

Development of TikTok Application-Based Learning Media on Environmental Change Material for Class X SMA Negeri 1 Gorontalo

Sri Agustina Ilahude¹, Abubakar Sidik Katili^{2*}, Chairunnisah J. Lamangantjo³

Department of Biology Education, Faculty of Mathematics and Natural Sciences, Gorontalo State University

¹ichailahude18@gmail.com; ²abubakarsidik@ung.ac.id; ³chairunnisah@ung.ac.id

*Corresponding author: abubakarsidik@ung.ac.id

Submission : 12/06/2024

Revision : 06/08/2024

Accepted : 18/08/2024

ABSTRACT

This research aims to develop learning media for Environmental Change material based on the TikTok application for class X students at SMA Negeri 1 in Gorontalo. This research is development research using the ADDIE model with trials on 20 students. This research analyzes data on learning media development, namely data analysis of validity, practicality, and effectiveness. The research results showed that (1) The media validity test based on percentages obtained a score of 95.8% (Very Valid), and the material validity test based on percentages obtained a score of 86% (Very Valid), (2) The Practicality Test consisted of Student Responses and Teacher Response. The student response test obtained a score of 83% (Very Practical), and the Teacher Response test obtained 90% (Very Practical). (3) The student learning outcomes test was obtained from the Pretest and Posttest evaluation results, based on the N-Gain scale, obtaining a score of 0.57 which is included in the (Medium) category. Based on the results of trials developing the TikTok media, it is categorized as valid, practical, and effective for use in classroom learning.

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



Keywords: Learning Media, Environmental Change, Tiktok Application

Introduction

Education is an important component in advancing science and technology and plays an important role in improving individual quality and competence. The main function of

education is to develop human potential through teaching and learning activities, especially in the context of technological advances. This is important because, through education, efforts to optimize the potential of human resources can be realized. Education also plays a role in preparing the younger generation to face changing times in the current global era. Technological developments specifically impact the field of education, changing the way of learning through the use of media, methods, and the learning outcomes obtained ([Susilawati et al., 2020](#)).

Education continues to experience dynamic transformation throughout the world, including in Indonesia, triggered by advances in internet-based science and technology. Advances in digital and information technology play an important role in supporting educational development ([Surani, 2019](#)). One of the striking changes is the digitalization of knowledge, which changes the way of learning from being limited by space and time to being more flexible. One aspect of significant change is the integration of technology as a learning medium in schools, which must follow current technological developments. The challenge of 21st-century learning is to combine technology as a means to develop learning skills ([Kurniawati & Nita, 2018](#)). Innovation is needed in the field of education, especially in the creation of educational programs and the application of learning media, therefore students can be trained in critical and creative thinking to master technology. Students are encouraged to develop their skills in scientific methods because technology is seen as the key to a country's modernization and progress ([Mardhiyah et al., 2021](#)). Learning aids that suit student characteristics are very important to achieve these learning objectives. One part of the learning system is learning media, which allows communication between teachers and students. Technology-based learning media is a type of learning media that can increase the effectiveness, efficiency, and quality of learning outcomes ([Kuswanto, 2018](#)). The importance of learning media also lies in its suitability to the interests and preferences of students. It is hoped that the learning media chosen can attract students' interest so that they can absorb the learning material more optimally and be able to implement it well under the guidance of educators ([Purba, 2020](#)).

Learning media functions to arouse students' interest, attention, and thinking in learning activities to achieve learning goals ([Tafano, 2018](#)). Interesting learning media can stimulate students' interest during the learning process. Management of learning aids is very important in formal educational institutions, where learning media can be used as a tool in teaching and learning activities. One form of teacher creativity is the ability to choose the right learning media. Learning media is a form used for a process that aims to convey information from an educator to students ([Muslih, 2016](#)). The use of learning media can overcome the challenges that arise when conventional methods dominate the learning process. Interesting learning media can improve the quality of student learning. This is due to technological advances which help improve students' understanding of the material taught by educators. According to taxonomy, media is divided into several categories, such as audio media, print media, still visual media, moving visual media, and semi-moving media ([Kaltsum, 2017](#)). Apart from that, learning media includes all types of tools or facilities used in the learning process. The types of learning media according to [Ichsan et al. \(2021\)](#) are visual media, audio media, and audio-visual media.

