



# The Effect of Using 3D Pageflip Learning Media on Student Learning Outcomes in Vibration and Wave Material

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Received: September 13, 2023

Revised: October 31, 2023

Accepted: November 25, 2023

Published: November 30, 2023

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DOI: [10.29303/jppipa.v9i11.5306](https://doi.org/10.29303/jppipa.v9i11.5306)

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**Abstract:** One learning media that can be applied in the learning process is 3D Pageflip Professional. 3D Pageflip Professional is a leading application software for creating e-books, digital magazines, e-papers, and others. This research aims to describe the effect of using 3D Pageflip Professional learning media on vibration and wave material at SMP Negeri 1 Telaga Jaya. This research uses a valid experimental method with a posttest-only control design. The sampling technique in this research was random sampling. The sample for this research was class VIII students divided into two classes, namely the experimental class is class VIII-1, and the control class is class VIII-2. This research uses quantitative descriptive data analysis. The research showed that the average percentage of cognitive level scores for student learning outcomes in classes using 3D Pageflip Professional learning media reached 81.30% (very high). In types using PowerPoint media, it reached 78.33% (high). Likewise, the results of classical completion in learning activities were 92% in the experimental class and 85% in the control class. These values show that the 3D Pageflip Professional learning media influences the learning outcomes of class VII students at SMP Negeri 1 Telaga Jaya, especially on vibration and wave material.

**Keywords:** Learning outcomes; Pageflip Profesional media; Vibration; Wave.

## Introduction

Natural science or science is a science that studies natural phenomena in the form of facts, concepts, and laws whose truth has been proven through a series of research. Based on the 2013 Curriculum, which refers to Government Regulation No. 32 of 2013 concerning national education standards, education aims to prepare every individual to have the ability to be a creative, productive, and practical person and able to contribute to society's life. Therefore, good science learning can be applied directly in everyday life (Fitri et al., 2019; Setiawan et al., 2023).

Exciting learning for students is learning that can become the center of student's attention to the material presented, such as by creating learning media that will be used as a learning resource and directing students to think creatively. Arsyad (2014) states that learning media is an intermediary for conveying messages or

information from the source to the recipient so that a learning process occurs. One learning media that can be applied in the learning process is 3D Pageflip Professional (Pratama et al., 2019; Koderi et al., 2020). 3D Pageflip Professional is a leading application software for creating e-books, digital magazines, e-papers, and others, equipped with more exciting audio, images, moving animations, and videos. This professional 3D Pageflip application also provides settings such as magazines, documents, and so on (Adawiyah et al., 2022; Syahrowardi & Permana, 2016; Minarni et al., 2019).

According to Mawarni & Muhtadi (2017), the Professional 3D Pageflip application has the advantage that students can understand the theory and carry out simulations directly on the media. Another advantage is that e-books can display digital formats containing text or images that can be read via a computer (Akbar & Noviani, 2019; Kurniawan et al., 2021).

## How to Cite:

Abdjul, T., Nurhayati, Katili, N., & Ntobuo, N. E. (2023). The Effect of Using 3D Pageflip Learning Media on Student Learning Outcomes in Vibration and Wave Material. *Jurnal Penelitian Pendidikan IPA*, 9(11), 10016–10021. <https://doi.org/10.29303/jppipa.v9i11.5306>

According to Amalia (2015), 3D Pageflip Professional is software that can create teaching materials in digital e-books with 3D effects. Apart from that, Salsabila (2013) stated that 3D Pageflip Professional is a type of computer software that can produce or create an animated display so that it can create interactive learning media for students. However, not all educators can carry out learning, especially in science learning, based on 3D Pageflip Professional (Raihan et al., 2018; Hamidah et al., 2023; Syuzita et al., 2023). This is because they need to gain the skills to develop learning media. Most of the learning media that are often used are still in the form of ordinary power points, so most students feel bored with the learning provided. Sometimes, learning outcomes decrease because motivation to learn decreases. To overcome this, educators must innovate, especially using engaging learning media such as 3D Pageflip Professional (Putra & Mufit, 2022; Mindayula & Sutrisno, 2021).

