



## Interactive Powerpoint Media in Grade IV Elementary School

Beny Al Fajar<sup>1\*</sup>, Farida Mayar<sup>2</sup> 

<sup>1,2</sup> Faculty of Education, Padang State University, Padang, Indonesia

### ARTICLE INFO

#### Article history:

Received June 14, 2023

Revised June 18, 2023

Accepted August 10, 2023

Available online August 25, 2023

#### Kata Kunci :

Media Pembelajaran, Powerpoint, Interaktif, Sekolah Dasar

#### Keywords:

Learning Media, Powerpoint, Interactive, Elementary School



This is an open access article under the [CC BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.

Copyright ©2023 by Author. Published by Universitas Pendidikan Ganesha

### ABSTRAK

Guru sebagai fasilitator harus mampu menyajikan materi dan pembelajaran yang menarik bagi siswa. Masih banyak guru yang belum menggunakan perangkat pembelajaran yang dapat membantu guru dalam menyampaikan pembelajaran kepada siswa yang dapat menyebabkan proses pembelajaran menjadi kurang maksimal. Media yang akan digunakan akan membuat siswa lebih aktif dalam proses pembelajaran. Salah satu contoh media pembelajaran yang dapat digunakan oleh guru adalah multimedia dengan menggunakan Powerpoint. Penelitian ini bertujuan untuk mengembangkan media PowerPoint interaktif untuk pembelajaran tematik di kelas IV sekolah dasar. Penelitian ini menggunakan metode penelitian dan pengembangan (R&D) dengan menggunakan model 4D. Pengumpulan data dalam penelitian ini menggunakan kuesioner untuk mengetahui uji validitas dan uji kepraktisan media. Uji efektivitas dilakukan dengan pengujian. Validasi ahli pada aspek materi, media, dan kebahasaan masuk dalam kategori Sangat Valid. Hasil uji kepraktisan oleh guru memperoleh nilai dalam kategori Sangat Praktis, dan hasil uji kepraktisan oleh siswa memperoleh nilai dalam kategori Sangat Praktis. Hasil uji keefektifan aspek pengetahuan dengan pretest di SDN memperoleh predikat sangat baik. Penilaian aspek keterampilan di SDN berpredikat Sangat Baik. Dari hasil penelitian dapat disimpulkan bahwa media PowerPoint interaktif di kelas IV SD praktis dan efektif untuk digunakan di kelas IV SD.

### ABSTRACT

The teacher as a facilitator must be able to present interesting material and learning for students. There are still many teachers who have not used learning tools that can assist teachers in conveying learning to students which can cause the learning process to be less than optimal. The media that will be used will make students more active in the learning process. One example of learning media that can be used by teachers is multimedia using Powerpoint. This research aims to develop interactive PowerPoint media for thematic learning in grade IV elementary school. This study uses research and development (R&D) methods using the 4D models. Data collection in this study used a questionnaire to determine the validity test and practicality test of the media. The effectiveness test is done by testing. The expert's validation on the material, media, and language aspect scored in Very Valid category. The results of the practicality test by the teacher obtained score in Very Practical category, and results of practicality test by students obtained score in Very Practical category. The results of effectiveness test on aspect knowledge with the pretest at elementary school obtain very good predicate. Assessment of skills aspects at elementary school found Very Good predicate. From the research can be concluded that interactive PowerPoint media in class IV of elementary school is practical and effective for use in class IV of elementary school.

### 1. INTRODUCTION

Currently technology is developing rapidly along with increasingly advanced science and habits in using technology. With advances in technology, the learning process will also develop, this developing technology can be used by teachers in delivering learning material to students, one of which is by using learning media, especially abstract material (Sherlyane Hendri et al., 2019; Sitanggang, 2022). With the help of the media, the learning process will be more interesting and can help teachers convey learning material. The emergence of ideas that can offer wider learning opportunities and develop more innovative learning (Nurcahyo, 2020; Suwartono & Aniuranti, 2019).

Learning at the elementary school level is based on aspects of attitudes, knowledge and skills related to 21st century learning where the basis for knowledge and skills is the preparation of students for meaningful learning by using technology and media for creativity and innovation, communication, research and problem solving (Huertas-Abril, 2021; Sulistyaningsih et al., 2019). In the implementation of learning a teacher must arrange learning depending on certain subjects to make it easier for students to complete learning exercises. In processing information and the abilities of students equipped in their fields, skilled

\*Corresponding author.