One of the learning media that is currently popular is the TikTok video media. Generation Z's use of TikTok is a challenge for educators not only to view it as mere entertainment to relieve boredom but also to ensure that the use of this platform is accompanied by meaningful education so that the impact is more positive for students. Educator creativity is very much needed considering technological advances that continue to develop. Changes in the academic system that integrate social media as an innovative method can help achieve educational goals in the current era of digital globalization ([Zubaidi et al., 2021](#)).

Methods

This research is a type of development research that focuses on product development. Learning media development uses the ADDIE model development which consists of analysis, design, development, implementation, and evaluation ([Setiadi & Yuwita, 2020](#)). However, research is only limited to the development stage. The data analysis technique in this research is TikTok media validation analysis, practicality analysis consisting of teacher responses and student responses, and analysis of learning outcomes using N-gain in limited trials through pretest-posttest evaluation.

Results and Discussion

Based on the research results, a product on environmental change material was obtained as TikTok video media. There were 3 phases carried out in developing this learning video. Starting with the initial analysis phase, namely conducting observations and interviews with the class X biology teacher where information was obtained regarding the obstacles faced by teachers and students in the learning process. For example, learning tends to use textbooks so students need supporting media in learning biology, especially environmental change material. Then it was discovered that the curriculum used at SMA Negeri 1 Gorontalo was an independent learning curriculum, to achieve learning outcomes interactive learning media was needed. The statement above strengthens previous research from Susanti et al. (2024), that the independent curriculum opens up opportunities for students to learn and learning must be carried out actively, creatively, and innovatively so that students feel challenged and involved in the learning process.

The design phase is the implementation of preparing the video script to prepare TikTok media. Researchers begin to create a product design, namely by collecting the necessary tools or materials, such as video editing applications, supporting images and animations, audio, and learning materials that will be explained. During the process of making the video, the researchers focused more on the use of animated images in the video, this was because in question number 5 out of 20 students preferred animated videos as a reference for learning videos, this was because students were more interested in animated videos for learning biology. This supports research by [Laelasari \(2024\)](#), that students tend to be interested in learning media that displays animation and other interesting displays.

The final phase of this research is development, at this stage, the researcher tests the validity of the product with material and media experts and then conducts a limited-scale trial. Two validators, each carrying out validation.

1) Media Expert Validation

The validation results from 1 media validator regarding the development of TikTok-based learning videos on environmental change material for class X SMA obtained results that were suitable for testing with minor revisions. Validators on average said they agreed with the design used in the media on the validation sheet which was assessed by media expert validators consisting of several validity variables which included layout aspects, text aspects, video aspects, audio aspects, programming, and packaging aspects. The overall validation results of media expert assessments can be seen in Figure 1.