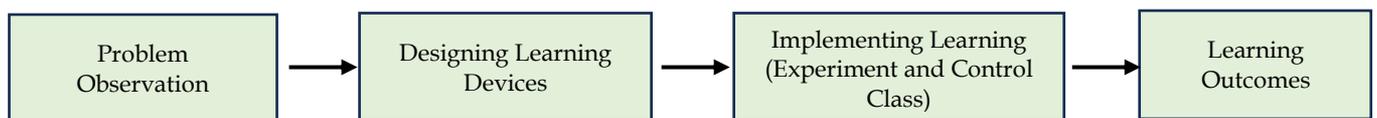
Masitoh, (2021) states that 3D Pageflip Professional media can provide learning material through sentences, images, audio, and video. There are various colors available that can attract students' attention; they are easy to make, and the price is affordable. However, Susilana and Riyana, (2008) said that the advantage of Pageflip is that they can increase understanding of material regarding several events that cannot be presented in class. Another advantage is that learning material can be shown in the form of a series of sentences and pictures, can be carried practically anywhere, and can increase student learning activities. The f Pageflip learning media has a suitability factor for the material and theory and a similarity factor for learning styles. 3D Pageflip Professional learning media can improve student learning outcomes and enable students to

independently understand the subjects they study (Diana et al., 2020; Yelianti et al., 2020).

3D Pageflip Professional media can be operated via laptop and Smartphone and Tablet by changing the file format first so that wherever and whenever, students can learn independently (Hayati et al., 2015). Based on this description, 3D Pageflip Professional Media significantly influences student learning outcomes. It can be an alternative learning media in science learning, especially in Vibration and Wave Material.

**Method**

This research will be conducted at SMP Negeri 1 Telaga Jaya, Gorontalo Regency. This research will be carried out during the academic year 2023/2024. This research is included in accurate experimental research (Posttest Only Control Design) because this research uses treatment and measurement in two classes, namely the experimental and control classes, with a quantitative approach. The research flowchart can be seen in Figure 1, consisting of problem observation, designing learning devices, implementing learning, and learning outcomes. To see the effect of using 3D Pageflip Professional learning media in science learning, especially on vibration and wave material, the researchers used two classes, namely the experimental and control classes. In the experiment class, the teacher uses 3D Pageflip Professional learning media, and in the control class, the teacher uses PowerPoint media in learning. This research uses quantitative descriptive data analysis of class student learning outcomes VIII SMP Negeri 1 Telaga Jaya, Telaga Jaya District, Gorontalo Regency. The samples in this research were students in class VIII-1, the Experiment class, and VIII-2, the Control class.



**Figure 1.** The research flowchart

This research is classified as experimental research using a Posttest Only Control Design as in Table 1 (Sugiyono, 2018).

**Table 1.** Posttest Only Control Design

Group	Treatment	Posttest
Experiment class	X <sub>1</sub>	O <sub>1</sub>
Control class	X <sub>2</sub>	O <sub>2</sub>

**Table 2.** Criteria for Assessing Student Learning Outcomes

Intervals (%)	Category
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0-50	Very low
51-60	Low
61-70	Medium
71-80	High
81-100	Very high

The instrument used in this research tests student learning outcomes at the cognitive level, measured starting from the cognitive domain, starting from C1, C2, and C3. The test was used to determine the effect of professional 3D Pageflip learning media, especially on vibration and wave material. The data analysis

technique used quantitative descriptive assessment categories as in Table 2 (Sugiyono, 2018).

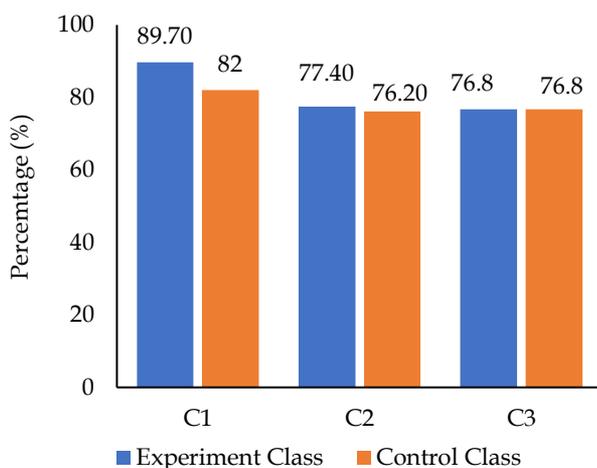
### Result and Discussion

This research aims to determine the effect of using 3D Pageflip Learning Media on the results of the learning process carried out by students on vibration and wave material. The research implementation can be seen in Figure 2.