E-mail addresses: [benyalfajar02@gmail.com](mailto:benyalfajar02@gmail.com) (Beny Al Fajar)

instructors/ facilitators/ partners/ teachers are needed. For this reason, the awareness and enthusiasm of teachers is needed to improve the quality of learning (Erita et al., 2020; Hermanto, 2022).

In the implementation of learning in elementary schools there are still teachers who present learning in the classroom with the lecture method which of course will cause learning to only be in one direction and make students feel bored. Teachers are also still not accustomed to using media to help present learning to students. With the media students are more interested in learning. This is very important for the success of the learning and teaching process in the classroom (Afandi, 2017; Nonthamand & Songkhla, 2018). Learning media is a factor that can motivate students in the implementation of learning and is able to encourage students to achieve maximum learning outcomes. Learning media is a tool that is physically used by teachers and students in teaching and learning activities so that social interaction is formed which raises student curiosity to further improve learning achievement (Muhali, 2019; Wibawa, 2017).

The media that will be used will make students more active in the learning process because students will participate directly in the use of media both seeing, demonstrating, hearing. With the direct participation of students in learning media, it will foster students' interest and enthusiasm in learning (Ibad & Sarifah, 2021; Tafonao, 2018). One example of learning media that can be used by teachers is multimedia using Powerpoint. Learning using powerpoint presentation media is designed and equipped with a controller that can be operated by the user so that the user can choose what he wants for instructions for use, materials, and practice questions. With the help of PowerPoint, teachers can present essential materials, concepts, as well as pictures and illustrations of learning materials that will be delivered to students (Raspati & Zulfiati, 2020; Wang et al., 2019). Most students need real examples in learning material, with powerpoint the teacher can present these abstract things into concrete in the form of pictures, videos, and illustrations.

The use of powerpoint is also rarely used in the learning process even though with the help of powerpoint the teacher can present essential material in learning in a concise and concise manner. The teacher will also find it difficult to convey some learning material because the teacher presents learning verbally which may not be the same as student perceptions, because the information conveyed is not concrete. With the help of PowerPoint, teachers can also make abstract events or material real to students (Ahdar, 2018; Annisa, N. & Simbolon, 2018). Teachers also rarely use interactive media, teachers tend to use media using linear learning media. Teachers more often use the pictures in the book as a medium. So that the linear media used will only function to be seen by students without being able to participate in the use of learning media. Therefore, the use of interactive media will make students more active in the learning process and will also increase the enthusiasm of students in learning. The teacher as a facilitator must be able to present interesting material and learning for students (Al Fajar, 2019; Praheto et al., 2020). There are still many teachers who have not used learning tools that can assist teachers in conveying learning to students which can cause the learning process to be less than optimal.

From these problems, of course, will affect student learning outcomes, learning that is not optimal will also cause the learning outcomes obtained by students to be less than optimal. An educator must be able to encourage and inspire students to be able to understand, apply, and develop a rational and objective way of thinking in responding to learning substances or materials (Kumalasari, 2020; Mayar, 2020). From the description above, it shows that there is still a lack of learning media that can assist teachers in conveying learning to elementary school students, with the existence of learning media can assist teachers in conveying learning. Therefore this study aims to develop interactive PowerPoint media for thematic learning in grade IV elementary school.

## 2. METHODS

This study uses research and development (R&D) methods using the 4D development model (Define, Design, Develop, Disseminate) (Thiagarajan, 1974). Each phase of the 4D model represents a specific stage in the development process. Define, in this phase the goals, objectives, and requirements of the project are clearly defined. This includes identifying the problem to be solved, understanding the target audience, and outlining the scope of the project. Design, the researchers and developers create a detailed plan for how the solution will be developed. Develop: the phase is where the actual creation of the solution takes place. This can involve coding, building hardware components, conducting experiments, or any other tasks necessary to bring the project to life. Disseminate: In the final phase, the developed solution is shared with the intended audience.

Data collection in this study used a questionnaire to determine the validity test and practicality test of the media. Validity refers to the extent to which a questionnaire measures what it is intended to measure. There are several types of validity, and each focuses on a different aspect of the questionnaire's quality.

Content validity is content of the questionnaire adequately represents the topic or construct being measured. Construct Validity, this type of validity assesses whether the questionnaire measures the intended construct (e.g., media preferences, attitudes, behavior) accurately. Criterion Validity is type of validity involves comparing the scores obtained from the questionnaire with scores from an established, valid measure of the same construct. If the scores from the two measures correlate strongly, it indicates good criterion validity. The effectiveness test is done by testing. The trials were carried out at SDN Percobaan Kota Padang with 1 teacher and 23 students, and at SDN 05 Padang Pasir with 1 teacher and 21 students.