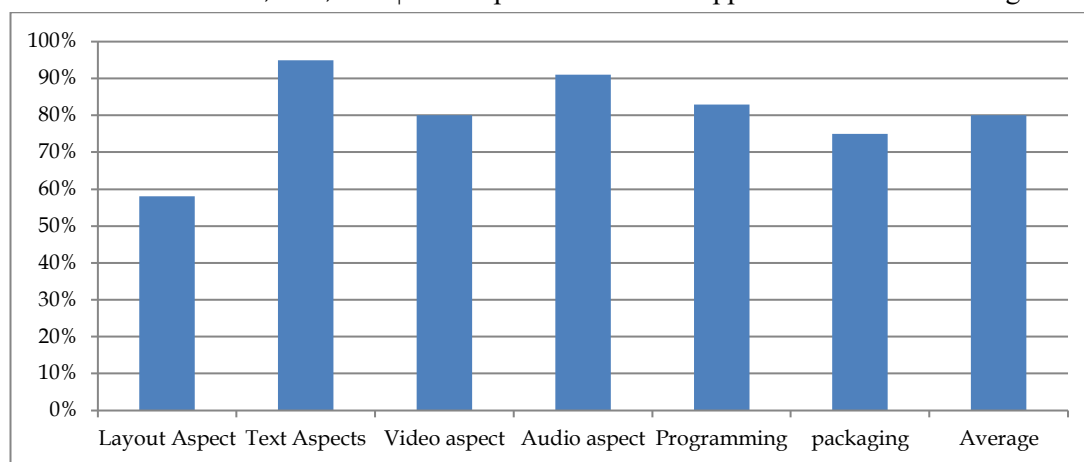


Figure 1. Media Expert Validation Graph

Based on data obtained from TikTok learning videos about environmental changes in class X SMA Negeri 1 Gorontalo, the media is considered very reliable and can be used with an accuracy rate of 86% according to validation criteria.

2) Material Expert Validation

The development of TikTok videos on environmental change material for class This step includes analyzing the data from the validity study on the validation sheet. The assessment results from the material validator consist of material aspects, linguistic aspects, and material presentation aspects. The overall validation results of media expert assessments can be seen in Figure 2.

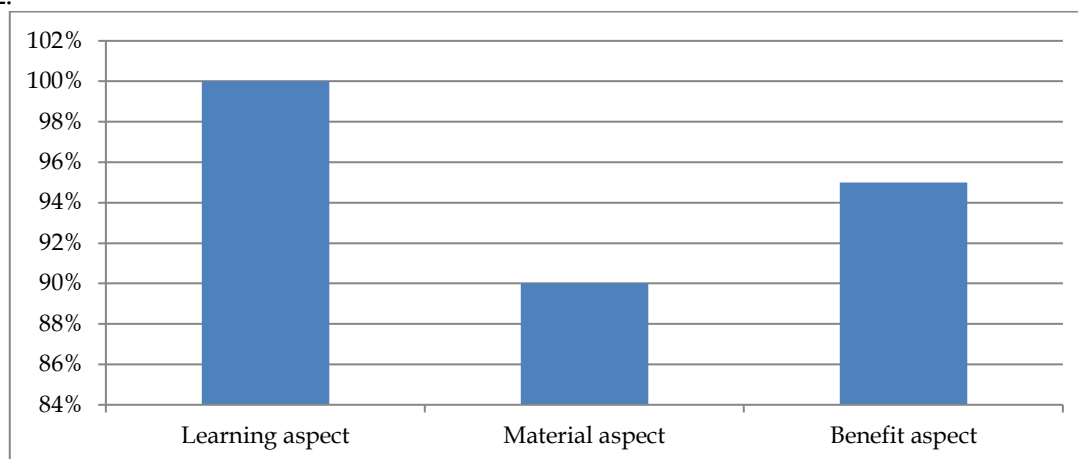


Figure 2. Material Expert Validation Graph

Based on the data obtained, a TikTok-based biology learning video on Environmental Change material in class X SMA Negeri 1 Gorontalo is said to be valid for use with an average score of 95% according to the criteria set in validation.

3) Media Plan Revision

Table 1. Revision of Material Design

No.	Before Revision	After Revision
1.	Small-scale revisions regarding the presentation and delivery of material to make it more in-depth	Material has been added to the video

Table 2. Revision of Media Design

No.	B efore Revision	After Revision
1.	Fixed animated video display 	The animated video display has been improved 
2.	The learning objective font is clarified 	The learning objective font has been corrected 

4) Practicality Analysis

After the product is declared feasible and valid by material expert validators and media experts, the next stage is product testing which aims to determine the research subject's response to the product that has been developed. The product was tested on a biology teacher who taught in class X at SMA Negeri 1 Gorontalo.

Based on the calculation of the test results, responses from biology subject teachers show that the content aspect of the material received a score of 92% with very practical criteria, the linguistic aspect received a score of 87% with very practical criteria, and the visual communication aspect received a score of 100% which is included in very practical criteria. A summary of the results of the teacher's responses can be seen in Figure 3.

