



Development of Hertovid (History Vertical Short Video) Based on YouTube Short on the Sendang Duwur Tomb Site Material for Students of SMAN 1 Paciran Lamongan

Nabih Mufarrih,^{1*} Najib Jauhari¹

¹Universitas Negeri Malang, Indonesia

*nabihmufarrih.2107316@students.um.ac.id

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Abstract: The media becomes something important in the learning process. Technological development that has been used massively has an impact on efficiency in various aspects of life, should be utilized in the development of learning media. The purpose of this study is to develop a learning media called Hertovid (History Vertical Short Video) based on YouTube Shorts and evaluate its validity, feasibility of learning media, and effectiveness. Hertovid containing historical content of the Sendang Duwur Tomb Site. The development of Hertovid in this study uses the Research and Development (R&D) method, following Sugiyono's model. At the product design validation carried out by material expert validators, obtaining 94,5%, and the media expert obtained 91,1%. The subjects used in the product initial trial and the product usage trial were 31 students from class X-E2 SMAN 1 Paciran. The percentage of 85,73% obtained from the initial trial result and 86,45% from the usage trial result. From this study, data were obtained that Hertovid is a historical learning media that is very feasible to use in learning and effective in improving students' understanding of the Sendang Duwur Tomb Site content.

Keywords: Hertovid; learning media; Sendang Duwur tomb site

Abstrak: Media menjadi sesuatu hal yang penting dalam proses pembelajaran. Perkembangan teknologi yang telah digunakan secara masif berdampak pada efisiensi di berbagai aspek kehidupan, seharusnya dapat dimanfaatkan dalam pengembangan media pembelajaran. Tujuan dari penelitian ini yaitu menghasilkan media pembelajaran Hertovid (*History Vertical Short Video*) berbasis *YouTube Shorts* dan menguji validitas, kelayakan media pembelajaran serta keefektifannya. Hertovid mengambil materi mengenai Situs Makam Sendang Duwur. Pengembangan Hertovid dalam penelitian ini menggunakan metode *Research and Development* (R&D) yang mengacu pada model Sugiyono. Pada tahap validasi desain produk, dilakukan oleh validator ahli materi dengan perolehan 94,5% dan dari ahli media diperoleh 91,1%. Subjek yang digunakan dalam uji coba awal dan uji coba pemakaian produk merupakan peserta didik kelas X-E2 SMAN 1 Paciran dengan jumlah 31 orang. Persentase sebesar 85,73% diperoleh dari hasil uji coba awal dan dari hasil uji coba pemakaian sebesar 86,45%. Dari penelitian ini diperoleh data bahwa Hertovid adalah media pembelajaran sejarah yang sangat layak untuk digunakan dalam pembelajaran dan efektif untuk meningkatkan pemahaman peserta didik pada materi Situs Makam Sendang Duwur.

Kata Kunci: Hertovid; media pembelajaran; situs makam Sendang Duwur



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Inrtoduction

Since the 4.0 Industrial Revolution became popular globally in 2016 the utilization of information and communication technology has led to increased interaction between humans, machines, and resources in a more integrated manner (Sulistyo et al., 2020). In addition to the 4.0 Industrial Revolution, the concept of Society 5.0 was introduced in 2019 by Japan Ministry of Economy, Trade and Industry (METI), which in this era, information and communication technology is extensively utilized, leading to increased efficiency across various aspect of life, including education (Sakiinah et al., 2022). These developments require to create creative and innovative learning processes that utilize available technology.

Therefore, educators play crucial role in teaching history in a way that keeps pace with the times. As stated in Regulation of the Indonesia Ministry of Education, Culture, Research, and Technology No. 032/H/KR/2024 (BSKAP, 2024), history educators have the role of connecting the past, present, and future by stimulating student's emotional and critical reasoning through imaginative, creative, critical, and reflective skills based on authentic sources. In line with this regulation, Arsyad (2020) argues that educators are required to use tools and leverage technology appropriate to the times to be applied in the learning process. Therefore, history educators must adapt to the era of Society 5.0 and the 4.0 Industrial Revolution so that history leaning can be more advanced and presented in an engaging and innovative manner, accompanied by innovations in the implementation of history learning (Ambarnis, 2023).