### **3. RESULT AND DISCUSSION**

#### **Results**

##### ***Define Stage***

The defining stage is carried out by analyzing several aspects which include: problem analysis and student analysis. The results of the analysis are described as follows problem analysis, and student analysis.

Elementary school learning tends to still use conventional physical media. This indicates that in learning in the classroom there is still a reduction in the use of learning media. The teacher explained that the use of learning media in class was still limited to the use of pictures and videos on YouTube. These problems indicate that there is still a lack of use of multimedia in learning. This shows that the learning media used is still in the form of linear learning media, which means only learning media can be used to be observed by students classically. These problems will cause a lack of student participation in learning, students tend to only see the learning media presented by the teacher so that over time students will feel bored, Another problem that arises in the use of linear learning media is that sometimes a material being taught requires several different types of media.

Student analysis looks at the quality of students which includes the level of knowledge of students in learning. This analysis is used as a basic reference in the development of interactive PowerPoint media. Analysis of student characteristics was carried out on class IV students at SDN 05 Padang Pasir. In the learning planning process it is necessary to understand the characteristics and abilities of students. Analysis of student abilities is an activity of identifying students in terms of needs and characteristics to determine specifications and qualifications for changes in behavior or objectives and materials. The characteristics of students are defined as characteristics of the individual qualities of students which generally include intelligence abilities, age and understanding of learning, experience, skills, psychomotor, cooperative abilities, and social abilities.

The characteristics of elementary school students are influenced by academic background, one of which is learning habits/learning style. Learning style refers to the way of learning that is preferred by students in the learning process, many students who take part in learning in certain subjects are taught using the same strategy, but have different levels of understanding. This difference is not only caused by the different levels of intelligence of students, but is determined by the way of learning that is owned by each student. A student who likes to read is less used to learning well if he has to listen to lectures or discussions. To solve the problem of the differences above, one of them is anticipated by using learning media in the form of interactive PowerPoint media which contains various ways of presenting learning, both in the form of text, video and audio. So that all the learning style needs of students can be met.

##### ***Design Stage***

To produce interactive powerpoint media in grade IV Elementary School, flowcharts and storyboards are first made as a design plan from which the interactive powerpoint is being developed. The flowchart contains all the main components that will be presented in interactive powerpoint media. The storyboard contains all the data that will appear on the screen and supporting data that will help in making interactive powerpoint media in grade IV Elementary School.

##### ***Develop Stage***

At this stage, the media is made according to the previous stages, and product validation of interactive powerpoint media is also carried out which aims to determine the feasibility and quality of the product. Product validation of interactive powerpoint media is carried out with validators who are experts and practitioners. The validator's assessment was carried out as a reference in improving the interactive PowerPoint media that was developed. The validators who conduct product assessments in this study are Material Expert Validators, Media Expert Validators, and Language Expert Validators.

The evaluation of interactive PowerPoint media products was carried out by five validators, namely four expert validators from university lecturers and one practitioner validator from elementary school

teachers. The validator will provide an assessment using an assessment instrument and provide advice on the product being developed. After that, the researcher made product improvements according to the suggestions given by the validator. The results of product assessments conducted by experts on interactive PowerPoint media that researchers have developed is show in [Table 1](#).

**Table 1. Interactive Powerpoint Media Validation Results**

Expert Validators	Score Percentage	Category
Material Expert	91.56	Very Valid
Media Expert	80	Valid
Language Expert	82.86	Very Valid

Base on [Table 1](#) validation with material experts obtained a score of 91.56% in the Very Valid category, which was indicated by the suitability of the material presented in interactive PowerPoint media in accordance with basic competencies and learning achievement indicators. Validation with media experts obtained a value of 80%. With the Valid category, this means that the developed interactive PowerPoint media contains an attractive and proportional design and is easy for students to use. Validation with linguists obtained an average value of 82.86% in the Very Valid category. This means that the interactive PowerPoint media developed has used good and correct language rules.

### **Disseminate Stage**

In the Dissemination stage, product distribution was carried out at SDN Percobaan Kota Padang and Padang Pasir 05 Elementary School to determine the practicality and effectiveness of powerpoint media. Practicality test results by teachers and students is show in [Table 2](#).

**Table 2. Practicality Test Results by Teachers and Students**

Subject	Score Percentage	Category
Teachers	97	Very Practical
Students	89	Very Practical

Based on [Table 2](#) show the results of practicality by the teacher, an average of 97% is obtained in the Very Practical category. Practicality results to students obtaining a practicality value of 89% in the Very Practical category. The effectiveness of the developed interactive PowerPoint media can be seen from the student learning outcomes. The learning outcomes are obtained from test results which are assessed from the aspects of knowledge, skills, and attitudes as show in [Table 3](#).