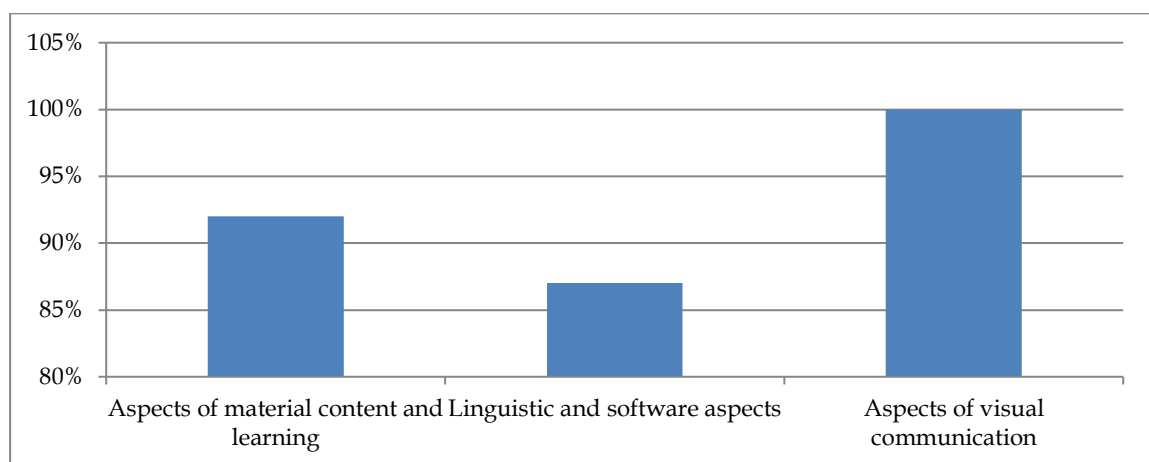


Figure 3. Graph of Teacher Response Analysis Results

After the product has been tested on biology subject teachers, it will then be tested on a small scale on class X students at SMA Negeri 1 Gorontalo. The results of class X students' responses can be seen in Figure 4.

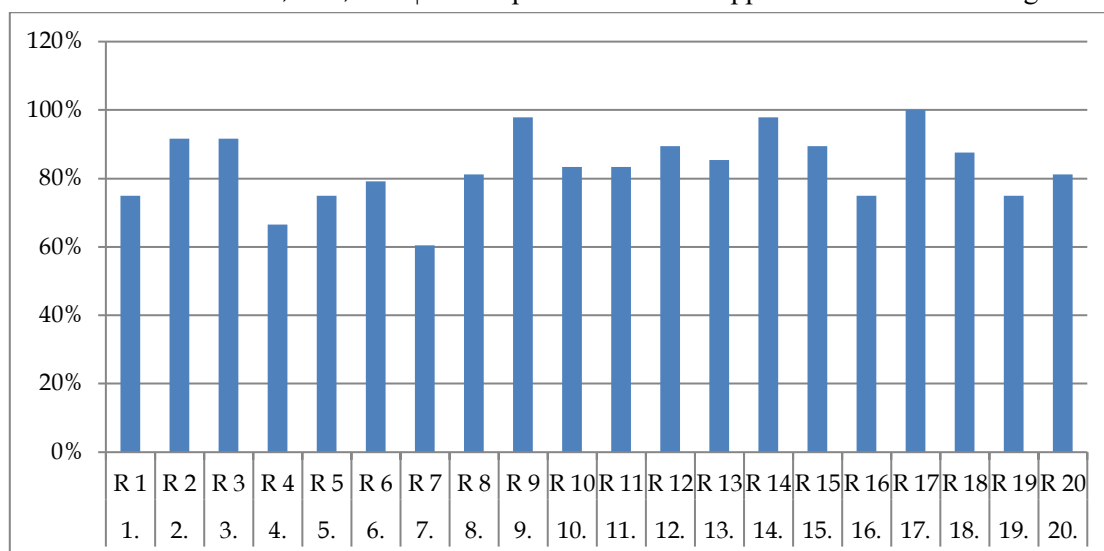


Figure 4. Student Practicality Graph

The results of the student response trials in Figure 4.4 were analyzed using a formula. The percentage results of 20 class X students obtained an average score of 83% with very practical and usable criteria.

