R-Disa
Riset Inovasi Pendidikan Guru Sekolah Dasar

Vol. 1 No. 1, March 2026
ISSN (print) XXXX-XXX; ISSN (online) XXX-XXX
https://doi.org/10.32493/r-disa.v1i1.59119

Literature Review: The Use of Interactive Multimedia in Improving Elementary School Students' Learning Outcomes

Diah Malaka Syakilah[1*]
[1]Pendidikan Dasar, Universitas Negeri Semarang, Indonesia*
[1]dmsyakilah1@gmail.com*

Abstract
Learning media is a tool or technique used in order to make learning more communicative and efficient. The various learning media developed are aimed at making students better able to understand the subject matter being studied. With the development of the times and technology, learning media can be in the form of interactive multimedia, namely multimedia learning involving the senses of sight and hearing through text media, visuals and audio, also computer-based interactive media. The purpose of the article is to find out how the application of interactive multimedia in elementary schools and why the use of interactive multimedia can improve elementary school student learning outcomes. The method used in the article is literature study by utilizing national and international journals with keywords searching for learning media, interactive multimedia and improving learning outcomes. From the search, 35 journals were obtained that match with criteria. From the results of the study, the application of interactive multimedia in elementary schools uses various applications that are easy to operate by students such as the web/internet and adobe flash. The use of interactive multimedia in learning can improve the learning outcomes of elementary school students, because the media makes students more interested and active in learning the material contained in interactive multimedia that has been adapted to ongoing learning. The selection of appropriate learning models and methods will also further support the use of interactive multimedia. However, with limited facilities in each school and student, interactive multimedia cannot be implemented without proper preparation
Keywords: *Learning Media, Interactive Multimedia, Learning*

Article Info
Submitted : 12 March 2026
Reviesed : 25 March 2026
Accepted : 25 March 2026

Introduction

Education is a deliberate and systematic effort that plays a crucial role in developing students into qualified, skilled, innovative, and creative individuals. Within this context, learning becomes a central component, as it represents the interactive process between teachers, students, and learning resources in a structured environment. Ideally, this process enables students to acquire knowledge, master skills, and develop positive attitudes effectively. However, in practice, many learning activities still rely on conventional, teacher-centered approaches that limit student engagement and active participation. As a result, learning objectives—intended as indicators of students' behavioral and competency achievements—are often not optimally attained. This gap between expected learning outcomes and actual classroom conditions highlights a significant problem, particularly in elementary education, where students require more engaging and meaningful learning experiences.

Basically, the learning process places greater emphasis on the active involvement of students in the learning activities (Putri, 2019). In addition, the learning process is more oriented toward the application of the concept of learning by doing, emphasizing personal experience through the processes of observing, questioning, reasoning, associating, and communicating in order to enhance students' creativity. Through this learning process, students are expected to achieve a balance between soft skills and hard skills, which include aspects of spiritual competence, social competence, knowledge, and skills.

The instructional methods and learning tools used are selected based on the objectives and learning materials that have been determined in advance, taking into account the teacher's

abilities, student characteristics, and the learning situation. Instructional methods and learning tools function as media for transforming the learning process toward the intended objectives. The use of media is one of the aspects that supports the achievement of learning objectives. Learning media refers to anything that can be used to convey messages or serve as learning materials, thereby stimulating students' attention, interest, thoughts, and feelings in learning activities in order to achieve the learning objectives (Daryanto, 2016).

The types of media used vary widely, such as audio media (Puspitawangi et al., 2016; Widyaningrum, 2020), visual media (Warmini et al., 2016; Aen, 2020) audio-visual media (Rozie, 2013; Novita et al., 2019), the selection of media depends on the material to be taught, as it ultimately refers to the primary objective of using media, namely to support the achievement of learning objectives. With the advancement of technology, it is undeniable that new ideas have emerged, such as the development of multimedia. In addition to the previously mentioned media, there is also multimedia learning media, which refers to media that integrates several types of media and equipment within a single learning process or activity. Multimedia learning involves the senses of sight and hearing through various forms of media, including text, still visuals, moving visuals, and audio, as well as interactive media based on computer technology and information and communication technology (Surjono, 2015).

