



Development of Nearpod-Based Interactive Learning Media on Environmental Pollution Materials

Hesti Gustini^{1*}, Yayat Ruhiat¹, Lukman Nulhakim¹

¹Teknologi Pendidikan, Universitas Sultan Ageng Tirtayasa, Serang.

Received: January 30, 2023

Revised: March 25, 2023

Accepted: March 28, 2023

Published: March 31, 2023

Corresponding Author:

Hesti Gustini

hestigustini16@gmail.com

DOI: [10.29303/jppipa.v9i3.3061](https://doi.org/10.29303/jppipa.v9i3.3061)

© 2023 The Authors. This open-access article is distributed under a (CC-BY License)



Abstract: This study aims to develop learning media using the Nearpod application on environmental pollution material for class VII in SMP/MTs. This type of research is development research using the ADDIE model, which consists of several stages, namely analysis, design, development, implementation, and evaluation. This research was conducted until the stage of development (development). Based on the results of the stages carried out with the ADDIE model, it can be concluded that Nearpod-based interactive learning media can then validate media experts and material experts. So that it can be implemented in the science learning process, especially environmental pollution material.

Keywords: ADDIE development; Environmental pollution; Instructional Media; Nearpods

Introduction

The development of science and technology causes the learning process as a system consisting of several parts, namely objectives, content or materials, methods, media and evaluation should be carried out systematically and systemically so that they are useful and effective. The quality of education will increase if the learning process carried out both inside and outside the classroom is effective and useful, as can be seen from the expected abilities, knowledge, attitudes and skills. Because in essence the learning process is the core of the whole educational process.

Along with the times, information technology has also developed. One of the most obvious impacts is the use of learning media, which are generally ICT-based. ICT-based learning media is a component of learning resources in which there are instructional materials in the student's environment in the form of information and communication technology. In this case, ICT-based learning media consists of all technologies related to retrieval, collection, processing, storage, dissemination, and presentation of information or material with the

help of computers and telecommunications (Suryani et al., 2018).

One of the things that can support the learning process in the world of education is the development of technology. One of the implementations of technology in education in Indonesia is as a learning medium. In line with meeting the needs of teachers and students so that learning media will continue to develop as demands in the global era. To increase the efficiency and effectiveness of learning, it is necessary to develop various creative and innovative learning models. This is done so that the learning process does not seem interesting and monotonous so that it can hinder the transfer of knowledge (Listiyani et al., 2021). Therefore, learning media is one of the factors supporting success in the learning process. Selection of the right media to be used as learning media will foster a sense of enthusiasm, be motivated to study harder and the learning process will be more effective and not boring.

Many ways are done to make learning not rigid. During the pandemic, many technology-based media were used to support the continuity of learning. Various media began to be recognized by educators during this

How to Cite:

Gustini, H., Ruhiat, Y., & Nulhakim, L. (2023). Development of Nearpod-Based Interactive Learning Media on Environmental Pollution Materials. *Jurnal Penelitian Pendidikan IPA*, 9(3), 1314–1319. <https://doi.org/10.29303/jppipa.v9i3.3061>

pandemic. There is media that functions as an interactive means between educators and students or between lecturers and students using video conferencing. There is also media that facilitates educators or lecturers to develop teaching materials. In addition, there are also learning media that are directed to evaluation or assessment. Several names of learning media for assessment are widely known. Utilization of such media is needed to assist educators or lecturers in evaluating learning and at the same time providing assessments.

Basically, the learning process is the process of communicating or delivering messages from the sender to the recipient. Messages in the form of subject matter written into communication symbols both in the form of verbal (writing and words) and nonverbal. The message will be received by students as knowledge, skills and values that can be applied to everyday life. Adequate means or media can convey the message effectively.

Technological developments in the world of education make learning not just sitting in the classroom. The use of information technology in the process of delivering information is experiencing rapid development (Haryani & Triyono, 2017). Educational technology plays a very important role in the independent learning program in the 4.0 era in improving the quality of education (Hanifah Salsabila et al., 2020). Teachers and students are required to be creative and innovative individuals to create a fun learning atmosphere. Both also have an important role in finding information to support learning. This information can be obtained in various media, such as the internet. With the internet network, students and teachers can carry out learning through cyberspace. This is supported by (Messina et al., 2022) which states that the application of technology to improve distance learning can be effective in supporting concept mastery.