5) Analysis of Learning Results

Student learning outcomes are then measured using research instruments in the form of pre-tests and post-tests. The pre-test and post-test are multiple-choice questions with 10 question numbers. The learning results of class X SMA Negeri 1 Gorontalo students can be seen in Figure 5.

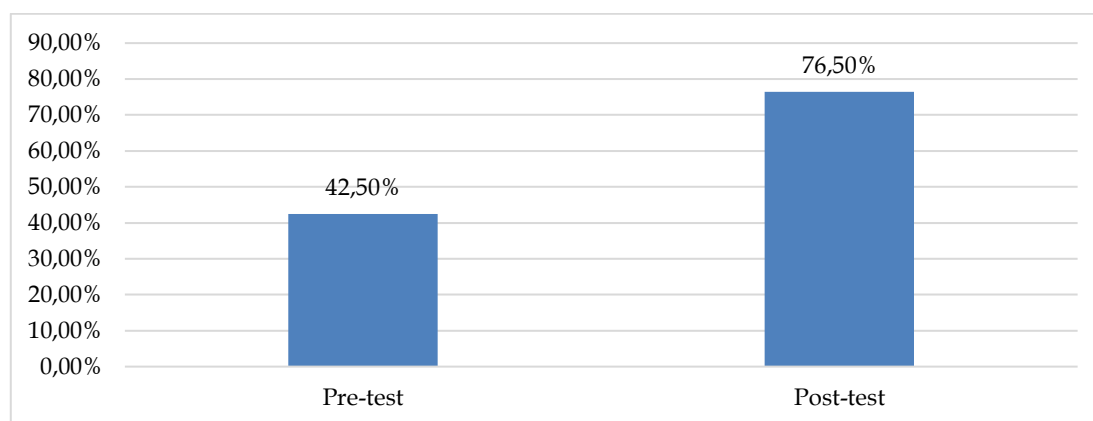


Figure 5. Graph of Student Learning Results

Based on data from Figure 4.5, the learning outcomes of each class X student at SMA Negeri 1 Gorontalo show an increase in student learning outcomes with an average gain index of 0.57 which is included in the medium criteria.

Discussion

Based on the research results, a product on environmental change material was obtained as TikTok video media. There were 3 phases carried out in developing this learning video. Starting with the initial analysis phase, namely conducting observations and interviews with

the class X biology teacher where information was obtained regarding the obstacles faced by teachers and students in the learning process. For example, learning tends to use textbooks so students need supporting media in learning biology, especially environmental change material. Then it was discovered that the curriculum used at SMA Negeri 1 Gorontalo was an independent learning curriculum, to achieve learning outcomes interactive learning media was needed. The statement above strengthens previous research from [Susanti et al. \(2024\)](#) that the independent curriculum opens up opportunities for students to learn and learning must be carried out actively, creatively, and innovatively so that students feel challenged and involved in the learning process.

Based on this description, researchers developed learning media in the form of TikTok-based learning videos made so that they can be accessed on smartphones, which will make it easier for students to learn because students can access the web or application anywhere and at any time. The function of learning videos, according to [Yudianto \(2017\)](#), learning videos are used as additional material for handout material or as independent learning media. It means the use of media in the learning process aims to improve students' ability to learn independently without relying on attending educators, as well as functioning as a media and evaluation tool that is effective and easy to understand by students.

The design phase is the implementation of preparing the video script to prepare TikTok media. Researchers begin to create a product design, namely by collecting the necessary tools or materials, such as video editing applications, supporting images and animations, audio, and learning materials that will be explained. During the process of making the video, the researchers focused more on the use of animated images in the video. This was because, in question number 5 out of 20 students preferred animated videos as a reference for learning videos, as students were more interested in animated videos for learning biology.

