

## APPLICATION OF POWTOON AUDIOVISUAL MEDIA IN MATHEMATICS LEARNING FOR ELEMENTARY SCHOOL STUDENTS: A REVIEW LITERATURE

**Adi Candra Kusuma\*<sup>1</sup>**

Politeknik Negeri Malang, Indonesia  
Email: candraraden45@polinema.ac.id

**Nur Ratnasari**

Universitas Lamappapoleonro, Indonesia  
Email: nratna.sari94@gmail.com

**Noerismayanti**

Institut Agama Islam Darud Da'wah Wal Irsyad Sidenreng Rappang, Indonesia  
Email: noerismayantiusman@gmail.com

### Abstract

The application Using Powtoon audiovisual materials in teaching elementary school pupils maths can be an interesting and effective method. Powtoon is an animated video creation platform that allows teachers to create engaging and interactive educational content. By using Powtoon, teachers can create learning videos that combine images, text, and sound to explain mathematical concepts visually and interestingly for students. One of the main advantages of implementing Powtoon is its ability to make learning material more interesting and easy for students to understand. With attractive animations and visuals, students can more easily understand complex mathematical concepts. Apart from that, the use of audiovisual media can also help students who have a visual or auditory learning style to more easily absorb information. This can increase student involvement in mathematics learning, because they can actively participate during the process of learning. Therefore, the use of Powtoon audiovisual materials in primary school mathematics instruction can provide a more interesting, interactive and effective learning experience for students, and help improve their understanding of mathematical concepts.

**Keywords:** application, multimedia materials, cartoons, learning maths, elementary school students

---

<sup>1</sup> Correspondence author

## INTRODUCTION

Education is a very influential element and a determining factor in the quality of human resources in a country. Education is a form of effort to educate the nation's life as stated in the 1945 Constitution (Maryanti et al., 2021). Nugroho et al., (2019) basically education is a lifetime endeavor to cultivate a person's personality and skills both inside and outside of the classroom. As according to Wijaya, H. (2019) who states that education is a human need throughout life. Education is one of the activities aimed at directing people to have good character and be useful in society. Beyond the national education system, every school has standards for learning achievement in developing human personality, namely with the help of media or teaching aids. This makes education very important, because without education it will be difficult for humans to develop. The development of science and technology in the era of globalization is very rapid, all forms of innovation are carried out to realize the welfare of society. In the field of education, technology is used to achieve educational goals in accordance with the demands of the times. Meanwhile, according to Shaturaev, J. (2021) technological developments have a big influence on the learning process, especially in delivery systems through the use of new generation media. The use of technology in creating learning media can be used as a useful tool for development and supporting the quality of education.

According to Pambudi, N. A., & Harjanto, B. (2020) technology-based learning media are a viable substitute for self-directed learning that can be employed throughout classroom and home learning sessions. One of them is computer-based learning media or what is called learning multimedia. Multimedia-based learning systems (technology that includes sound, images and video) can present learning material that is more interesting, less monotonous, and makes it easier to deliver the material. The more you use your five senses when learning, the easier it will be for students to understand the material. Media can be defined as a tool for conveying messages that can stimulate students' thoughts and feelings, thereby generating motivation to learn. A key factor in helping students succeed academically is learning media. Learning media will simplify and clarify the content (Akrim, 2022).

The media used in learning varies from print media to audiovisual media. A type of media known as audiovisual media combines sound and visual elements. One form of audiovisual media is powtoon animation video media (Ananda, S. R., & Zulfadewina, 2023). Anjarsari et al., (2023) stated that Powtoon audiovisual based learning materials come in the form of engaging

movies and work in tandem with learning materials that feature visuals and more conversational, approachable language. It is envisaged that using this media, pupils will find it simpler to grasp the material. Students can study material from the video without being limited by space and time and can download audiovisual powtoon via the features available on YouTube which can be accessed on the internet either via laptop, tablet or smartphone. This will facilitate the process by which teachers lead students' knowledge from actual to semi-real, semi-conceptual, and ultimately conceptual.

The benefits of mathematics learning media include increasing interest and making it easier to achieve learning outcomes (Wardhani et al., 2023). Educators are also required to have creativity and create an interesting learning atmosphere with situations that are not monotonous so that learning becomes fun. This is meant by using animation as a medium. In relation to animation media, Bungawati, B., & Rahmadani, E. (2023) believes that animation is a form of processing a unique image or imitation of an object that moves from one place to another. The use of animation media has benefits, including achieving learning success that will be superior and easier than without practicing without using animation media. Excelling at this topic means that it can increase learning achievement rather than learning without using animated media.