**Table 3. Knowledge Aspect Effectiveness Test Results**

Schools	Pretest Scores	Predicate	Posttest Scores	Predicate
SDN Percobaan Padang	60.72	B- (Good)	83.19	A-(Very Good)
SDN 05 Padang Pasir	65.40	B- (Good)	85.08	A- (Very Good)

Base on [Table 3](#) the pretest results at SDN Experiment Padang obtained an average score of 60.72 with a B- (Good) predicate, at SDN 05 Padang Pasir obtained an average score of 65.40 with a B- (Good) predicate. The posttest scores at SDN Experiment Padang obtained by students with a score of 83.19 with A- were in the Very Good predicate, and at SDN 05 Padang Pasir they obtained a score of 85.08 with a A- Very Good predicate. Assessment of skills aspects is carried out during the learning process by using an assessment rubric is show in [Table 4](#).

**Table 4. Skills Aspect Effectiveness Test Results**

Schools	Scores	Predicate
SDN Percobaan Padang	3.51	A-(Very Good)
SDN 05 Padang Pasir	3.63	A- (Very Good)

Based on [Table 4](#) show the learning outcomes that have been achieved, it can be seen that learning using interactive powerpoint media in class IV of Experimental Padang Elementary School on the skill aspect obtained a conversion value of 3.51 with a Very Good predicate, and at SDN 05 Padang Pasir obtained a conversion value of 3.63 with a Very Good predicate. Assessment of attitude aspects is carried out during

the learning process, using an assessment rubric. The attitude assessment rubric assesses the attitudes that emerge and stand out in ongoing learning is show in [Table 5](#).

**Table 5. Attitude Aspect Effectiveness Test Results**

Schools	Scores	Predicate
SDN Percobaan Padang	3.57	A-(Very Good)
SDN 05 Padang Pasir	3.52	A- (Very Good)

Based on [Table 5](#) the learning outcomes that have been achieved, it can be seen that the results of the assessment of the attitude aspect of students at Padang Experimental Elementary School obtained a conversion value of 3.57 with a Very Good predicate, and at SDN 05 Padang Pasir obtained a conversion value of 3.52 with a Very Good predicate.

## Discussion

In the Define stage, problem analysis and student analysis are carried out. The analysis of the problems found is that the use of multimedia is still lacking because sometimes a material being taught requires several different types of media and the use of linear learning media is only one-way based so that students will only see and observe the media used by the teacher. Elementary school learning tends to still use conventional physical media. This indicates that in learning in the classroom there is still a reduction in the use of learning media.

These problems will cause a lack of student participation in learning, students tend to only see the learning media presented by the teacher so that over time students will feel bored, Another problem that arises in the use of linear learning media is that sometimes a material being taught requires several different types of media. Student analysis shows the learning styles that are owned by each student so that with interactive PowerPoint media it can meet the needs of student learning styles. A student who likes to read is less used to learning well if he has to listen to lectures or discussions ([Jannah & Atmojo, 2022](#); [Taufik, 2019](#)).

Analysis of student abilities is an activity of identifying students in terms of needs and characteristics to determine specifications and qualifications for changes in behavior or goals and materials. The characteristics of students are defined as characteristics of the individual qualities of students which generally include intelligence abilities, age and understanding of learning, experience, skills, psychomotor, cooperative abilities, and social abilities ([Aprilliyah, 2014](#); [Damarjati & Miatur, 2020](#); [Guo et al., 2018](#)). The characteristics of elementary school students are influenced by academic background, one of which is learning habits/learning style. Learning style refers to the way of learning that is preferred by students in the learning process, many students who take part in learning in certain subjects are taught using the same strategy, but have different levels of understanding. This difference is not only caused by the different levels of intelligence of students, but is determined by the way of learning that is owned by each student. A student who likes to read is less used to learning well if he has to listen to lectures or discussions. To solve the problem of the differences above, one of them is anticipated by using learning media in the form of interactive PowerPoint media which contains various ways of presenting learning, both in the form of text, video and audio. So that all the learning style needs of students can be met ([Lathiifah & Kurniasi, 2020](#); [Mustafida, 2016](#)).

At the Design stage, the initial design of interactive PowerPoint learning media products was developed. At this stage, flowcharts and storyboards are made. The flowchart contains the components contained in the interactive PowerPoint media sections, while the storyboard contains all the data that will appear on the PowerPoint slide show. The use of media in learning aims to provide meaningful and enjoyable experiences for students, with media it can provide real experiences for students because it will include all the senses in students ([Aprilliyah, 2014](#); [Fitria, 2020](#)).