The study of history plays a key role in fostering historical awareness among students, where past events can serve as a basis for evaluating the future, rather than merely memorizing names, places, and dates (Susanto, 2014). Each subject has its own characteristics, including history, which studies significant events and societal developments that have occurred chronologically based on historical sources and incorporates key elements: people, place, and time (Fajri et al., 2023). Essentially, history learning can serve as a strategic means of instilling noble values and the nation.s heritage at both national and local levels (Nurhalizza et al., 2019). Therefore, history educators need to utilize innovative media to facilitate the delivery of both national and local historical content in the history learning process. Local history itself refers to events that occur within a confined geographical scope, have limited impacts, and associated with aspects related to region, figures, and culture (Syahputra et al., 2021).

The Sendang Duwur Tomb Site is located in Lamongan Regency, specifically in Paciran District. The site sits at an elevation of approximately 120 meters above sea level and is surrounded by limestone mountains (Nurkholishoh et al., 2021). According to Tjandrasasmita (2022), the Sendang Duwur Tomb Site was constructed during the transitional period from the Hindu-Buddhist era to the Islamic era, this can be determined from the *candrasengkala* inscription on the mosque's porch, which reads *Gunanning Salira Tirta Hayu*, signifying the year 1483 Saka or 1561 AD. Upon close examination, the architecture of the Sendang Duwur Tomb Site reveals acculturation between pre-Islamic and Islamic cultures, this acculturation is evident in the mosque building and the tomb complex (Mustopo, 2000). The discovery of this site indicates that during the transitional period along the Lamongan coast, the teachings of Islam were disseminated by Raden Nur Rahmat, also known as Sunan Sendang (Suyatno & Ayundasari, 2021). Unfortunately, students of SMA 1 Paciran are currently unaware of the material regarding the Sendang Duwur Tomb Site. Therefore, the development of educational media is necessary to assist educators in presenting the material on the Sendang Duwur Tomb Site.

Learning media refer to various forms of physical or digital tools used to assist educators in delivering instructional material during the learning process, aiming to stimulate student's

attention, enhance their understanding and learning outcomes, and optimized the process of history learning (Arsyad, 2020). The implantation of digital-based learning media requires educational institutions equipped with facilities that are compatible with intended media. Following observation conducted at SMAN 1 Paciran in February 2025, it was found that the school's facilities are adequate for the utilization of the media to be developed by the researcher. The facilities provided by the school to support the learning process include projectors in every classroom, W-Fi access available to all students, and permission for students to use smartphones during lessons under teacher supervision.

History learning media are developed with careful consideration of their usefulness and relevance to students conditions (Basri & Sumargono, 2018). However, challenges were identified in the implementation of history learning at the selected school. Based on observations, interviews with the history teacher of X Grade SMAN 1 Paciran, and need analysis, it was found that the teacher only relied on PowerPoint presentation and history textbook available in the school library. The lack of innovative media and limited use of digital technology have made history learning less engaging and resulting in relatively low students learning outcomes. Considering student's conditions, it was 90,3% of them found to use social media with short-form vertical video features such as Youtube Short, Tiktok, and Instagram Reels. This condition provides an opportunity for the researcher to develop a social media-based learning media in the form of short vertical videos.

Each students has their own learning style, according to Budi et al., (2021), students learning styles are classified into three types: auditory, visual, and kinesthetic. Based on teacher statemen, students of Class X-E2 better inderstand when the material is presented visually. The learning media that can be developed is Hertovid (History Vertical Short Video), which contains Sendang Duwur Tomb Site material. In addition to visual elements, Hertovid integrates audio and visual elements, thus classifying Hertovid as an audiovisual learning media (Basri & Sumargono, 2018). Audiovisual learning media refer to media that present both sound (audio) and images (visual) simultaneously that combined through an editing process (Sujono AR, 2022).