The utilization of technology has not been fully optimized, as the facilities that already support classroom learning are not balanced with the use of interactive learning media (Alam et al., 2019). Interactive multimedia is multimedia that is equipped with control tools that allow users to determine or select the next process within the media. Examples include interactive learning applications, educational games, and similar digital applications (Daryanto, 2016). Multimedia provides an interactive process that gives students the freedom to operate and navigate the media independently. Based on these considerations, this article aims to examine how interactive multimedia is implemented in elementary schools and why the use of interactive multimedia can improve elementary school students' learning outcomes.

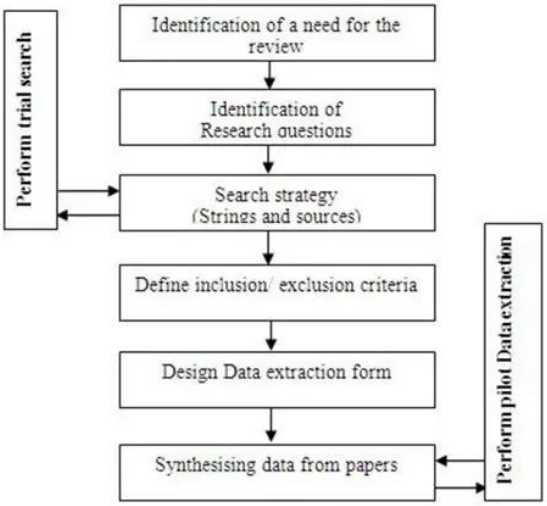
To address these challenges, the integration of interactive multimedia has emerged as a promising solution to enhance the quality of the learning process. Interactive multimedia not only facilitates more dynamic interaction but also supports students' active involvement through visual, auditory, and kinesthetic elements. Despite its potential, its implementation in classrooms remains limited due to teachers' lack of technological competence and insufficient development of appropriate learning media. Moreover, previous studies have predominantly focused on the effectiveness of multimedia in general, with limited attention to its role in fostering specific learning outcomes and student engagement in real classroom settings. Therefore, this study aims to fill this research gap by investigating the use of interactive multimedia as an innovative approach to improve learning effectiveness and achieve instructional objectives more optimally.

Research Method

This article employs a literature study or literature review by analyzing several studies related to the topic of discussion, namely learning media, interactive multimedia, and the improvement of students' learning outcomes. The reference sources used as the main materials of discussion are derived from books, national journals, international journals, conference proceedings, and other relevant publications. The stages of the literature review used in this study are as follows. The first stage is article collection. This stage involves searching for and downloading articles from databases such as Google Scholar, SINTA, Garuda, and Scopus by using the keywords *learning media*, *interactive multimedia*, and *improvement of learning outcomes*, with a publication range from 2013 to 2020.

The second stage is article reduction, which involves reducing the number of articles based on their relevance to the variables stated in the title. In other words, the main points are summarized to facilitate the researcher in compiling the article. The reduction process must include the main topics, namely learning media, interactive multimedia, and the improvement of students' learning outcomes. From this process, a total of 35 journals were obtained, consisting of 5 international journals and 30 national journals.

The third stage is organization and discussion. In this stage, the researcher presents theories and concepts related to learning media, interactive multimedia, and the improvement of learning outcomes. The fourth stage is drawing conclusions based on the organization and discussion that have been conducted previously. These stages are intended to review the development of interactive multimedia in improving elementary school students' learning outcomes in the learning process.



Pic 1. Development Process for the Systematic Literature Review Protocol

Result and Discussion

Learning media refers to anything that can be used to convey messages or serve as instructional materials, thereby stimulating students' attention, interest, thoughts, and feelings in learning activities in order to achieve the intended learning objectives (Daryanto, 2016). Learning media are tools or techniques used to make the learning process more communicative and efficient (Putri, 2019).

The use of learning media provides several benefits, such as capturing objects or events in the form of photographs and videos, as well as manipulating objects so that they can enhance students' learning motivation (Marlina, 2019). The development of interactive multimedia incorporates images and videos to manipulate objects or events, thereby facilitating students' understanding of the topic of energy sources. The criteria for the use of learning media include: (1) alignment with the learning objectives to be achieved, (2) appropriateness in supporting the lesson content and compatibility with students' abilities, (3) practicality, flexibility, and durability, (4) the teacher's skill in using the media, (5) suitability with the target group, and (6) technical quality. The development of visual media, whether in the form of images or videos, must present information clearly so that the conveyed message is not disrupted by other elements (Arsyad, 2017).