At the Develop stage, interactive powerpoint media product validation is also carried out with a validator. The validation results with experts show that the material presented in interactive PowerPoint media is in accordance with basic competencies and learning achievement indicators. The material contains the core sub-sub-material which will be explained in student worksheets which contain conclusions obtained from real-life problems regarding the understanding of the material conveyed in each sub-material. Problems related to learning materials should relate to the context of everyday life ([Imam et al., 2018](#); [Muthaharoh et al., 2019](#)). The developed interactive PowerPoint media contains an attractive and proportional design and is easy for students to use. PowerPoint can be used to create interactive media from learning materials by incorporating visual and audio components into presentation slides and can be shared via platforms for use by students with the help of computers, laptops and gadgets ([Mensah & Nabie,](#)

2021; Praheto et al., 2020). The results of validation with experts also show that the developed interactive PowerPoint media has used good and correct language rules. At the Disseminate stage, a practicality test and an effectiveness test were carried out. The results of the practicality test by the teacher and students. The practicality of interactive PowerPoint media is seen from the side of ease of use for learning. Learning media is said to be practical if the media can be used practically by educators and students without having to have specific skills in learning so that each individual can use the media (Alkadri & Fauzi, 2021; Anggraini et al., 2020; Nasution & Harahap, 2019).

In line with previous study that state the use of interactive PowerPoint media can also make learning time more efficient, with the help of PowerPoint the teacher does not need to write learning material on the blackboard (Zain & Pratiwi, 2021). The media used in the learning process has wide distribution power such as Powerpoint in the form of files, this type of media has wide distribution power because it can be integrated with the internet which can be accessed by anyone and only requires a device to operate it (Pakpahan & Mawati, 2020; Shigli et al., 2016). Other study state by using learning media can help teachers provide the same stimulation, equate experiences and generate the same perceptions, because if the teacher only conveys material verbally (lectures), students will receive it differently depending on the perceptions of the students themselves and their respective experiences, where each student has different perceptions and experiences (Wahidin, 2018).

The effectiveness of the developed interactive PowerPoint media can be seen from the student learning outcomes. The learning outcomes are obtained from test results which are assessed from the aspects of knowledge, skills, and attitudes. Based on the learning outcomes that have been achieved, it appears that learning using interactive PowerPoint media can help students understand the material so as to obtain very good results. The developed interactive PowerPoint media presents problems related to the subject matter that will be mastered in a concrete and comprehensive manner. The use of learning media in the orientation of the learning achievement stage really helps the effectiveness of the learning process and the delivery of the content of learning messages (Noviana et al., 2020; Suwartono & Aniuranti, 2019). Interactive powerpoint media can make students more active, focus on the learning process, and also foster a sense of fun in the learning process. Students can use interactive PowerPoint media according to their needs in the learning process so that they can improve student learning outcomes (Anwar et al., 2020; Putri & Nurafni, 2021). However, this research also has some limitations. One of the results from the development of PowerPoint interactive media may only apply to grade IV in elementary schools which is the focus of the research. Generalizability of results to a wider range or different levels of education may be limited. In addition, this study may not have sufficient time to observe the long-term impact of using PowerPoint interactive media on fourth grade learning. Long-term effects may require a longer period of research.

#### 4. CONCLUSION

Validation on the material and media aspect obtained a value of good category. The results of the practicality test by the teacher obtained very practical category. The practicality test results for students obtained a very practical category. The effectiveness test on student learning outcomes in the knowledge aspect at Padang experimental elementary school obtained good and very good category. The skill aspect at Padang Experimental Elementary School earned a score with very good predicate, while at Padang Pasir 05 SDN earned a score with very good predicate. The attitude aspect at Padang Experimental Elementary School obtained a very good predicate, while at Padang Pasir 05 SDN obtained a score with an very good predicate.