The post-pandemic learning process system has undergone many changes. Students become more familiar with various digital platforms due to their familiarity with online learning conditions. Such as googleform, zoom meeting, google meet, google classroom and other digital platforms. Teachers are also required to be able to adapt to applications that can support in making learning media. In online learning conditions, teachers are required to be creative in using technology-based learning media so that until they return to the face-to-face learning process, teachers must still be prepared to apply technological adaptations to learning that takes place in the classroom.

The development of interesting and innovative learning media can help and make it easier for students to understand the learning material being taught because two-way communication is carried out. This situation requires teachers to innovate in order to solve a problem around them (Syah, 2020). Nearpod is a learning support application software. The nearpod

application has many interesting features that can be used to support interactive learning and can be accessed for free by students and teachers from all over without being limited by space and time. However, the nearpod application has not been widely known and used by the general public, especially educational actors. Research conducted by Susanto resulted that nearpod media can improve the results of students' critical thinking skills, nearpod media is very suitable for use in learning (Susanto, 2021). In addition, results from student surveys and focus groups show that using Nearpod increases students' interest in class and positively influences their learning (Shehata et al., 2020). Nearpod also helps build and develop student interest in learning, leading to greater attention, engagement, and increased student attendance (Abdullah et al., 2022).

Nearpod is a medium that is able to meet the needs of students who have visual, auditory, and kinesthetic learning styles. A learning platform that makes it easy for students and teachers to interact directly and indirectly. Such platforms can be of great benefit to students in terms of their independent learning (Anggoro et al., 2022). The features provided in this application include interactive boards, discussion walls, evaluation questions, interactive material simulations, and 3D form media, VR, videos, etc. The advantages of Nearpod learning media are an attractive display for students, accessible via devices, and teachers can monitor student activities directly. There are three options for using the Nearpod application, namely live lessons, live lessons + zoom, and the third can be accessed by students at any time by entering via a link or access code shared by the teacher. So, the development of Nearpod learning media can make it easier for teachers to deliver material and students understand the material.

Environmental pollution and its impact on ecosystems is one of the materials taught to students in class VII. In this material students usually tend to be assigned to read the material only. This certainly does not provide a learning experience for students. Therefore, learning media is needed that allows students to carry out learning activities other than reading, including being able to do quizzes, watch learning videos, work on game-based questions, or be able to interact with the teacher. Based on this, there is one learning media that can support learning activities by providing various fun learning activities for students, namely Nearpod.

Based on previous research discussing the use of the Nerapod application as a learning medium including: a) Use of the Nearpod Application for Integrated Thematic Learning Teaching Materials Theme 8 Sub-theme 1 Learning 3 Class IV Elementary School by Mayang Putri Minalti and Yeni Erita (Minalti & Erita, 2021), the results obtained were 90% material

validity, 71% language validity and 77.6% design validity; b) Development of Nearpod E-Media through the Discovery Learning Model to Improve Students' Critical Thinking Skills in Elementary Schools by Tri Adi Susanto, the research results are very feasible and effective in increasing students' critical thinking skills (Susanto, 2021). In addition, research reveals a positive attitude towards the use of digital platforms (Nearpod platform), and a positive correlation between problem-solving abilities and attitudes towards platform use for third graders (Afnan Takhaneh & Al-Kasasbeh, 2022). Researchers have not found articles that discuss the use of Nearpod learning media in junior high school science learning, especially on environmental pollution material. Therefore, researchers are interested in developing Nearpod as a learning medium in science subjects in the class VII environmental pollution chapter, considering that this platform is very relevant for use in the teaching and learning process, especially in science lessons.

Method

This research uses the type of development research. The type of research used by researchers is Research and Development (R&D) research and development. Research and Development (R&D) is a research method used to produce certain products, and test the feasibility of these products (Sugiyono, 2014). ADDIE is a flexible learning model developed and designed by the Center for Educational Technology, Florida State University, including 5 phases called Analysis, Design, Development, Implementation, and Evaluation (Maddison & Kumaran, 2017).