In its development, various types and formats of media have been created and utilized in the learning process. However, fundamentally, all these media can be categorized into three main types: visual media, audio media, and audio-visual media (Putri, 2019). Visual media are types of media that rely solely on students' sense of sight. Through this type of media, the learning experiences gained by students are highly dependent on their visual abilities.

Audio media are types of media used in the learning process that involve only students' sense of hearing. Therefore, audio media are limited to manipulating sound elements. Audio-visual media, on the other hand, are types of media used in learning activities that involve both hearing and sight simultaneously within a single process or activity (Suryani et al., 2018).

In addition to these types of media, there is also multimedia learning media, which refers to media that integrates several types of media and equipment within a single learning process or instructional activity (Khairunnisa & Ain, 2022). Multimedia learning involves the senses of sight and hearing through various forms of media, including text, still visuals, moving visuals, and audio, as well as interactive media based on computer technology and information and communication technology.

Interactive Multimedia

Multimedia is a combination of text, photographs, art, graphics, sound, animation, and video elements that are digitally manipulated. Multimedia is generally classified into two categories, namely linear multimedia and interactive multimedia. Linear multimedia refers to multimedia that is not equipped with any control tools that can be operated by users, such as television and films. Meanwhile, interactive multimedia is multimedia that is equipped with control tools that allow users to operate and determine the next process within the media (Putri et al., 2023). Examples include interactive learning applications, educational games, and other similar digital applications (Daryanto, 2016). Interactivity in multimedia includes: (1) the involvement of users in interacting with the application program; and (2) interactive information applications that aim to enable users to obtain only the information they need without having to go through all the available content (Prasetyo, Sari, et al., 2023).

Interactive multimedia is a display designed by developers so that its interface fulfills the function of conveying information while also enabling interaction with its users (Prasetyo, Sari, et al., 2023). In other words, when this concept is applied in the learning context, it becomes a digital medium used in the instructional process to deliver information such as knowledge, attitudes, and skills through two-way or multi-directional communication (Putri, 2019). Multimedia learning has several benefits or advantages when used in the instructional process, including: making learning more effective and optimal, increasing students' interest and motivation to learn, creating a more interactive learning environment so that the delivery of material becomes more optimal, accommodating the diverse needs of students, and assisting in achieving the intended learning objectives.

The development of information technology has driven new ways of living, from the beginning to the end of life. This type of life is commonly referred to as e-life, meaning that various aspects of life are influenced by electronic-based needs and services (Maulidia et al., 2023). The development of the information era today enables the availability of unlimited information in various forms that can be accessed easily and quickly (Safitri et al., 2024). From the development of information technology, different types of media can be integrated with other media, which is referred to as multimedia. Furthermore, multimedia can create interaction, which is known as interactive multimedia. The characteristics of media in multimedia-based learning include: (1) having more than one convergent medium, for example combining audio and visual elements; (2) being interactive, meaning that it has the capability to accommodate user responses; and (3) being independent, meaning that it provides convenience and completeness of content so that users can utilize it without guidance from others (Daryanto, 2016).

Quality of Interactive Multimedia

Interactive multimedia may consist of several material components, such as a cover page, learning objectives, a list of materials, the presentation of the content, and a closing section (Nugroho et al., 2023). In some cases, the display is designed in a more detailed structure, including an opening section, a main menu containing submenus, an instruction menu, a competency menu, a stimulus menu, a material menu, an experiment menu, a question menu, a game menu, a profile menu, and a reference menu for the learning materials (Putri, 2019). The formats of interactive multimedia learning include drill and practice, tutorial-based guidance, and games or simulations (Pradana & Hidayat, 2022). The application commonly used to develop interactive multimedia for elementary schools is the software Adobe Flash (Alam et al., 2019; Prasetyo, Nugroho, et al., 2023) and web/internet (Yuniarti & Sari, 2022). This application is often used because its operation tends to be relatively easy for elementary school students.