Hertovid is an audiovisual learning media that utilizes YouTube Short as one of social media that provide short-form vertical video feature. Hertovid consists of eight parts, each approximately 60 seconds in duration, containing the Sendang Duwur Tomb Site material presented in chronological order. Vertical short video can be easily produced without the use of professional cameras or advanced cinematographic techniques (Miao, 2023). YouTube Short offers a duration of 60-180 second with a 9:16 aspect ratio or full portrait format, YouTube Short is easily accessible and highly flexible in it use (Arintha et al., 2024). The choice of Hertovid as learning media was based on the results of a needs analysis questionnaire completed by students od Class X-E2 at SMAN 1 Paciran, in which 87% of students indicated that teacher should use innovative learning media during learning process. Moreover, according to the history teacher of Class X-E2, it is impractical to take students directly to historical site during class time. Moreover, YouTube Short has become one of the most popular contents, particularly among children and teenagers due to its rapid, engaging, and easily accessible format (Rizkiyah et al., 2025), and the data from APJII (the Indonesian Internet Service Providers Association) indicated that 38,63% of Gen Z users accessed YouTube as of 2024. Hence, Hertovid serves as viable solution to existing challenges, as it assisting educator to deliver historical material in a more innovative way.

Research on the utilization of video as a learning medium can be found in various forms. A related study by Agustini and Ngarti (2020) developed instructional videos aimed at enhancing students learning motivation, their research produced Camtasia Studio-based

learning videos that were rated highly feasible with score 91,4% and proven effective in increasing students interest. Another research by Laili (2023) developed a Google Sites-based learning video containing material on the 1955 first general election, which achieved a feasibility score of 85,02% categorized as feasible. In addition both related study before, related research from Santoso and Winarmo (2023) developed a Tiktok-based video learning media for physical education learning materials for XI grade students, which obtained a score of 75% and was categorized as fairly engaging for application in the learning process.

This research aims to the produce Hertovid learning media based on YouTube Short containing material on the Sendang Duwur Tomb Site, as well to determine its validity, feasibility, and effectiveness in the history learning process. This research targeting Hertovid enable to assisting educators for deliver historical content innovatively through the utilized of social media, thereby creating a more engaging history learning and increasing the learning outcomes of X-E2 Grade students at SMAN 1 Paciran of the Sendang Duwur Tomb Site historical content.

Research Method

The method that used in this study was Research ang Development (R&D) based on the development model by Sugiyono (2022). The research and development method is an approach used to assess the feasibility and effectiveness of a developed product, particularly within educational which is designed through several systematic steps (Gustiani, 2019). This development model was selected because it provides systematic and detailed procedures and is commonly applied in similar studies. The following are stages of the research and development model by Sugiyono (2022):

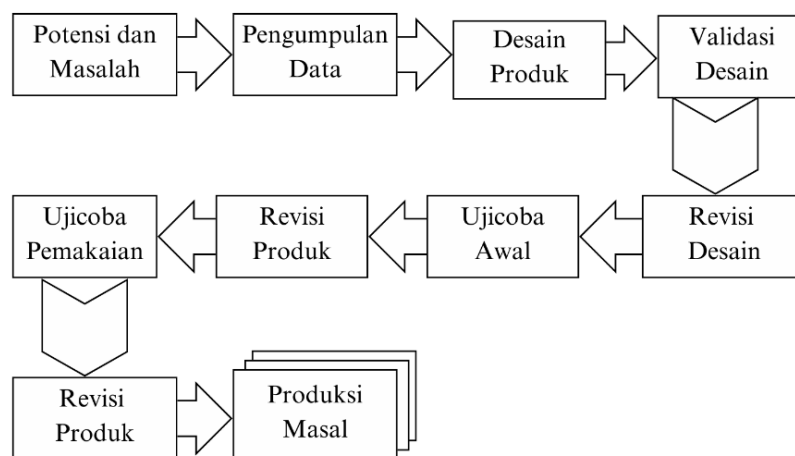


Figure 1. Research and Development Procedures Sugiyono Model

Source: Sugiyono, 2022

To determine the feasibility of the Hertovid (History Vertical Short Video) learning media, product testing was conducted on X-E2 Class students at SMAN 1 Paciran as the trial subjects. Prior to students trial, the product was validated by expert validators (Sugiyono, 2022). The Product feasibility testing was conducted in two stages, an initial trial with a small group and followed by a usage trial with a large group. Data from both the expert validity test and the

product trial by students were gathered using a Likert scale questionnaire ranging from 1 to 5. The data obtained from the validation and feasibility test questionnaire were analyze using the following formula from Akbar (2013):

$$P = \frac{TSe}{TSh} \times 100\%$$

Information:

- P** : Percentage
- TSe** : Total of expert validators/students answer score
- TSh** : Total of maximum/ideal score
- 100 : Constanta

After the calculation results from the formula above were obtained, tabulation was used to determine the validity and feasibility of the product. The following tabulation based on Akbar (2013) is used to identify the validity and feasibility criteria:

Table 1. Expert Validation Level Criteria for Material and Media

No	Percentage (%)	Criteria
1	86 - 100%	Sangat Valid
2	71 - 85%	Valid
3	56 - 70%	Cukup Valid
4	41 - 55%	Kurang Valid
5	25 - 40%	Tidak Valid

Table 2. Feasibility Level Criteria

No.	Percentage (%)	Criteria	Information
1	81- 100%	Sangat Layak	Sangat baik untuk digunakan
2	61- 80%	Layak	Boleh digunakan dengan revisi kecil
3	41 - 60%	Cukup Layak	Boleh digunakan dengan revisi besar
4	21 - 40%	Kurang Layak	Tidak boleh digunakan
5	0 - 20%	Tidak Layak	Sangat tidak boleh digunakan

In addition to the feasibility, this study also involved a product effectiveness test, which was conducted through pre-test and post-test on both small-group and large-group. The data obtained from the pre-test and post-test results will be calculated using N-Gain test formula according to Hake (1999) as cited in Sukarelawan (2024):

$$Ngain = \frac{\text{Skor Posttest} - \text{Skor Pretest}}{\text{Skor Ideal} - \text{Skor Pretest}} \times 100\%$$

After the pre-test and post-test data were calculated using the aforementioned formula, the resulting scores were tabulated based on the N-Gain score criteria guidelines by Hake (1999) as cited in Sukarelawan (2024), to determine the effectiveness of the media product. The guidelines are as follows:

Table 3. Effectiveness Level Criteria

Percentage (%)	Criteria
< 40	Tidak Efektif

40 – 55	Kurang Efektif
56 – 75	Cukup Efektif
> 76	Efektif

Research Result

Hertovid (History Vertical Short Video) Development Result

This research and development project resulted in the creation of Hertovid (History Vertical Short Video), a YouTube Shorts-based educational tool designed to assist educators in delivering instructional content. This initiative leverages the digital age, in which social media platforms are increasingly utilized for various purposes. Moreover, social media platforms with vertical short video features are widely used by the general public and students (Darmawan & Ridwan, 2023). Hertovid can serve as an innovative learning media to help educators present the history of the Sendang Duwur Tomb Site as local history to students, by leveraging technological advancements.

The Hertovid media was developed based on the strengths and challenges identified during the learning process in Class X-E2 at SMAN 1 Paciran, which were gathered through observations, interviews with educators, and the distribution of student needs analysis questionnaires. The identified strengths include facilities such as a projector in the classroom, WiFi accessible to all students, students being permitted to use smartphones on school premises, students better understanding the material presented using learning media, and students being familiar with social media platforms featuring vertical short videos, such as YouTube Shorts. In the learning process in Class X-E2 at SMAN 1 Paciran, several issues were identified, such as a lack of innovative media, educator's underutilization of social media as part of digital media, students finding the learning process less engaging, students' learning outcomes tending to be low, and educators having never covered historical material regarding the Sendang Duwur Tomb Site. Additionally, the researcher conducted an analysis of Learning Outcomes Phase E as the basis for the pedagogical components of the material on Hertovid, and collected data from literature sources such as books, scientific articles, and others research related to the Sendang Duwur Tomb Site.