A technology used in designing mathematics learning media is Powtoon. Powtoon is an online service for creating interesting animated videos and can add user voices to the service. The benefit of Powtoon in learning mathematics is that it has an animation effect which can be used to clarify the delivery of information, make the media more interesting, lively and entertaining and plus there are audio elements (Sari, 2022) so that using learning media with Powtoon is expected to make it easier to achieve success and teaching materials are delivered more fully and comprehensively.

The application using Powtoon audiovisual materials in teaching elementary school pupils maths can be an interesting and effective method. Powtoon is an animated video creation platform that allows teachers to create engaging and interactive educational content. By using Powtoon, teachers can create learning videos that combine images, text, and sound to explain mathematical concepts visually and interestingly for students. One of the main advantages of implementing Powtoon is its ability to make learning material more interesting and easy for students to understand (Dewi, A. M., & Kamaludin, 2022). With attractive animations and visuals, students can more easily understand complex mathematical concepts. Apart from that, the use of audiovisual media can also help students who have a visual or auditory learning

style to more easily absorb information. Apart from that, Powtoon also allows teachers to create interactive quizzes or questions in videos, which can help test students' understanding directly. This can increase student involvement in mathematics learning, because they can actively participate in the learning process. Consequently, the use of Powtoon audiovisual materials in elementary school mathematics instruction can provide a more interesting, interactive and effective learning experience for students, and help improve their understanding of mathematical concepts (Akmalia et al., 2021).

## **RESEARCH METHOD**

A review of the literature was the research method employed in this paper. A literature review is an organized method for assessing, combining, and summarizing research findings from multiple sources of literature that are pertinent to the subject of the study. A literature review will enable us to locate methods, ideas, conclusions, and suggestions that have already been covered in related literature when using Powtoon audiovisual medium in mathematics instruction for elementary school pupils (Denney & Tewksbury, 2013). A variety of resources, such as periodicals, books, documents, the internet, and libraries, are available for literature study. The writing style employed is a literature review study, with an emphasis on writing outcomes pertaining to the purpose, meaning, and advantages of learning media, as well as the benefits and drawbacks of audiovisual learning media, the definition of Powtoon audiovisual media, and the application of Powtoon audiovisual media in mathematics learning in elementary schools.

## **RESULT AND DISCUSSION**

### **Definition, Functions and Benefits of Learning Media**

Novaliendry et al., (2020). According to this, learning media is anything that can be used to transmit messages from one person to another in order to pique students' interests, feelings, and thoughts in a way that promotes learning. Learning media is part of learning resources which can be people, messages, tools, materials, techniques and the environment. Learning media is also a combination of learning tools (hardware) and learning materials (software).

Learning media has several functions in the learning process, including (Hardiansyah, 2022):

1. Informative function: learning media functions as a source of information and knowledge for students.

2. Instructive function: learning media functions as a tool to convey learning material systematically and effectively.
3. Motivational function: learning media functions as a driver and booster of student interest, attention and enthusiasm for learning.
4. Interactive function: learning media functions as a means and communication both between students and teachers as well as between students themselves.
5. Creative function: learning media functions as a tool to develop students' creativity and imagination.

Learning media provides benefits for teachers and students in the learning process, including (Harefa, 2023):

1. Benefits for teachers: learning media can help teachers in planning, implementing and evaluating learning. Learning media can also help teachers overcome the limitations of time, space and existing resources.
2. Benefits for students: learning media can help students acquire, understand, remember and apply learning material. Learning media can also help students develop the ability to think, behave and act in accordance with learning objectives.