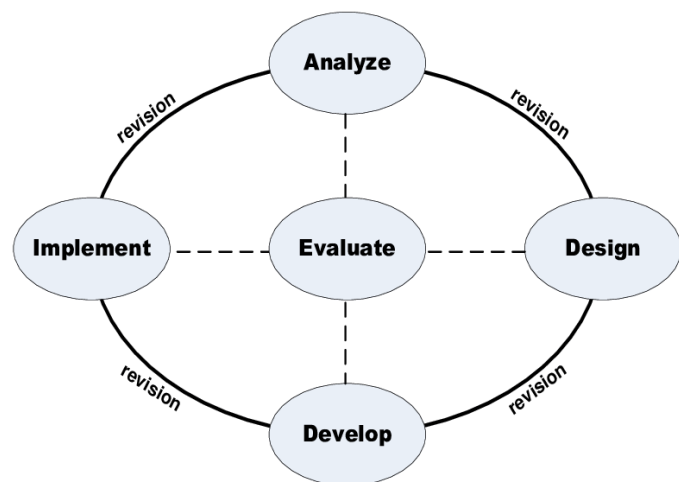


Figure 1. ADDIE model flowchart

The product resulting from this research is a nearpod media-based assessment. The development model used in this study is the ADDIE model, namely analysis, design, development, implementation, and evaluation (Branch, 2009). The development of the

ADDIE model is also used in research based on developing learning media (Dwitiyanti et al., 2020). The selection of the ADDIE model is based on the consideration that this model is composed of several systematic sequences based on needs, problem solving, and the characteristics of learning Indonesian, however this research focuses on the Analysis, Design and Development stages. This development model is a model that focuses more on products so that it is suitable for developing animated video content for learning Natural Sciences, especially environmental pollution material.

Result and Discussion

The development research entitled “Development of Nearpod-Based Interactive Learning Media” The stages of the ADDIE Development model in Research and Development (R&D) research have been completed. The ADDIE paradigm is often applied to instructional development, but can also be applied to making models, learning approaches, learning methods, media, and teaching materials (Puspasari, 2019). Effective ADDIE instructional design focuses on carrying out authentic tasks, complex knowledge, and original problems (Hidayat & Nizar, 2021). The development stages consist of the Analysis, Design, and Development stages. The stages of developing Nearpod-based learning media are as follows:

Analysis Stage

In the first stage the researcher conducted interviews with science teachers to obtain the data needed in the stages of developing learning media. The analysis obtained includes needs analysis, curriculum analysis, and student analysis. The first stage in this development research was the needs analysis stage by conducting interviews at Mutiara Bunda Middle School, Cilegon. The results of the analysis from this step are self-evaluation and follow-up evaluation to improve the results of the analysis (Widyastuti & Susiana, 2019). The results of this analysis become a reference in the development of interactive multimedia-based learning media on environmental pollution material. Therefore, researchers think of developing interactive multimedia-based learning media so that it is interesting, and students' curiosity about the learning material presented and makes students not feel bored even though carrying out distance learning.

Next, the researcher conducted a curriculum analysis. The process of curriculum analysis begins with the selection of learning materials that are in accordance with the curriculum used in schools, namely the 2013 curriculum. Furthermore, further studies are carried out on Core Competencies (KI) and Basic Competencies (KD), indicators, and goals to be achieved in subjects and

their application which refers to Permendikbud number 37 of 2018. At this stage the process of preparing something to be implemented to achieve the desired learning objectives, preparation of lesson plans, media and learning materials (Eriani, 2020).