The development of the Hertovid product processed through three stages: pre-production, production, and post-production. The pre-production stage involved compiling material from literature sources and drafting the script based on the compiled content. The production stage consisted of video recording, photo taking process, and voice over recording. Finally, post-production stage encompassed thumbnail creation, video editing, and rendering the editing result.

The Hertovid product comprises several key components, such as the thumbnail, the video content, and the ending. The Hertovid thumbnail features an image representative of the content for each respective part. The main video content provides an explanation of the Sendang Duwur Tomb Site material, which is divide into eight parts. The breakdown of these parts is as follows: (a) part 1 introduce the Sendang Duwur Tomb Site, (b) part 2 explains the established of the mosque, (c) part 3 describe the layout of the Sendang Duwur Tomb Site complex, (d) part 4 discusses the cultural acculturation in the mosque architecture, (e) part 5 examines the *Kala*, *Makara*, and floral motifs, (f) part 6 details the types of gateways (*gapura*) found within the cemetery complex, (g) part 7 explores other ornaments discovered in the complex, (h) part 8 explains the main *cungkup* (the tomb of Raden Nur Rahmat) and other tombs at the site, while also serving as the conclusion. This division of the material into eight parts was implemented to presents the information in a chronological and comprehensive manner, a necessary approach

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given the 180-second maximum duration for a single YouTube Short video. Finally, the ending segment contains the video credits and a list of reference sources used for the material.

Hertovid features 1080 x 1920 HD video resolution using the YouTube Shorts aspect ratio of 9:16, with each segment lasting approximately 60 seconds. Hertovid is edited using DaVinci Resolve and CapCut Desktop software. Hertovid includes images and subtitles to help students better understand the presented material. The font used for the subtitles is MS Pgothic with the color code #31f5ff (cyan).

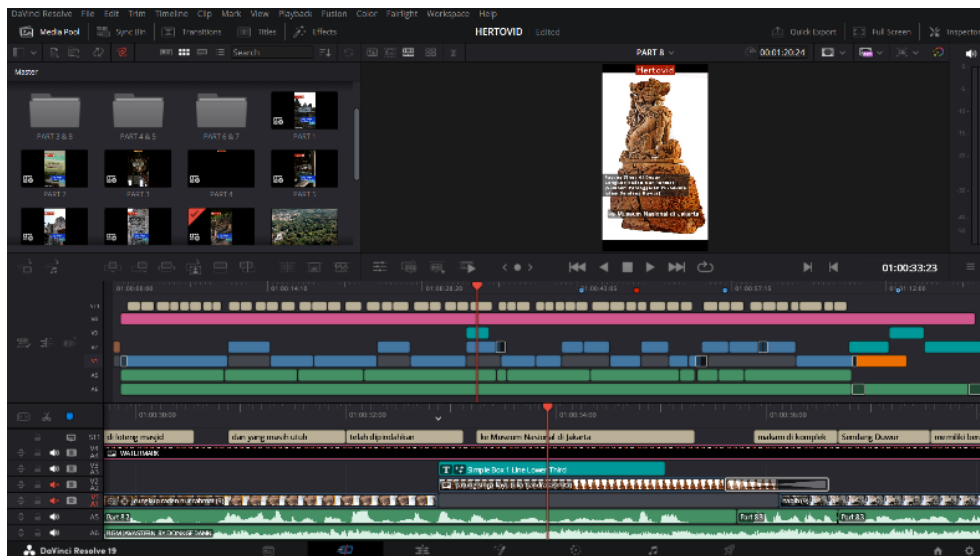


Figure 2. Hertovid Editing using DaVinci Resolve
Source: Research Data, 2025



Figure 3. Hertovid Thumbnail Design and Content
Source: Research Data, 2025

Prior to being tested on students, the media product must undergo a design validation stage by experts to determine its validity level (Kartikasari et al., 2016). The product validation was conducted by both a subject matter expert and media expert. Material validation assessed the coverage, appropriateness, and coherence of the Hertovid content, while media validation was assessed based on the display, usability, and communication aspects outlines in the validation questionnaire. The results showed that the material validation scored 94,5% and the media validation scored 91,1%, according to the validity level criteria (Table 1), the Hertovid media product is categorized as “highly valid”.