#### 5. REFERENCES

- Afandi, A. (2017). Media ICT Dalam Pembelajaran Matematika Menggunakan Powerpoint Interaktif Dan Ispring Presenter. *Jurnal Terapan Abdimas*, 2, 19–26. <https://doi.org/10.25273/jta.v2i0.972>.
- Ahdar. (2018). Pengembangan Media Pembelajaran Powerpoint Padu Musik Terhadap Antusiasme Siswa Dalam Pembelajaran Ilmu Sosial. *Media Komunikasi Sosial Keagamaan*, 18, 287–302. <https://doi.org/10.21274/dinamika.2018.18.2.287-302>.
- Al Fajar, B. (2019). Analisis Penanaman Kemampuan Literasi Siswa Sekolah Dasar. *Prosiding Seminar Nasional Pendidikan Guru Sekolah Dasar*, 1(1), 74–79. <https://psn.prosiding.unri.ac.id/index.php/PSN/article/view/7782>.
- Alkadri, R., & Fauzi, A. (2021). Practicality of high school physics e-book integrated materials of meteor fall disaster mitigation based on guided inquiry model assisted google classroom. *Journal of Physics: Conference Series*, 1876(1). <https://doi.org/10.1088/1742-6596/1876/1/012061>.
- Anggraini, D., Khumaedi, M., & Widowati, T. (2020). Validity and reliability contents of independence

- assessment instruments of basic beauty students for class X SMK. *Journal of Research and Educational Research Evaluation*, 9(1), 40–46. <https://doi.org/10.15294/jere.v9i1.42558>.
- Annisa, N. & Simbolon, N. (2018). Pengembangan Media Pembelajaran Interaktif Ipa Berbasis Model Pembelajaran Guided Inquiry Pada Materi Gaya Di Kelas Iv Sd Negeri 101776 Sampali. *School Education Journal Pgsd Fip Unimed*, 8(2), 217–229. <https://doi.org/10.24114/sejpgsd.v8i2.10199>.
- Anwar, Z., Kahar, M. S., Rawi, R. D. P., Nurjannah, N., Suaib, H., & Rosalina, F. (2020). Development of Interactive Video Based Powerpoint Media In Mathematics Learning. *Journal of Educational Science and Technology (EST)*, 6(2), 167–177. <https://garuda.kemdikbud.go.id/documents/detail/1712717>.
- Aprilliyah. (2014). Pengembangan Media Pembelajaran Modul Interaktif Pada Materi Jurnal Khusus Kelas X Akuntansi di SMK Negeri Mojoagung. *Jurnal Khusus*, 2(2), 1–7. <https://jurnalmahasiswa.unesa.ac.id/index.php/35/article/view/9412>.
- Damarjati, S., & Miatun, A. (2020). Pengembangan Game Edukasi Berbasis Android sebagai Media Pembelajaran Berorientasi pada Kemampuan Berpikir Kritis. *ANARGYA: Jurnal Ilmiah Pendidikan Matematika*, 4(2), 164–175. <https://doi.org/10.24176/anargya.v4i2.6442>.
- Erita, Y., Jannah, R., Fitria, Y., & Eliyasni, R. (2020). Students' progress in integrated thematic learning with scientific approaches. *International Journal of Innovation, Creativity and Change*, 13(6), 36–48. [https://ijicc.net/images/vol\\_13/Iss\\_6/13604\\_Erita\\_2020\\_E\\_R.pdf](https://ijicc.net/images/vol_13/Iss_6/13604_Erita_2020_E_R.pdf).
- Fitria, Y. (2020). Optimalisasi Karakter Peserta Didik di Era Digital Melalui Pembelajaran Sains Berorientasi Pendekatan STEM. *Prosiding Seminar Nasional Pendidikan Guru Sekolah Dasar*, 1–11. <https://psn.prosiding.unri.ac.id/index.php/PSN/article/view/7878>.
- Guo, D., Wright, K. L., & McTigue, E. M. (2018). A content analysis of visuals in elementary school textbooks. *Elementary School Journal*, 119(2), 244–269. <https://doi.org/10.1086/700266>.