**Figure 2.** Implementation of research on the effect of using 3D Pageflip learning media in the class.

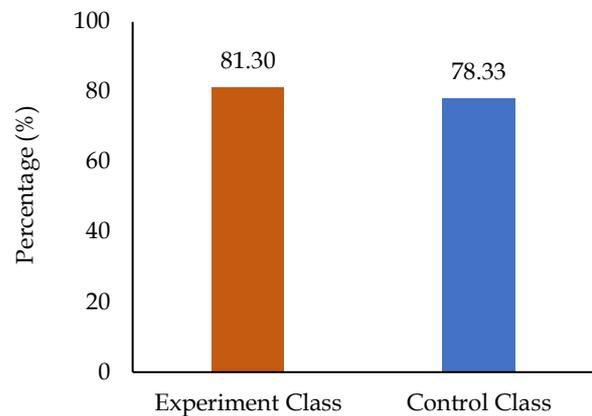
The results of research and data analysis of student learning outcomes, it was found that there was a difference between the learning outcomes of students who used the 3D Pageflip Professional learning media and the learning outcomes of students who used the PowerPoint learning media, as in Figure 3.



**Figure 3.** Average percentage of student learning activity results in the cognitive domain.

Figure 3 shows that the percentage of learning outcomes using 3D Pageflip Professional learning media at cognitive level C1 reached 89.70%, while in the control class, it was 82%. At the C2 cognitive level in the experiment class, it got 77.40%; in the control class, it was

76.20%. The C3 cognitive level in the experimental class reached 76.80%, while the results obtained in the control class were 76.80%. The average difference in learning activity results is shown in Figure 4.



**Figure 4.** Average percentage of student learning outcomes.

Figure 4 shows that the average percentage of cognitive level scores resulting from the learning process carried out by students in classes given special treatment 3D Pageflip Professional media reached 81.30% (very high), and students obtained these results through learning activities in class. Those who were not given special treatment reached 78.33% (high). Based on the data obtained, the results of learning activities carried out by students using 3D Pageflip Professional learning media were higher when compared to the effects of learning activities obtained by students using PowerPoint media.

This is because the 3D Pageflip Professional learning media presents learning material that can be given more interestingly to increase students' enthusiasm and interest in learning. Using 3D Pageflip Professional learning media in the learning process can create new desires and interests and motivate learning activities because it can make abstract knowledge more real. 3D Pageflip Professional learning media is attractive, making students active when trying it. Students can understand the material they study more effectively, their concentration is focused on the media, and learning becomes more fun.

This research is by what was reported by Takdir et al. (2023), who concluded that using 3D Pageflip Professional interactive media in the learning process resulted in higher learning outcomes and learning activities carried out by students than before using interactive media in class. The results of this research explain that using the hypothesis testing method significantly influences student learning outcomes when using 3D Pageflip Professional Interactive Media.

The following statement is also consistent with that reported by Adegoke (2010), who concluded that integrating animation, presentation, and textual information in a computer-based environment will improve students' physics learning outcomes. The results show that multimedia-based teaching can reduce students' low interest and cognitive achievement in physics subjects. The importance is that students who study physics subjects using computer-based multimedia tend to obtain better learning process results.

The analysis results using this media positively influence student learning outcomes. Using this media will help teachers convey the content of the material being studied, and teaching materials are more easily understood by students (Ferdianto & Nurulfatwa, 2019), so in learning, it is best to use the interactive 3D Pageflip Professional media. Furthermore, the percentage of students' classical completion in science learning, especially the concept of vibrations and waves, can be seen in Table 3.