Following validation by the expert validator, the media required revisions. Based on comments and suggestions from the media expert, Hertovid needed the following improvements, such as (1) the font used in the video opening and subtitles should be changed to white and centred, (2) the Hertovid watermark should be repositioned to the upper centre and reduced in size, (3) material references should be added at the end of the video. After the media product was revised according to the media validator feedbacks, it was deemed highly valid for implementation in history learning and enable to uploaded at YouTube Short, making the Hertovid accessible to students.



Figure 4. Revised Hertovid Content Design
Source: Research Data, 2025

Revised media product subsequently underwent an initial trial with a small group to assess its feasibility by student responses to the Hertovid product. The small group consisted of 9 out of 31 students from class X-E2 at SMAN 1 Paciran, selected using a cluster sampling technique, a stratified sampling approach was applied based on learning outcomes following lower, middle, and higher clusters (Manikaros & Avgerinos, 2023). The results of the initial trial at small-group indicated that the product met the “highly feasible” criterion with a score of 85,73%. In addition to the questionnaire results, students at this stage also provided comment and suggestions, which served as basis for product revision. However, no obstacles were reported by students regarding the use of the Hertovid media, and only positive feedback was received. Therefore, the Hertovid media is deemed suitable for testing on a larger subject group.

Following the initial trial at small group, the media product was subsequently tested in usage trial with a large group setting that involved 22 out of 31 students from class X-E2 at

SMAN 1 Paciran, with no overlap from the small group participant. The large group usage trial results obtained that Hertovid met the “highly feasible” criterion with a percentage of 86,45%, indicating its suitability for application as a learning media in the history learning process. During large group usage trial, some obstacles were identified by students regarding the video resolution, audio, and a suggestion for more detailed video footage. Despite these technical observations, students also provided substantial positive feedback. Comments included praise for the presentation, such as “the placement and delivery are already good”, “the material in the media is very clear and well-structured, making it easy for me to understand”, and “it is very suitable for history learning because it is easy to understand and very engaging for studying Sendang Duwur historical content”.

In addition to the product feasibility test by using Hertovid in learning, an effectiveness test was conducted to determine whether student learning outcomes on the topic of the Sendang Duwur Tomb Site improved after using the Hertovid media. The effectiveness was measured by comparing a pre-test conducted by students before the use of Hertovid, with a post-test conducted by students after the learning session with the media. To analyze the difference in scores before and after using Hertovid, a paired sample t-test and N-Gain test were applied. The results of the paired sample t-test showed a Sig. (2-tailed) value of 0,000 which is less than ($<$) 0,05 leading to the conclusion that there is a statistically significant difference between the mean pre-test and post-test scores following the use of Hertovid. Furthermore, the N-Gain test yielded an overall mean N-Gain score of 0,8094 indicating a high level of improvement in the learning outcomes of class X-E2 after using the Hertovid media, and the mean N-Gain percentage was 80,94% which falls under the “effective” category according to the effectiveness level criteria (tables 3). Based on the results from both tests, it can be concluded that the Hertovid media is effective in improving the learning outcomes of class X-E2 students at SMAN 1 Paciran on the Sendang Duwur Tomb Site material.

The Hertovid product, having successfully passed the stages of validity, feasibility, and effectiveness testing, can now proceed to the final production stage by uploading it to YouTube Hertovid channel making it accessible for use by educator and students of class X-E2 at SMAN 1 Paciran, as well as by educators and students from other schools as learning medium, and it is available to the general public to enhance their historical knowledge.

Discussion

As a support for the learning process, learning media play a crucial role in helping educators present learning materials and making it easier for students to improve their understanding of the subject matter (Walangadi & Pratama, 2018). The use of learning media can influence the learning process. This aligns with the view of Arsyad (2020) that explains that learning media consists of various tools that can be utilized to present information or content during the learning process, thereby stimulating students’ interest and attention. Meanwhile, according to Basri & Sumargono (2018) learning media is defined as anything provided or utilized by educators for the purpose of learning, thereby improving the quality of the learning process.