Adobe Flash is an animation program that supports programming through its ActionScript feature. This program is suitable for developing interactive learning media because it supports animations, graphics, images, text, and programming functions (Alam et al., 2019). The advantages of Adobe Flash include the following: (1) it is suitable for creating animations; (2) it can be used as a tool for developing two-dimensional games; (3) animations can be created, executed, and controlled; (4) it can be utilized for web-based applications with simple navigation; (5) the media fonts will not change even if the computer used does not have the same fonts installed; (6) images are vector-based, so they do not lose quality even when zoomed in hundreds of times; (7) it can run on the Microsoft Windows operating system; and (8) the final output can be saved in various formats, such as *.avi, *.gif, *.mov, and other file formats (Yuniarti & Sari, 2022).

The Internet (Interconnected Network) is a global network that connects computers to one another around the world. Through the Internet, computers can be interconnected to communicate, share, and obtain information (Yuniarti & Sari, 2022). Through the Internet, users are able to access a website, which serves as a medium that offers new channels of communication for sharing and obtaining information. The main factor contributing to the attractiveness of the Internet is its ability to access various forms of information such as text, audio, images, illustrations, and others from web sources more easily and quickly compared to other communication or information media. Before being fully implemented in the learning process, interactive multimedia must first be validated by subject-matter experts and media experts, and subsequently tested for its feasibility and practicality (Alam et al., 2019).

The Use of Interactive Multimedia in Learning to Improve Elementary School Students' Learning Outcomes

In the era of the Fourth Industrial Revolution and in preparation for the Society 5.0, professional teachers are expected to adapt to the development of information and communication technology (ICT) and be able to utilize ICT in the learning process, such as through the use of interactive multimedia (Lestari et al., 2023). In its implementation, the process can begin with the development of interactive multimedia. The process of developing interactive multimedia in learning starts with analyzing the problems encountered during classroom learning activities at school. After the analysis stage, the process continues with the stages of design, development, implementation, and evaluation (Pratama et al., 2023). This multimedia product is developed to facilitate students in learning independently and according to their individual learning abilities, which in turn can influence their learning outcomes. In this study, the multimedia developed contains integrated Social Studies material and is accompanied by supporting images that are relevant to the content. Thus, when students read the material, they can directly view the images that illustrate the concepts explained in the lesson (Nugroho & Sari, 2022).

In an effort to provide effective learning facilities for students through interactive multimedia, the multimedia developed must contain several components that support the learning process. The elements or components included in multimedia consist of text, graphics or photographs, audio, video, and animation (Nugraha et al., 2023).

The use of interactive multimedia learning media can make the learning process more innovative and interactive, as well as increase students' learning motivation due to its attractive presentation, which may include videos, text, images, and other visual elements (Madcoms, 2012). The interactive multimedia developed represents a summary of all the materials presented in the teaching materials provided by the teacher, featuring a dynamic display that can serve as a distinctive attraction for students (Prasetyo, Sari, et al., 2023). After various preliminary tests had been conducted, students were given a pre-test and a post-test before and after using the interactive multimedia in order to determine whether the use of interactive multimedia could improve their learning outcomes. The results can be observed as an effect of the learning process that was implemented.

Multimedia provides a better contribution to students' understanding in the learning process (Prasetyo, Sari, et al., 2023). Several advantages of the multimedia developed include

its potential to serve as an alternative independent learning resource to overcome the limitations of classically implemented learning. A multimedia format that is particularly appealing to elementary school students is the game-based format, as it is believed that students can learn while playing. Similar to stimulation activities, learning games can be effective; however, they are often difficult to design. Therefore, designers must ensure that while creating a game-like environment, the integrity of the learning objectives is not compromised (Prasetyo, Sari, et al., 2023).

Interactive multimedia can also be combined with appropriate teaching methods and models tailored to the learning needs, ensuring that the learning process does not become monotonous or boring (Prasetyo, Sari, et al., 2023). The selection of the model is also based on a clear division of components that aligns with the intended learning objectives (Prasetyo, Sari, et al., 2023). However, due to the limited facilities available in each school or for individual students, interactive multimedia cannot be effectively implemented without thorough preparation.