- Hermanto, H. (2022). The teacher performance evaluation in learning management in inclusive settings. *Jurnal Prima Edukasia*, 10(1), 28–36. <https://doi.org/10.21831/jpe.v10i1.37511>.
- Huertas-Abril, C. A. (2021). Developing speaking with 21st Century digital tools in the English as a foreign language classroom: New literacies and oral skills in primary education. *Aula Abierta*, 50(2), 625–634. <https://doi.org/10.17811/RIFIE.50.2.2021.625-634>.
- Ibad, T. N., & Sarifah, M. (2021). Penggunaan Media Realia dalam Meningkatkan Pengalaman Belajar Siswa. *Bidayatuna Jurnal Pendidikan Guru Mandrasah Ibtidaiyah*, 4(2), 232. <https://doi.org/10.54471/bidayatuna.v4i2.1303>.
- Imam, I., Ayubi, A., & Bernard, M. (2018). Pengaruh Pembelajaran Berbasis Masalah Terhadap Kemampuan Pemecahan Masalah Matematis Siswa SMA. *JPMI: Jurnal Pembelajaran Matematika Inovatif*, 1(3), 355–360. <https://doi.org/10.22460/jpmi.v1i3.355-360>.
- Jannah, D. R. N., & Atmojo, I. R. W. (2022). Media Digital dalam Memberdayakan Kemampuan Berpikir Kritis Abad 21 pada Pembelajaran IPA di Sekolah Dasar. *Jurnal Basicedu*, 6(1), 1064–1074. <https://doi.org/10.31004/basicedu.v6i1.2124>.
- Kumalasari, N. (2020). Upaya Meningkatkan Motivasi Dan Hasil Belajar Pada Peserta Didik Kelas II Dalam Pembelajaran Daring Tematik Melalui Media Belajar Power Point Interaktif. *JP3 (Jurnal Pendidikan Dan Profesi Pendidik)*, 6(2). <https://doi.org/10.26877/jp3.v6i2.7313>.
- Lathiifah, I. J., & Kurniasi, E. R. (2020). Analisis Kemampuan Pemecahan Masalah Siswa Pada Pembelajaran SPLDV Berbasis STEM. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, 4(2), 1273–1281. <https://doi.org/10.31004/cendekia.v4i2.354>.
- Mayar, F. (2020). The Arts Learning through Straw Media in Early Childhood. *International Conference of Early Childhood Education (ICECE 2019)*, 178–182. <https://doi.org/10.2991/assehr.k.200715.037>.
- Mensah, J. Y., & Nabie, M. J. (2021). The Effect of PowerPoint Instruction on High School Students' Achievement and Motivation to Learn Geometry. *International Journal of Technology in Education*, 4(3), 331–350. <https://eric.ed.gov/?id=EJ1311518>.
- Muhali, M. (2019). Pembelajaran Inovatif Abad Ke-21. *Jurnal Penelitian Dan Pengkajian Ilmu Pendidikan: E-Saintika*, 3(2), 25–50. <https://doi.org/10.36312/e-saintika.v3i2.126>.
- Mustafida, F. (2016). Kajian Media Pembelajaran Berdasarkan Kecenderungan Gaya Belajar Peserta Didik Sd/Mi. *Madrasah: Jurnal Pendidikan Dan Pembelajaran Dasar*, 6(1), 77–95. <https://doi.org/10.18860/jt.v6i1.3291>.
- Muthaharoh, F., Pamungkas, A. S., & Alamsyah, T. P. (2019). Pengembangan bahan ajar tematik media pembelajaran berbasis Lectora inspire pada kelas IV SDN Cilegon 1. *Jurnal Dimensi Pendidikan Dan Pembelajaran*, 7(2), 74–85. <https://doi.org/10.24269/dpp.v7i2.1716>.
- Nasution, S. R. A., & Harahap, M. S. (2019). Pengembangan Bahan Ajar Tematik Terpadu Berbasis Project Based Learning Yang Praktis di Kelas IV SD. *Seminar Nasional Multi Disiplin Ilmu Universitas Asahan*. <https://core.ac.uk/download/pdf/268619206.pdf>.