Design Stage

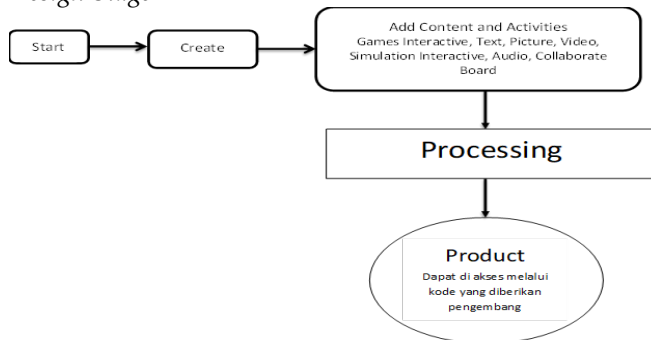


Figure 2. Nearpod-Based Learning Media Development Flowchart

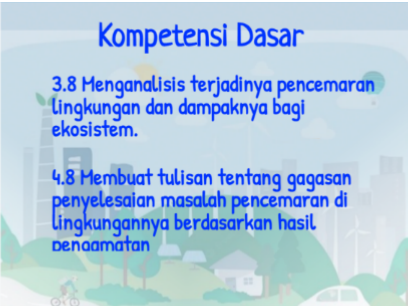
At this stage, the researcher begins to develop a design for making learning media using the Nearpod application with the following steps: 1) Determining achievement indicators that are in accordance with Basic Competency; 2) Create materials and add animated videos; 3) Making quizzes and games; 4) Added interactive simulations and discussion boards; 5) Determination of the background image.

Development Stage

This stage is the stage that contains activities for the realization of product development and design and determines supporting media. In this production process, the researcher directly compiled learning media using the features available in the Nearpod application. This stage is the process of developing nearpod-based interactive media in making learning media using the Nearpod application as follows:

Table 1. Story board of nearpod-based interactive media development

Scene	Appearance	Description	Information
		The initial display when students have entered via the link provided.	
1		The opening is the title of the material to be presented. Background taken from google. Writing optimized from available features. At the bottom there is a navigator.	The first scene will be filled with voice from the developer as the opening of the learning media.
2		Given rules in following the lesson. Background taken from google. Writing optimized from available features.	The second scene is filled with the developer's voice to explain the rules during the learning process

Scene	Appearance	Description	Information
3		Provide information to KD students on this material. Background taken from google. Writing optimized from available features.	The third scene is filled with the developer's voice to explain basic competence in environmental pollution material.

In this study resulted in the application of interactive learning media on environmental pollution material which is expected to train students' cognitive abilities, both the ability to see, listen. This learning media focuses on animated videos, simulations, open discussions. In addition, this application also provides an interactive quiz menu.

Conclusion

The process of developing interactive multimedia-based learning media in the form of the Nearpod application for class VII environmental pollution learning at Mutiara Bunda Cilegon Middle School uses the ADDIE development model starting from analyzing, designing, and developing. At the analysis stage, the researcher conducted interviews with the science teacher at Mutiara Bunda Middle School, Cilegon. Next is the planning stage, the researcher begins to design learning media by considering the results of the interviews and makes learning media with the help of the Nearpod application. The last stage is development, the researcher develops the learning media that has been designed and then validates the media experts and material experts. So that it can be implemented in the science learning process, especially environmental pollution material.

References

Abdullah, M. I., Inayati, D., & Karyawati, N. N. (2022). Nearpod use as a learning platform to improve student learning motivation in an elementary school. *Journal of Education and Learning (EduLearn)*, 16(1), 121-129. <https://doi.org/10.11591/edulearn.v16i1.20421>

Afnan Takhaneh, B. H., & Al-Kasasbeh, B. M. (2022). The Effect of Using Digital Education in Developing the Problem-Solving Ability and Attitudes towards Nearpod Platforms among Primary Stage Students in Jordan. *Journal of Education*, 143, 30-11. <https://doi.org/10.34120/0085-036-143-021>

Anggoro, K. J., Khasanah, U., & Milnes, N. (2022). Nearpod Slides to Enhance Students' Self-Study.

Studies in Self-Access Learning Journal, 13(4), 142-146. <https://doi.org/10.37237/130405>

Branch, R. M. (2009). *Instructional Design: The ADDIE Approach*. New York: Springer. <https://doi.org/10.1007/978-0-387-09506-6>

Dwitiyanti, N., Kumala, S. A., & Widiyatun, F. (2020). Using the ADDIE model in development of physics unit conversion application based on Android as learning media. *Formatif: Jurnal Ilmiah Pendidikan MIPA*, 10(2), 125-132. <https://doi.org/10.30998/formatif.v10i2.5933>

Eriani, E. (2020). Mitra Ash-Shibyan Blended Learning : Kombinasi Belajar Untuk Anak Usia Dini. *Jurnal Pendidikan Dan Konseling*, 3(1), 11-21. <https://doi.org/10.46963/mash.v3i01.112>