This supports research by [Susanti et al. \(2024\)](#) that students tend to be interested in learning media that displays animation and other interesting displays. At this stage is the process of designing TikTok video teaching materials which include:

a) Material Selection

Based on the results of observations and interviews, the selection of Environmental Change material is material that will be discussed through TikTok video learning media. This material will describe the learning objectives of environmental change, and the causes and negative impacts of environmental change. Starting from analyzing environmental pollution, types of pollution, environmental damage, and human efforts in handling waste.

b) Formulation of Learning Objectives

The learning objectives for this material are based on the learning objectives that have been designed by the class X teacher at SMA Negeri 1 Gorontalo. Identifying the learning objectives of the material to be studied is very important so that the material presented is following the learning needs and abilities that students are expected to master ([Wulandari & Mardhiyana, 2022](#)).

c) Making TikTok Video Designs

Design creation begins with researchers accessing the TikTok web application and then joining using the registered email and password. Next, the researchers began designing the TikTok video design using the CapCut application to clarify the sound, clarify the video quality, and add background sound. Apart from that, the Canva application is for designing learning media with elements such as animated images and activities explained in the learning media. After preparing a learning video according to the specified lesson material, students can view the video directly via the TikTok link that has been shared.

The final phase of this research is development, at this stage the researcher tests the validity of the product with material and media experts and then conducts a limited-scale trial. The validity of TikTok-based learning video material experts pay attention to elements which include learning aspects, material aspects and benefit aspects. Based on the validity results from material experts, a score of 95% was obtained with very valid criteria. Based on these results, expert validators still provide notes to improve the quality of material aspects. In the material aspect, it has a score of 90% with very valid criteria, according to Akbar (2016), if the validity value obtained is 86% -100% then the learning media is categorized as very valid or suitable for use both in teaching activities and for testing.

The validity of TikTok-based learning video media experts pays attention to the elements in it including aspects of layout, text, video, audio, programming and packaging. Based on the validity results from media experts, a score of 86% was obtained with very valid criteria. Based on these results, the expert validator noted that there was no feedback on the quiz for students.

The results of the practicality test given by 20 students were 80%, and the teacher's assessment was 90%, the results were considered very practical. Regarding the response criteria, a score of 81%-100% is considered very practical. This shows that TikTok-based video teaching materials are good for use as learning support media. Researchers found that TikTok-based video teaching materials met the eligibility criteria for developing TikTok videos because they used clear and easy-to-understand language, and presented the material visually in a very interesting way. This is following previous research conducted which explained that teaching materials for videos must fulfill two main components, namely language aspects and visual aspects. The language aspect must use language that is clear and easy to understand, and the visual aspect must use interactive media such as images, animations, or photos that are relevant to the subject matter.

After the practical results are carried out, the test results are then calculated. The results of the pre-test answers show that the scores obtained by students before implementing learning using TikTok videos were low scores. This is because students do not understand material about environmental change. Furthermore, the post-test value shows changes with high values. This states that the use of TikTok video media can improve learning outcomes as indicated by increasing post-test scores and can increase students' understanding of the concepts being studied.

Conclusion

Based on the research that has been conducted, it can be concluded that TikTok video learning media can improve student learning outcomes regarding environmental change material. The ability of learning outcomes can be seen from the average post-test score compared with the pretest score. The success of this learning media can encourage students to learn more easily, where students do not only rely on textbook teaching materials but can learn through TikTok videos at any time.

Based on the results of material expert validation, a score of 95.8% was obtained and the results of validation from media experts obtained a score of 86%, so overall the validation results obtained an average validator score of 90.90%, meaning that the TikTok video developed had reached very valid criteria. The results of the TikTok video practicality test obtained an average teacher response of 90% and student response results of 83% which were included in the very practical criteria. This shows that the learning media is practical and can be used. Student learning outcomes using TikTok videos obtained an average N (gain) in class X SMA Negeri 1 Gorontalo of 0.57 which is included in the medium criteria.