Learning media can be classified based on various criteria, such as dimensions, technological developments, physical characteristics, nature of use, etc. The following are several types of learning media based on technological dimensions and developments (Ansari et al., 2020):

1. Two-dimensional learning media: learning media that only has length and width without thickness. Examples: books, magazines, newspapers, posters, pictures, graphs, maps, word cards, student worksheets, transparencies, slide films.
2. Three-dimensional learning media: learning media that has length, width and thickness. Examples: real objects (realia), models (replicas), manipulatives (props), dioramas (miniature scenes), dolls (puppet), costumes (clothing).
3. Media resulting from print technology: learning media created using a printing machine. Examples: textbooks, teacher's manuals, source (reference) books, independent study modules.
4. Media resulting from audio technology: learning media that presents information through sound. Examples: educational radio (broadcasting), audio cassettes (recording), podcasts (internet).
5. Media resulting from visual technology: learning media that presents information through still or moving images. Examples: short films (motion

- pictures), educational television (broadcasting), educational videos (recording), presentation slides (computer).
6. Media resulting from audio-visual technology: learning media that presents information through sound and images simultaneously. Examples: filmstrip (still picture film with sound), interactive multimedia (computer), video conference (internet).
  7. Computer-based technology media: learning media that is created and run using a computer. Examples: computer assisted learning programs (computer assisted instruction), simulation programs (computer simulation), game programs (computer games), tutorial programs (computer tutorial).
  8. Media resulting from a combination of print technology and computer technology: learning media that combines print and computer elements. Examples: digital books (e-books), digital magazines (e-magazines), digital newspapers (e-newspapers).

### **Advantages and Limitations of Audio Visual Learning Media**

Audio-visual media has a number of advantages as mentioned in several points regarding the use of learning media that have been stated previously. More specifically, there are several advantages of audio-visual learning media that other learning media do not necessarily have. The advantages of using audio-visual learning media according to Kustyarini et al., (2020) are as follows: The advantages of using audio-visual learning media according to Dewi, A. M., & Kamaludin, A. (2022) are as follows:

1. Can complete students' basic experiences when they read, discuss, practice, etc. Have the ability to depict perceptions that serve as a stand-in for the natural world and even objects that are ordinarily invisible.
2. Is able to precisely explain a procedure that is repeatable.
3. In addition to inspiring and boosting motivation, audio-visual learning materials have the power to influence students' attitudes and behaviors. For instance, programs about the connection between diarrhea and a dirty environment can cause students to develop negative attitudes toward it and to start throwing trash in the proper place.
4. Has principles that can stimulate discussion and reflection in student groups.
5. Suitable for usage with individuals or diverse groups of all sizes.
6. May condense the picture of typical occurrences.

### **Powtoon Audiovisual Media Definition**

Audiovisual media refers to a type of learning media that utilizes digital technology to present audio and visual elements simultaneously. This includes various forms such as video recordings, animations, and other visual and auditory materials. One special application for audiovisual media is Powtoon, which is a tool for creating animated videos and visual presentations. Powtoon allows the visualization of objects in the form of non-verbal animation, making it an effective and interesting tool for educational purposes (Pratiwi<sup>1</sup>, A. N., & Handayati, 2020).

Powtoon is renowned for its ability to provide a wide selection of animations and engaging visual and auditory stimuli, making the delivery of educational content more engaging and stimulating to learners. It has been used in various educational settings, including primary schools and higher education, to enhance learning experiences and improve learning outcomes (Ardaningsih et al., 2022). In short, Powtoon is an audiovisual media tool that allows the creation of interactive and visually engaging content, making it an effective resource for educational purposes, especially in enhancing the learning experience and improving learning outcomes.

According to Putri, A. E., & Susanti, R. (2022) Powtoon Audiovisual Media is a type of learning media that utilizes digital technology to present audio and visual elements simultaneously. Powtoon is an application that allows the creation of animated videos and visual presentations. This application is famous for its ability to provide a wide selection of interesting animations and visual stimuli, thereby increasing attraction and stimulation in the delivery of educational content. Various studies also show that the use of Powtoon audiovisual learning media can improve learning outcomes and student motivation at various levels of education, from elementary school to college.

Powtoon audiovisual media has several advantages and disadvantages that need to be considered (Choirudin et al., 2020):

1. Research shows that Powtoon can be used by teachers to teach more creatively and innovatively, and can foster students' critical thinking and creativity
2. This application provides unique animations that are not available on other platforms, as well as quite complete features such as handwriting animation, cartoon animation and lively transition effects
3. Powtoon can also overcome limitations of space, time and sensory power in presenting messages, and is not boring because of its varied nature

4. Apart from that, this application can provide changes in aspects of human life, inherit cultural elements, and continue cultural and artistic elements that exist in society. The use of Powtoon audiovisual media has also been proven effective in increasing student learning motivation.