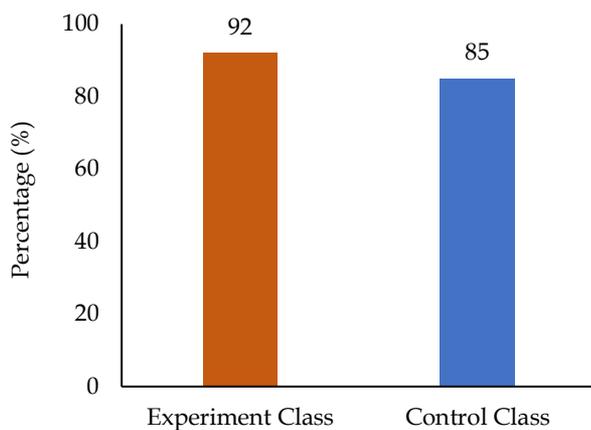
**Table 3.** Classical Completion of Student Learning Outcomes

Class	The number of students	Number of students who completed	Number of students who did not complete	Classical completion (%)
Experiment class	26	24	2	92
Control Class	20	17	3	85

The data displayed in Table 3 is classical completeness data on student learning outcomes. There were 26 students in the experimental class; 24 answered completely, and 2 answered did not complete. Meanwhile, the number of students in the control class was 20 students: 17 students answered completely, and 3 students did not. As for classical completeness, the results of learning activities were 92% in the experimental class and 85% in the control class. A comparison graph of classical completion scores for student learning outcomes can be seen in Figure 5.

media can explain abstract material that can be visualized using this learning media and look attractive to students. It can also create favorable conditions for students to understand lessons. Additionally, interactive simulations can be displayed, making the learning process exciting and fun and making students more motivated to participate in teaching and learning activities in class.

Using 3D Pageflip Professional learning media can help students understand theory and can be directly simulated. This research is supported by the results of a similar study, which shows that using 3D Pageflip media in learning can help improve the results of students' learning activities. The average student learning outcomes obtained are in the "very good" category for use in the teaching and learning process, with a percentage of 91.46% (Hayati et al., 2015). This means that there has been an increase in student competence. These results are supported by research results from Juliani and Ibrahim, (2023) that the Pageflip media used can influence student results in learning Indonesian. Learning outcomes were higher in the experimental class, which used Pageflip media, than in the control class, which only used topical books. Flipbook media has its advantages for students. Its attractive format can make students enthusiastic and active because students can participate in trials of Pageflip media, students can more easily understand the material being studied, students focus on Pageflip media, and learning becomes more meaningful and exciting.



**Figure 5.** Comparison of classical completion percentages.

Figure 5 shows the percentage of classical completeness in the learning process carried out by students, showing that the experimental class has a higher level of classical completeness, namely 92%, in the very high category compared to the control class, which only has classical completeness. A completion rate of 85% is in the very high category, showing that the 3D Pageflip Professional learning media is very good for science learning because using 3D Pageflip learning

**Conclusion**

The research results show the influence of the 3D Pageflip Professional learning media on vibration and wave material on student learning outcomes. This

difference can be seen in the results of student learning activities in the experimental class, which applied 3D Pageflip Professional learning media, and the effects of student learning activities in the control class, which used PowerPoint media. The average percentage value of cognitive level in types using 3D Pageflip Professional learning media reached 81.30% (very high), and in classes using PowerPoint media reached 77.33% (high). Likewise, the results of classical completion in learning activities were 92% in the experimental class and 85% in the control class. It can be concluded that the 3D Pageflip Professional Learning media influences the results of learning activities carried out by students at SMP Negeri 1 Telaga Jaya, especially on vibration and wave materials.

#### Acknowledgments

Thanks are expressed to the Institute for Research and Community Service (LP2M) Gorontalo State University, as well as the principal, teachers, and students from SMP Negeri 1 Telaga Jaya who have helped support the implementation of this research.

#### Author Contributions

Tirtawaty Abdjul: Conceptualization, writing—original draft preparation, methodology, writing—review and editing; Nurhayati: Methodology; Nancy Katili: Validation, data curation; Nova Elysia Ntobuo: Methodology, formal analysis.

#### Funding

This research received no external funding.

#### Conflicts of Interest

The authors declare no conflict of interest.