Hanifah Salsabila, U., Irna Sari, L., Haibati Lathif, K., Puji Lestari, A., & Ayuning, A. (2020). Peran Teknologi Dalam Pembelajaran Di Masa Pandemi Covid-19. *Al-Mutharahah: Jurnal Penelitian dan Kajian Sosial Keagamaan*, 17(2), 188-198. <https://doi.org/10.46781/al-mutharahah.v17i2.138>

Haryani, P., & Triyono, J. (2017). Augmented Reality (Ar) Sebagai Teknologi Interaktif Dalam Pengenalan Benda Cagar Budaya Kepada Masyarakat. *Simetris : Jurnal Teknik Mesin, Elektro dan Ilmu Komputer*, 8(2), 807. <https://doi.org/10.24176/simet.v8i2.1614>

Hidayat, F., & Nizar, M. (2021). Model Addie (Analysis, Design, Development, Implementation and Evaluation) Dalam Pembelajaran Pendidikan Agama Islam. *Jurnal Inovasi Pendidikan Agama Islam (JIPAI)*, 1(1), 28-38. <https://doi.org/10.15575/jipai.v1i1.11042>

Listiyani, N., Hidayat, S., & Nulhakim, L. (2021). Development of Augmented Reality Flashcard Media to Improve the Ability of Grade IV Elementary School Students in Reading Understanding of Alternative Energy Source Materials. *Jurnal Penelitian Pendidikan IPA*, 7(1), 15-21. <https://doi.org/10.29303/jppipa.v7i1.861>

Maddison, T., & Kumaran, M. (2017). *Distributed Learning: Pedagogy and Technology in Online Information Literacy Instruction*. Chandos

- Publishing. <https://doi.org/10.1016/C2015-0-00018-1>
- Messina, D. M., Mikhail, S. S., Messina, M. J., & Novopoltseva, I. A. (2022). Assessment of learning outcomes of first year dental students using an interactive Nearpod educational platform. *Journal of Dental Education*, 86(7), 893-899. <https://doi.org/10.1002/jdd.12901>
- Minalti, M. P., & Erita, Y. (2021). Penggunaan Aplikasi Nearpod Untuk Bahan Ajar Pembelajaran Tematik Terpadu Tema 8 Subtema 1 Pembelajaran 3 Kelas IV Sekolah Dasar. *Journal of Basic Education Studies*, 4(1), 2231-2246. Retrieved from <https://www.ejurnalunsam.id/index.php/jbes/article/view/3724>
- Puspasari, R. (2019). Pengembangan Buku Ajar Kompilasi Teori Graf dengan Model Addie. *Journal of Medives: Journal of Mathematics Education IKIP Veteran Semarang*, 3(1), 137. <https://doi.org/10.31331/medivesveteran.v3i1.702>
- Shehata, N., Mitry, C., Shawki, M., & El-Helaly, M. (2020). Incorporating Nearpod in undergraduate financial accounting classes in Egypt. *Accounting Education*, 29(2), 137-152. <https://doi.org/10.1080/09639284.2019.1704806>
- Sugiyono. (2014). *Metode Penelitian Kuantitatif, Kualitatif dan R&D*. Alfabeta.
- Suryani, N., Setiawan, A., & Aditin Putria. (2018). Media pembelajaran inovatif dan pengembangannya (Pipih Latifah (ed.). In *Sifonoforos*, 1.
- Susanto, T. A. (2021). Pengembangan E-Media Nearpod melalui Model Discovery untuk Meningkatkan Kemampuan Berpikir Kritis Siswa di Sekolah Dasar. *Jurnal Basicedu*, 5(5), 3498-3512. Retrieved from <https://jbasic.org/index.php/basicedu/article/view/1399>
- Syah, R. H. (2020). Dampak Covid-19 pada Pendidikan di Indonesia: Sekolah, Keterampilan, dan Proses Pembelajaran. *SALAM: Jurnal Sosial dan Budaya Syar-i*, 7(5). <https://doi.org/10.15408/sjsbs.v7i5.15314>
- Widyastuti, E., & Susiana. (2019). Using the ADDIE model to develop learning material for actuarial mathematics. *Journal of Physics: Conference Series*, 1188(1). <https://doi.org/10.1088/1742-6596/1188/1/012052>