- Nonthamand, N., & Songkhla, J. N. (2018). The Correlation of Open Learning, Collaboration, Learning Tools, and Creative Problem Solving by Graduate Students in Thailand. *International Journal of Emerging Technologies in Learning*, 13(9), 280–289. <https://doi.org/10.3991/ijet.v13i09.7835>.
- Noviana, E., Kurniaman, O., & Affendi, N. (2020). KOASE: Disaster Mitigation Learning Media in Elementary School. *Tadris: Jurnal Keguruan Dan Ilmu Tarbiyah*, 5(1), 11–25. <https://doi.org/10.24042/tadris.v5i1.5183>.
- Nurchahyo, M. A. (2020). Penggunaan multimedia interaktif untuk meningkatkan literasi digital siswa SMP pada mata pelajaran IPA. *Jurnal Pendidikan Informatika Dan Sains*, 9(2), 132–138. <https://doi.org/10.31571/saintek.v9i2.2077>.
- Pakpahan, A. F., & Mawati, D. P. (2020). *Pengembangan Media Pembelajaran* (A. Karim & S. Purba (eds.)). Yayasan Kita Menulis.
- Praheto, B. E., Andayani, Rohmadi, M., & Wardani, N. E. (2020). The effectiveness of interactive multimedia in learning Indonesian language skills in higher education. *Rupkatha Journal on Interdisciplinary Studies in Humanities*. <https://doi.org/10.21659/rupkatha.v12n1.34>.
- Putri, H. P., & Nurafni, N. (2021). Pengaruh Media Pembelajaran PowerPoint Interaktif terhadap Hasil Belajar IPS Siswa Sekolah Dasar. *Edukatif: Jurnal Ilmu Pendidikan*, 3(6), 3538–3543. <https://edukatif.org/index.php/edukatif/article/view/986>.
- Raspati, M. I., & Zulfiati, H. M. (2020). Pengembangan Multimedia Interaktif Menggunakan Powerpoint Dalam Pembelajaran Tematik. *Tunas: Jurnal Pendidikan Guru Sekolah Dasar*, 5(2), 46–59. <https://doi.org/10.33084/tunas.v5i2.1437>.
- Sherlyane Hendri, S., Hendri, S., Kiswanto Kenedi, A., Helsa, Y., & Anita, Y. (2019). Elementary School Teacher Ability in Using Application Technology for Mathematics Learning Assessment in the 2013 Curriculum. *Advances in Social Science, Education and Humanities Research*, 382(Icet), 446–449. <https://doi.org/10.2991/icet-19.2019.112>.
- Shigli, K., Agrawal, N., Nair, C., Sajjan, S., Kakodkar, P., & Hebbal, M. (2016). Use of PowerPoint presentation as a teaching tool for undergraduate students in the subject of gerodontology. *Journal of Indian Prosthodontist Society*, 16(2), 187–192. <https://doi.org/10.4103/0972-4052.167940>.
- Sitanggang, A. T. (2022). Tingkat Pemahaman Mahasiswa antar Pembelajaran Online dan Offline dalam masa pandemi Covid-19 menggunakan metode Forward Chaining. *Jurnal Informasi Dan Teknologi*, 4, 64–69. <https://doi.org/10.37034/jidt.v4i1.187>.
- Sulistyaningsih, Sulam, K., Syakur, A., & Musyarofah, L. (2019). The Implementation of 21st Century Skills as the New Learning Paradigm to the Result of Student's Career and Life Skills. *Magister Scientiae*, 1(1), 1–10. <https://doi.org/10.51836/journeel.v1i1.37>.
- Suwartono, T., & Aniranti, A. (2019). Digital Teaching Tools in 21st Century EFL Classroom: Are Our Teachers Ready? *ELLITE: Journal of English Language, Literature, and Teaching*, 3(2), 57. <https://doi.org/10.32528/ellite.v3i2.1916>.
- Tafonao, T. (2018). Peranan Media Pembelajaran Dalam Meningkatkan Minat Belajar Mahasiswa. *Jurnal Komunikasi Pendidikan*, 2(2), 103. <https://doi.org/10.32585/jkp.v2i2.113>.
- Taufik, A. (2019). Analisis Karakteristik Peserta Didik. *El-Ghiroh: Jurnal Studi Keislaman*, 16(01), 1–13. <https://jurnal.staibsllg.ac.id/index.php/el-ghiroh/article/view/71>.
- Thiagarajan. (1974). Instructional Development for Training Teachers of Exceptional Children. In *Indiana* (Issue Mc).
- Wahidin, U. (2018). Implementasi Literasi Media dalam Proses Pembelajaran Pendidikan Agama Islam dan Budi Pekerti. *Edukasi Islami: Jurnal Pendidikan Islam*, 7(02), 229–244. <https://doi.org/http://dx.doi.org/10.30868/ei.v7i2.284>.
- Wang, A. I., Sætre, R., Rydland, T., & Dahl, Y. (2019). Evaluation of Interactive and Gamified Approaches for Teaching ICT Theory: A Study of PowerPoint, Sembly, and Kahoot. *European Conference on Games Based Learning*, 784–XXIV. [https://folk.idi.ntnu.no/alfw/publications/Evaluation\\_PP\\_Sembly\\_Kahoot.pdf](https://folk.idi.ntnu.no/alfw/publications/Evaluation_PP_Sembly_Kahoot.pdf).
- Wibawa, S. C. (2017). The Design And Implementation Of An Educational Multimedia Interactive Operation System Using Lectora Inspire. *Elinvo (Electronics, Informatics, and Vocational Education)*, 2(1). <https://doi.org/10.21831/elinvo.v2i1.16633>.
- Zain, A. A., & Pratiwi, W. (2021). Analisis Kebutuhan Pengembangan Media PowerPoint Interaktif Sebagai Media Pembelajaran Tematik Kelas V SD. *Elementary School: Jurnal Pendidikan Dan Pembelajaran Ke-SD-An*, 8(1), 75–81. <http://download.garuda.kemdikbud.go.id/article.php?article=2997005&val=27000>.