References

- Akbar, S. (2016). *Learning Tool Instrument*. Bandung: PT Teen Rosdakarya.
- Ichsan, J. R., Suraji, M. A. P., Muslim, F. A. R., Miftadiro, W. A., & Agustin, N. A. F. (2021). Media Audio Visual dalam Pembelajaran di Sekolah Dasar. *Seminar Nasional Hasil Riset Dan Pengabdian Ke-III (Snhrp-III 2021)*, 183–188.
- Kaltsum, H. U. (2017). Utilization of educational teaching aids as elementary school English learning media. *Urecol: University Research Colloquium*, 19–24.
- Kurniawati, I. D., & Nita, S.-. (2018). Media Pembelajaran Berbasis Multimedia Interaktif Untuk Meningkatkan Pemahaman Konsep Mahasiswa. *DoubleClick: Journal of Computer and Information Technology*, 1(2), 68. <https://doi.org/10.25273/doubleclick.v1i2.1540>
- Kuswanto, J. (2018). Android-Based Learning Media in Class XI Network Operating Systems Subjects. *Infotama Media Journal*, 14(1), 15–20. <https://doi.org/10.37676/jmi.v14i1.467>
- Laelasari, F. (2024). *The effect of applying YouTube learning media on increasing students' learning motivation and critical thinking skills in PAI learning at SMAN 3 Sumedang*. UIN Sunan Gunung Djati Bandung.
- Mardhiyah, R. H., Aldriani, S. N. F., Chitta, F., & Zulfikar, M. R. (2021). The importance of learning skills in the 21st century as a demand in human resource development. *Lectura: Journal of Education*, 12(1), 29–40. <https://doi.org/10.31849/lectura.v12i1.5813>
- Muslih. (2016). Utilization of ICT-Based Learning Media in TPQ Non-formal Education Institutions. *Dimas: Journal of Religious Thought for Empowerment*, 16(2), 215–234. <https://doi.org/10.21580/dms.2016.162.1090>
- Purba, R. A. (2020). *Introduction to Learning Media: Our Writing Foundation*.
- Setiadi, G., & Yuwita, N. (2020). Development of Indonesian Language Course Modules Using the Addie Model for Iai Sunan Kalijogo Malang Students. *Academics: Journal of Islamic Education Management*, 2(2), 200–217. <https://doi.org/10.51339/akademika.v2i2.207>
- Surani, D. (2019). Literature study: The role of educational technologists in education 4.0. *In Proceedings of the National FKIP Education Seminar*, 2(1), 456–469.
- Susanti, H., Mulyawan, H., Nanang Purnama, R., Aulia, M., & Kartika, I. (2024). Independent Curriculum Development to Improve the Quality of Learning. *Reslaj: Religion Education Social Laa Roiba Journal*, 6(4), 13404–13408.
- Susilawati, F., Gunarhadi, G., & Hartono, H. (2020). Pentingnya Pengembangan Bahan Ajar Tematik Dalam Peningkatkan Karakter Peduli Lingkungan Siswa. *EduHumaniora | Jurnal Pendidikan Dasar Kampus Cibiru*, 12(1), 62–68. <https://doi.org/10.17509/eh.v12i1.15068>
- Tafano, T. (2018). The Role of Learning Media in Increasing Student Interest in Learning. *Journal of Educational Communication*, 2(2), 103.
- Wulandari, N. I., & Mardhiyana, D. (2022). The effectiveness of collaborative water learning models with CRH assisted by learning videos on understanding mathematical concepts. *Kadikma*, 13(3), 135–143. <https://doi.org/10.19184/kdma.v13i3.33738>
- Yudianto, A. (2017). Application of Video as a Learning Media. *National Education Seminar 2017*, 234–237.

Zubaidi, A., Junanah, J., & Shodiq, M. J. F. (2021). Development of Mahârah Al-Kalâm Learning Media Based on Social Media Using the Tiktok Application. *Arabi: Journal of Arabic Studies*, 6(1), 119–134. <https://doi.org/10.24865/ajas.v6i1.341>