Conslusion

Multimedia is a combination of text, images, graphics, sound, animation, and video elements that are digitally integrated to create meaningful learning experiences. In the educational context, interactive multimedia must undergo rigorous validation processes involving both subject-matter experts and media specialists, as well as feasibility and practicality testing, before being implemented in classrooms. When properly developed, interactive multimedia has been shown to improve elementary school students' learning outcomes due to its engaging and dynamic presentation. These features encourage active student participation and align well with the demands of student-centered learning. Furthermore, the effectiveness of interactive multimedia is strengthened when it is supported by appropriate learning models and instructional methods, enabling students to better understand and retain the material.

However, the successful implementation of interactive multimedia remains constrained by limited facilities and infrastructure in many schools. Therefore, it is essential to provide concrete and strategic recommendations for educators and policymakers. Teachers are encouraged to adopt flexible and adaptive approaches, such as utilizing low-bandwidth or offline-based multimedia, maximizing the use of existing devices (e.g., smartphones), and applying blended learning strategies that combine digital and conventional methods. Meanwhile, policymakers should prioritize equitable access to educational technology by improving infrastructure, providing institutional support, and offering continuous professional development programs to enhance teachers' digital competencies. Through these efforts, the integration of interactive multimedia can be more effectively realized, even in resource-limited educational settings.

References

Aen, R. (2020). Meningkatkan Pemahaman Konsep IPA Siswa SD Menggunakan Media Visual Berupa Media Gambar Dalam Pembelajaran IPA. *Journal Of Elementary Education*, *3*(2), 99–103.

Alam, G. F., Az-Zahrah, H. M., & Rokhmawati, R. I. (2019). Pengembangan Media Pembelajaran Berbasis Multimedia Interaktif pada Mata Pelajaran Sains Materi Tata Surya Menggunakan Model APPED. *Jurnal Pengembangan Teknologi Informasi Dan Ilmu Komputer*, *3*(4), 3832–3837.

Arsyad, A. (2017). *Media Pembelajaran*. PT Raja Grafindo Persada.

Daryanto. (2016). *Media Pembelajaran*. Gava Media.

Khairunnisa, K., & Ain, S. Q. (2022). Pengembangan Multimedia Interaktif Pembelajaran Tematik Siswa Sekolah Dasar. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, *6*(6), 5519–5530. https://doi.org/https://doi.org/10.31004/obsesi.v6i6.3198

Lestari, R., Hidayat, T., & Rahman, A. (2023). Pemanfaatan Multimedia Interaktif dalam Pembelajaran untuk Meningkatkan Keterampilan Abad 21 Siswa Sekolah Dasar. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, *7*(4), 4528–4538.