Dewi, R., Ashura, I., & Pamungkas, A. S. (2020) stated that some of the advantages and disadvantages of powtoon are as follows:

**Ease of Use:** Powtoon is designed to make it easy for anyone to create animated presentations without requiring in-depth design or development skills. Users can use ready-made templates and intuitive editing tools.

**Engaging Visual Content:** Powtoon allows users to create dynamic and engaging visual content, with customizable animations, characters, text, and icons.

**Ready-to-Use Templates:** The platform provides a variety of templates that can be customized as needed, thereby speeding up the creation process and ensuring design consistency.

**Flexibility in Presentations:** Powtoon can be used to create various types of presentations, from training to marketing to educational, with extensive content customization possibilities.

**Available Online:** As a web-based application, Powtoon allows access and collaboration from various locations, without the need for additional software installation.

It is important to remember that audiovisual media is not always suitable for all types of learning materials or situations. Therefore, it is necessary to consider the advantages and disadvantages of audiovisual media before using it in learning. Additionally, users and students need to improve their technology skills to get the most out of Powtoon. By considering these advantages and disadvantages, the use of Powtoon audiovisual media can be an effective tool for learning if used correctly and according to the learning context.

**Customization Limitations:** While Powtoon offers a variety of templates and customization options, there are limitations when it comes to deeper designs or very specific customizations.

**Dependency on Internet Connection:** Because Powtoon is a web-based application, the quality of the user experience may be affected by a slow or unstable internet connection.

**Cost:** While Powtoon has a free option, advanced features like additional cloud storage or access to premium templates may require a subscription fee.

**Render Speed and Performance:** For complex or long projects, Powtoon's render time or performance can be an issue depending on device specifications and internet connectivity.

**Degree of Suitability to Specific Needs:** Some users may feel that Powtoon does not fully meet their needs for highly customized or technical content.

### **Application of Powtoon Audiovisual Media in Mathematics Learning in Elementary Schools**

The application it has been demonstrated that using Powtoon audiovisual materials to teach mathematics in elementary schools improves student learning outcomes. In light of the study's findings, Powtoon-based interactive multimedia is proven to be valid, practical, and has a potential effect on elementary school mathematics learning. The use of Powtoon media in mathematics subjects in elementary schools has also been proven effective. Research also the average learning motivation of students in experimental classrooms using Powtoon media increased, demonstrating the effectiveness of this method in raising students' motivation to study. In addition, it has been demonstrated that using Powtoon media can improve student interest and learning outcomes when it comes to mathematics content (Akmalia et al., 2021). The use of powtoon in primary school mathematics instruction has been shown to enhance student interest in learning, learning motivation, and learning results.

The application of audiovisual media in mathematics learning in elementary schools can provide many benefits for students. The following are several ways and reasons why audiovisual media such as Powtoon can be useful in this context (Prayoga, I. K. A., & Agustiana, 2023):

**Benefits of Applying Powtoon in Mathematics Learning in Elementary Schools:**

1. **Make it easier to understand concepts:** Animations and visualizations in Powtoon can help illustrate abstract or complex mathematical concepts in a way that is easier for students to understand.
2. **Bring Math Concepts to Life:** The animated characters, graphs, and diagrams in Powtoon can help bring math material to life, making it more interesting and relevant for students.
3. **Increase Student Engagement:** Dynamic and interactive animated presentations can increase student engagement in mathematics learning. They are more likely to be actively involved with the material presented.

4. Facilitates Independent Learning: Powtoon allows teachers to create video tutorials or learning materials that students can access outside the classroom. This supports independent learning and repetition of material.
5. Reinforce Direct Teaching: Powtoon can be used as a tool to strengthen teachers' direct teaching, by providing visual illustrations that support oral explanations.
6. Use of Various Learning Styles: Audiovisual media such as Powtoon can accommodate various student learning styles, such as visual, auditory and kinesthetic, in a more flexible way.

The following are the steps for implementing Powtoon audiovisual media in mathematics learning in elementary schools (Kafah et al., 2020):

1. Needs Analysis

The first step is to carry out a needs analysis of the mathematics competencies that grade IV elementary school students should have. This can involve collecting data through questionnaires for teachers and students, as well as referring to the ADDIE development model. This research consists of several steps, namely: Analysis-Design-Development-Implementation-Evaluation.