#### References

- Adawiyah, R., Putri, T. S. Y., & Wilujeng, I. (2022). The Development of the 3D Pageflip Professional-based e-Module on Energy Concepts. *Jurnal Penelitian Dan Pembelajaran IPA*, 8(1), 45-59. <http://dx.doi.org/10.30870/jppi.v8i1.6890>
- Adegoke, B. A. (2010). Integrating animations, narratives and textual information for improving physics learning. *Electronic Journal of Research in Education Psychology*, 8(21), 725-748. <https://doi.org/10.25115/ejrep.v8i21.1391>
- Akbar, A., & Noviani, N. (2019). Tantangan dan solusi dalam perkembangan teknologi pendidikan di Indonesia. *Prosiding Seminar Nasional Program Pascasarjana Universitas PGRI Palembang*, 18-25. Retrieved from <https://jurnal.univpgri-palembang.ac.id/index.php/Prosidingpps/article/view/2927>
- Amalia, R. (2015). *Pengembangan Buku Pintar Elektronik (BPE) Berbasis 3D Pageflip pada Tema Cita-citaku kelas IV di SDIT Al-Kamilah 01 Banyumanik*. Under Graduates thesis, Universitas Negeri Semarang. Retrieved from <https://lib.unnes.ac.id/20735/1/1102411105-s.pdf>.
- Arsyad, A. (2014). *Media Pembelajaran*. Jakarta: Raja Grafindo Persada.
- Diana, N., Latifah, S., Gunawan, I., & Anggriani, L. (2020). Physical module based on Higher Order Thinking Skill (HOTS) using 3D pageflip professional. *Journal of Physics: Conference Series*, 1572(1), 012050. <http://dx.doi.org/10.1088/1742-6596/1572/1/012050>
- Ferdianto, F., & Nurulfatwa, D. (2019). 3D page flip professional: Enhance of representation mathematical ability on linear equation in one variable. *Journal of Physics: Conference Series*, 1188(1), 012043. <http://dx.doi.org/10.1088/1742-6596/1188/1/012043>
- Fitri, H., Maison, M., & Kurniawan, D. A. (2019). Pengembangan E-Modul menggunakan 3D pageflip professional pada materi momentum dan impuls SMA/MA kelas XI. *Edufisika: Jurnal Pendidikan Fisika*, 4(01), 46-58. Retrieved from <https://online-journal.unja.ac.id/EDP/article/view/4029>
- Hamidah, A., Ayunasari, D. S., & Sanjaya, E. (2023). Development of E-LKPD in Motion System Materials for High School Class Using PageFlip 3D Software. *Jurnal Penelitian Pendidikan IPA*, 9(3), 1233-1241. <https://doi.org/10.29303/jppipa.v9i3.3396>
- Hayati, S., Budi, A. S., & Handoko, E. (2015). Pengembangan media pembelajaran flipbook fisika untuk meningkatkan hasil belajar peserta didik. *Prosiding Seminar Nasional Fisika (E-Journal)*, 4, SNF2015-II. Retrieved from [https://journal.unj.ac.id/unj/index.php/prosiding\\_gsnf/article/view/4810](https://journal.unj.ac.id/unj/index.php/prosiding_gsnf/article/view/4810)
- Juliani, R., & Ibrahim, N. (2023). Pengaruh Media Flipbook Terhadap Hasil Belajar Bahasa Indonesia Siswa Kelas Iv Di Sekolah Dasar. *Else (Elementary School Education Journal): Jurnal Pendidikan dan Pembelajaran Sekolah Dasar*, 7(1). <https://doi.org/10.30651/else.v7i1.14065>
- Koderi, K., Latifah, S., Fakhri, J., Fauzan, A., & Sari, Y. P. (2020). Developing electronic student worksheet using 3D professional pageflip based on scientific literacy on sound wave material. *Journal of Physics: Conference Series*, 1467(1), 012043. <https://doi.org/10.1088/1742-6596/1467/1/012043>
- Kurniawan, W., Astalini, A., Jufrida, J., Basuki, F. R., & Kurniawan, D. A. (2021). Pengembangan Media Pembelajaran IPA Menggunakan Software 3D