https://doi.org/https://doi.org/10.31004/obsesi.v7i4.4870
Madcoms. (2012). *Adobe Flash Professional CS6*. Andi.
Marlina. (2019). *Pembelajaran Berdiferensiasi di Sekolah Inklusif*. Universitas Negeri Padang Press.
Maulidia, L. N., Suparno, S., & Rosyidah, U. J. (2023). Technology-Based Learning Media in Early Childhood Education to Face Society 5.0 Era: a Systematic Literature Review. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, *7*(5), 5793–5805. https://doi.org/https://doi.org/10.31004/obsesi.v7i5.4997
Novita, L., Sukmanasa, E., & Pratama, M. Y. (2019). Penggunaan Media Pembelajaran Video terhadap Hasil Belajar Siswa SD. *Indonesian Journal of Primary Education*, *3*(2), 64–72.
Nugraha, A., Pratama, R., & Sari, D. (2023). Pengembangan Multimedia Interaktif Berbasis Teknologi Digital Pada Pembelajaran di Sekolah Dasar. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, *7*(3), 3475–3486. https://doi.org/https://doi.org/10.31004/obsesi.v7i3.4442
Nugroho, A., Pratama, R., & Sari, D. (2023). Pengembangan Multimedia Interaktif Berbasis Teknologi Digital dalam Pembelajaran di Sekolah Dasar. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, *7*(4), 4521–4532. https://doi.org/https://doi.org/10.31004/obsesi.v7i4.4876
Nugroho, A., & Sari, D. P. (2022). Pengembangan Multimedia Interaktif dalam Pembelajaran untuk Meningkatkan Pemahaman Konsep Siswa Sekolah Dasar. *Jurnal Basicedu*, *6*(5), 8421–8430. https://doi.org/https://doi.org/10.31004/basicedu.v6i5.3745
Pradana, R., & Hidayat, T. (2022). Pengembangan Multimedia Interaktif Berbasis Komputer untuk Meningkatkan Hasil Belajar Siswa Sekolah Dasar. *Jurnal Basicedu*, *6*(4), 6405–6413. https://doi.org/https://doi.org/10.31004/basicedu.v6i4.3312
Prasetyo, A., Nugroho, H., & Rahmawati, D. (2023). Pengembangan Multimedia Interaktif Berbasis Game Pada Pembelajaran di Sekolah Dasar. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, *7*(3), 3490–3501. https://doi.org/https://doi.org/10.31004/obsesi.v7i3.4460
Prasetyo, A., Sari, R., & Nugroho, H. (2023). Pengembangan Multimedia Interaktif Berbasis Teknologi Digital untuk Meningkatkan Aktivitas Belajar Siswa. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, *7*(3), 3465–3476. https://doi.org/https://doi.org/10.31004/obsesi.v7i3.4452
Pratama, R., Nugroho, A., & Sari, D. (2023). Pengembangan Multimedia Interaktif Menggunakan Model ADDIE dalam Meningkatkan Hasil Belajar Siswa. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, *7*(3), 3520–3530. https://doi.org/https://doi.org/10.31004/obsesi.v7i3.4470
Puspitawangi, K. R., Wibawa, I. M., & Pudjawan, K. (2016). Pengaruh Model Pembelajaran Kooperatif Tipe Talking Stick Berbantuan Media Audio Terhadap Hasil Belajar IPS Siswa. *Journal PGSD Universitas Pendidikan Ganesha*, *4*(1), 1–12.
Putri, N. A. (2019). Pengembangan Multimedia Interaktif Berbasis Discovery Learning Pada Muatan IPA Kelas IV SDN Tambangan 01 Semarang. *E-Journal Universitas Negeri Semarang*.
Putri, N. A., Rahman, A., & Suryani, N. (2023). Pengembangan Multimedia Interaktif Berbasis Digital untuk Meningkatkan Keterlibatan Belajar Siswa. *Urnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, *7*(4), 4550–4562. https://doi.org/https://doi.org/10.31004/obsesi.v7i4.4897
Rozie, F. (2013). *Pengembangan Media Video Pembelajaran Daur Air Untuk Meningkatkan Proses Dan Hasil Belajar IPA Siswa Kelas V SD Negeri Bintoro 02 Jember*. Universitas Negeri Malang.
Safitri, D., Aulia, N. N., Rahmat, R., & Wijaya, V. (2024). Pemanfaatan Teknologi Informasi dalam Memenuhi Kebutuhan Sumber Informasi dan Pembelajaran. *CoverAge: Journal of Strategic Communication*, *15*(1). https://doi.org/https://doi.org/10.35814/coverage.v15i1.5970
Surjono, H. D. (2015). The Effects Of Multimedia And Learning Style On Student Achievement In Online Electronics Course. *The Turkish Online Journal of Educational Technology*, *14*(1),

· 116–122.
Suryani, N., Setiawan, A., & Putria, A. (2018). *Media Pembelajaran Inovatif dan Pengembangannya*. PT Remaja Rosdakarya.
Warmini, N. K., Agung, A. A. G., & Sumantri, M. (2016). Pengaruh Model Pembelajaran SSCS Berbantuan Media Visual Terhadap Hasil Belajar Matematika Siswa Kelas IV SD Di Gugus VII Kecamatan Busungbiu. *E-Journal Mimbar PGSD Undiksha*.
Widyaningrum, H. K. (2020). Penggunaan Media Audio Untuk Meningkatkan Kemampuan Menyimak Dongeng Anak Pada Siswa Kelas IV Sekolah Dasar. *Premiere Education*, *5*(2), 200–209.
Yuniarti, R., & Sari, D. P. (2022). Pengembangan Multimedia Interaktif Berbasis Teknologi Digital untuk Meningkatkan Hasil Belajar Siswa Sekolah Dasar. *Jurnal Basicedu*, *6*(5), 8765–8773. https://doi.org/https://doi.org/10.31004/basicedu.v6i5.3812