2. Development of Interactive Multimedia Based on Powtoon

After needs analysis, the next step is the development of interactive multimedia based on Powtoon. Based on the research results, Powtoon-based interactive multimedia is proven to be valid, practical, and has a potential effect on thematic learning for class V elementary school

3. Implementation of Powtoon Media in Mathematics Learning

After development, Powtoon media can be implemented in mathematics learning. The use of Powtoon media in comic material in elementary schools has also proven effective

4. Increased Motivation and Learning Results

The average student learning motivation in experimental classrooms using Powtoon media increased, demonstrating the effectiveness of this method in raising student motivation for learning. In addition, it has been demonstrated that using Powtoon media can increase student interest and learning outcomes in mathematics material

From these steps, the application of Powtoon audiovisual media in mathematics learning in elementary schools can have a positive impact in improving students' learning outcomes, learning motivation and interest in learning.

Examples of the application of Powtoon in Mathematics Learning according to research by Sugilar et al., (2023), namely:

Geometry Concepts Explained: Uses animation to explain concepts such as shapes, lines, and angles.

Basic Math Calculations: Create video tutorials that show the processes of addition, subtraction, multiplication, and division in a visual and interactive way.

Problem Solving: Shows math problem solving strategies through animations that illustrate the steps.

Visualizing Data: Create animated graphs or diagrams to help students understand concepts such as bar graphs or pie charts.

Combining Theory with Real Cases: Using Powtoon to show the application of mathematics in everyday life, for example in calculating the area of a room or the volume of a container.

The application of audiovisual media such as Powtoon not only increases the effectiveness of mathematics learning but also opens up opportunities for more interactive and experience-based learning for elementary school students. By utilizing this technology wisely, teachers can create more engaging and meaningful learning experiences for their students.

## **CONCLUSION**

Based on literature studies, the application of Powtoon audiovisual media in mathematics learning for elementary school students has shown positive results. Some findings from the literature study include:

1. Validity and Effectiveness of Powtoon

Powtoon-based interactive multimedia is proven to be valid, practical, and has potential effects on elementary school mathematics learning. The creation of Powtoon audiovisual materials to help primary school pupils study mathematics has proven effective

2. Increased Motivation and Learning Results

The use of Powtoon media is effective in increasing student learning motivation, as well as increasing student interest and learning outcomes in mathematics material

3. Implementation in Learning

Powtoon media has been implemented in mathematics learning in elementary schools, and the results show a favorable effect on raising students' motivation for studying, interest in learning, and learning results. These results suggest that using Powtoon audiovisual materials to teach

mathematics in elementary schools has a beneficial effect in improving learning outcomes, learning motivation and student interest in learning.

## REFERENCES

- Akmalia, R., Fajriana, F., Rohantizani, R., Nufus, H., & Wulandari, W. (2021). Development of powtoon animation learning media in improving understanding of mathematical concept. *Malikussaleh Journal of Mathematics Learning (MJML)*, 4(2), 105-116.
- Akrim, A. (2022). A new direction of Islamic education in Indonesia: Opportunities and challenges in the Industrial Revolution Era 4.0. *Edukasi Islami: Jurnal Pendidikan Islam*, 11(01), 35-48.
- Ananda, S. R., & Zulfadewina, Z. (2023). Analysis of the effect of powtoon application interactive learning media on mathematics learning ability of elementary school students. *Jurnal Paedagogy*, 10(1), 268-276.
- Anjarsari, E., Juniati, D., & Khabibah, S. (2023). The Effectiveness of PowToon Audiovisual Media on Mathematics Learning Three-Dimensional Geometry Object Elementary School. *Vygotsky: Jurnal Pendidikan Matematika dan Matematika*, 5(1), 45-54.
- Ansari, J. A. N., & Khan, N. A. (2020). Exploring the role of social media in collaborative learning the new domain of learning. *Smart Learning Environments*, 7(1), 9.
- Ardaningsih, L. A. N., & Adnyayanti, N. L. P. E. (2022). The use of powtoon as the learning media in teaching english in elementary school. *Journal of Educational Study*, 2(1), 105-110.
- Bungawati, B., & Rahmadani, E. (2023). Development of powtoon based science learning media in Elementary Schools. *Jurnal Pendidikan Sains Indonesia (Indonesian Journal of Science Education)*, 11(2), 265-275.
- Choirudin, C., Ningsih, E. F., Amrulloh, H., Anwar, M. S., Azizah, I. N., & Prastika, M. S. (2020). Development of Learning Media for Ethnomathematics and Culture of Lampung with the Powtoon Application. *Jurnal Tadris Matematika*, 3(2), 141-152.
- Clark, R. C., & Mayer, R. E. (2023). *E-learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning*. John Wiley & sons.
- Denney, A. S., & Tewksbury, R. (2013). How to write a literature review. *Journal of criminal justice education*, 24(2), 218-234.
- Dewi, A. M., & Kamaludin, A. (2022). Development of audiovisual-based powtoon animation video on chemical bonds for tenth grade. *Jurnal Penelitian Pendidikan IPA*, 8(1), 222-229.
- Dewi, R., Asyura, I., & Pamungkas, A. S. (2020). The development design of digital teaching materials assisted by Powtoon application for science learning in primary school. *JPSD (Jurnal Pendidikan Sekolah Dasar)*, 6(2), 212-226.

