis Kebutuhan Penggunaan Bahan Ajar Berbasis Teknologi Infomasi. *Jurnal Basicedu*, 6(6), 9304-9314. <https://doi.org/10.31004/basicedu.v6i6.4037>
- Trisiana, A. (2020). Penguatan Pembelajaran Pendidikan Kewarganegaraan Melalui Digitalisasi Media Pembelajaran. *Jurnal Pendidikan Kewarganegaraan*, 10(2), 31. <https://doi.org/10.20527/kewarganegaraan.v10i2.9304>
- Wahyugi, R., & Fatmariza, F. (2021). Pengembangan Multimedia Interaktif Menggunakan Software Macromedia Flash 8 Sebagai Upaya Meningkatkan Motivasi Belajar Siswa Sekolah Dasar. *Edukatif: Jurnal Ilmu Pendidikan*, 3(3), 785-793. Retrieved from <https://edukatif.org/index.php/edukatif/article/view/439>