- Pageflip Professional untuk Mengatasi Masalah Keterbatasan Bahan Ajar Sekolah. *Jurnal Panjar: Pengabdian Bidang Pembelajaran*, 3(1), 6-13. <https://doi.org/10.15294/panjar.v3i1.52951>
- Masithoh, A. (2022). Pengaruh Model Pembelajaran Jigsaw Menggunakan Media Flipbook Terhadap Hasil Belajar IPS Kelas V SD. *Jurnal BELAINDIKA (Pembelajaran dan Inovasi Pendidikan)*, 4(1), 21-27. <https://doi.org/10.52005/belaindika.v4i1.80>
- Mawarni, S., & Muhtadi, A. (2017). Pengembangan digital book interaktif mata kuliah pengembangan multimedia pembelajaran interaktif untuk mahasiswa teknologi pendidikan. *Jurnal Inovasi Teknologi Pendidikan*, 4(1), 84-96. <https://doi.org/10.21831/jitp.v4i1.10114>
- Minarni, M., Malik, A., & Fuldiaratman, F. (2019). Pengembangan bahan ajar dalam bentuk media komik dengan 3D page flip pada materi ikatan kimia. *Jurnal Inovasi Pendidikan Kimia*, 13(1). <https://doi.org/10.15294/jipk.v13i1.15984>
- Mindayula, E., & Sutrisno, H. (2021). Motivation Level of Student After Implementation Learning Media Based on 3D-Pageflip. In *6th International Seminar on Science Education (ISSE 2020)*, 283-288. <https://doi.org/10.2991/assehr.k.210326.040>
- Pratama, D. J., Ranti, S., Usmeldi, U., & Syafriani, S. (2019). Preliminary analysis of learners in developing student book-oriented research-based learning models using 3D pageflip professionals on science lessons junior high school. *Journal of Physics: Conference Series*, 1185(1), 012125. <https://doi.org/10.1088/1742-6596/1185/1/012125>
- Putra, A. Y., & Mufit, F. (2022). Literature Review of Learning Media Development using 3D Pageflip in Physics Learning. *Konstan-Jurnal Fisika dan Pendidikan Fisika*, 7(1), 7-11. <https://doi.org/10.20414/konstan.v7i1.88>
- Raihan, S., Haryono, H., & Ahmadi, F. (2018). Development of scientific learning e-book using 3D pageflip professional program. *Innovative Journal of Curriculum and Educational Technology*, 7(1), 7-14. <https://doi.org/10.15294/ijcet.v7i1.24793>
- Salsabila, R. P. E. G. (2013). *Pengembangan modul elektronik fisika sebagai media instruksional pokok bahasan hukum newton pada pembelajaran fisika di SMA*. Universitas Jember. Retrieved from <https://repository.unej.ac.id/handle/123456789/13760>
- Setiawan, D. G. E., Arbie, A., Fauzia, A., Buhungo, T. J., Supartin, S., Payu, C. S., & Yunus, M. (2023). The Influence of Inquiry-Based Learning Model on Scientific Literacy in the Rotational Dynamics of a Rigid Bodies. *Jurnal Penelitian Pendidikan IPA*, 9(3), 1118-1123. <https://doi.org/10.29303/jppipa.v9i3.3249>
- Sugiyono. (2018). *Metode Penelitian Kombinasi (Mixed Methods)*. Bandung: Alfabeta.
- Susilana, R., & Riyana, C. (2008). *Media pembelajaran: hakikat, pengembangan, pemanfaatan, dan penilaian*. CV. Wacana Prima.
- Syahrowardi, S., & Permana, A. H. (2016). Desain handout multimedia menggunakan 3D pageflip professional untuk media pembelajaran pada sistem android. *Jurnal Penelitian & Pengembangan Pendidikan Fisika*, 2(1), 89-96. <https://doi.org/10.21009/1.02113>
- Syuzita, A., Susilawati, S., & Sukarso, A. A. (2023). Validation of E-Module Based on Argument-Driven Inquiry using 3D Page Flip Professional to Improve Students' Generic Science, Critical Thinking and Scientific Argumentation Abilities. *Jurnal Penelitian Pendidikan IPA*, 9(8), 6272-6277. <https://doi.org/10.29303/jppipa.v9i8.4947>
- Takdir, M., Ferdiansyah, H., & Zulkfli, N. (2023). The Effect Of Using Pageflip Professional 3d Interactive Media On The Learning Outcomes Of Crafts And Entrepreneurship Of Grade X Students SMA Muhammadiyah Pangsidi School. *Innovative: Journal Of Social Science Research*, 3(4), 5028-5037. <https://doi.org/10.31004/innovative.v3i4.2921>
- Yelianti, U., Anggereini, E., & Irfan, M. K. (2020, February). Developing Electronic Learning Media Using 3d Pageflip on the Material of Classification of Living Things for the 7th Grade Students of Junior High School. In *Journal of Physics: Conference Series*, 1464(1), 012039. <https://doi.org/10.1088/1742-6596/1464/1/012039>