- Hardiansyah, F. (2022). Improve Science Learning Outcomes for Elementary School Students Through The Development of Flipbook Media. *Jurnal Penelitian Pendidikan IPA*, 8(6), 3069-3077.
- Harefa, D. (2023). THE RELATIONSHIP BETWEEN STUDENTS'INTEREST IN LEARNING AND MATHEMATICS LEARNING OUTCOMES. *AFORE: Jurnal Pendidikan Matematika*, 2(2), 1-11.
- Kafah, A. K. N., Nulhakim, L., & Pamungkas, A. S. (2020). Development of video learning media based on powtoon application on the concept of the properties of light for elementary school students. *Gravity: Jurnal Ilmiah Penelitian dan Pembelajaran Fisika*, 6(1).
- Kustyarini, K., Utami, S., & Koesmijati, E. (2020). The importance of interactive learning media in a new civilization era. *European Journal of Open Education and E-Learning Studies*, 5(2).
- Maryanti, R., Nandiyanto, A. B. D., Hufad, A., & Sunardi, S. (2021). Science education for students with special needs in Indonesia: From definition, systematic review, education system, to curriculum. *Indonesian Journal of Community and Special Needs Education*, 1(1), 1-8.
- Novaliendry, D., Darmi, R., Hendriyani, Y., Nor, M., & Azman, A. (2020). Smart learning media based on android technology. *International Journal of Innovation, Creativity and Change*, 12(11), 715-735.
- Nugroho, O. F., Permanasari, A., & Firman, H. (2019). The movement of stem education in Indonesia: Science teachers'™ perspectives. *Jurnal Pendidikan IPA Indonesia*, 8(3), 417-425.
- Pambudi, N. A., & Harjanto, B. (2020). Vocational education in Indonesia: History, development, opportunities, and challenges. *Children and Youth Services Review*, 115, 105092.
- Pratiwi<sup>1</sup>, A. N., & Handayati, P. (2020). The Influence of Audiovisual Learning Media with Powtoon Application to Students' Learning Motivation in Accounting Lesson.
- Prayoga, I. K. A., & Agustiana, I. G. A. T. (2023). Audio Visual Media Based on Problem Based Learning Water Cycle Topics for Class V Elementary School. *Mimbar Ilmu*, 28(3).
- Putri, A. E., & Susanti, R. (2022). Using the Powtoon Application as A Learning Media in Elementary School. *Journal International Inspire Education Technology*, 1(1), 52-61.
- Sari, N. K. C. P. (2022). Powtoon animation video based on contextual approach in elementary school mathematics learning. *Mimbar PGSD Undiksha*, 10(2), 308-317.
- Shaturaev, J. (2021). Education in indonesia: financing, challenges of quality and academic results in primary education. *Архив научных исследований*.
- Sugilar, H., Mandalawati, I. S., Jihad, A., Rachmawati, T. K., & Kariadinata, R. (2023, April). The development of Powtoon animation media on

- mathematical arithmetic operations. In *AIP Conference Proceedings* (Vol. 2646, No. 1). AIP Publishing.
- Wardhani, P. A., Sabrina, S., & Fahrurrozi, F. (2023). Development of Powtoon-Assisted Audiovisual Media in Mathematics to Improve Understanding of Elementary School Students. *Wahana*, 75(1), 144-155.
- Wijaya, H. (2019). Redefining the success of education: where Indonesia has excelled and where it has not. *Humaniora*, 31(2), 118.