Based on the discussion presented above, it is clear that the functions and benefits of learning media are crucial and cannot be overlooked in the learning process. In the learning process, educators play a role in delivering content to students as the recipients of that content (Kiron, 2017). Learning media can serve to support educators in presenting content to students. In an era where digital technology is utilized in various aspects of life, delivering learning materials using digital educational media can make the learning process more innovative. Technological advancements have led to a shift from print media to digital media and even

social media for accessing information. Hertovid is one such educational platform that utilizes the social media platform YouTube Shorts.

In its development, video has taken various forms, including documentaries video, video blogs (commonly known as vlogs), animations, stop motion, and the recently trending vertical short video. A vertical short video is characterized by its brief duration, approximately around 60 seconds. On the YouTube Short platform, these videos have a duration of 60 to 180 seconds with a 9:16 aspect ratio and resolution of 1080 x 1920p HD. Beyond its role as an entertainment based social media platform, YouTube Short can be utilized as innovative medium for history learning, as demonstrated by Hertovid. Students can easily access Hertovid via smartphones and other devices, especially since YouTube Short is integrated into the YouTube application which is typically preinstalled on smartphone.

The use of Hertovid learning media has the potential to assist educators in delivering material about the Sendang Duwur Tomb Site. This site is an Islamic archaeological site that built during a transitional period and located in Paciran District. The site showcases cultural acculturation between Hindu-Buddhist and Islamic elements. The acculturation evident in the mosque building, pulpit, gateways within the tomb complex, the main tomb *cungkup* and other tomb structure. The existence of this site serves as evidence that the Sendang Duwur Village was once inhabited by community with pre-Islamic beliefs and that dissemination of Islamic religion occurred persuasively. Teaching about the Sendang Duwur Tomb Site is important as part of local history and is expected to foster a sense of tolerance among students in a diverse society, utilizing Hertovid as the learning media. In addition to assisting educators in content delivery, Hertovid can be used easily and flexibly by students to gain a deeper understanding of the site. The use of Hertovid also aims to familiarize students with leveraging technological advancement for educational purposes.

The primary advantage of the YouTube Short based Hertovid learning media is its easy accessibility from anywhere and at any time, allowing students to learn about the Sendang Duwur Tomb Site without the need to visit the site location directly. Hertovid learning media leverages current technological advancements and trends. Utilizing YouTube Short as a learning media has the potential to create an engaging learning process. The content in Hertovid is presented chronologically from part 1 to part 8, enabling students to study and comprehend the material more easily. A limitation of Hertovid is that its use requires student to have a smartphone or other device with an active internet connection.

Conclusion

Learning media firstly one of the important aspects of the learning process. With the advancement of the technology, educators are expected to leverage this situation by independently developing learning media, as they themselves should best understand the needs and conditions of their students. The use of innovative learning media can serve as a solution to existing problems in the history learning process. This study resulted in the development of Hertovid based on Youtube Short learning media product containing Sendang Duwur Tomb Site material for X-E2 grade students at SMAN 1 Paciran. The product was developed using Sugiyono Research and Development (R&D) model, which contains of ten steps. Hertovid is a vertical short video leaning medium presenting on the content on the Sendang Duwur Tomb Site material. The editing process of Hertovid utilized DaVinci Resolve and CapCut Dekstop video editing software. The YouTube Short social media platform was chosen to facilities easy access and usage for students via smartphone and other devices. The Hertovid learning media produced in this study was assessed as highly valid based on expert design validation, highly feasible from student trials, and effective, these results indicate that the Hertovid product is

suitable for use as a learning medium for history of the Sendang Duwur Tomb Site for X-E2 grade students at SMAN 1 Paciran. The design validation yielded scores of 94,5% from the matter expert validator and 91,1% from the media expert validator. The initial trial at small group scored 85,73%, and the large group usage trial scored 86,45%, both categorizing Hertovid as highly feasible. The effectiveness test showed a mean score of 80,94%, which falls under the effective category. Based on these results, it can be concluded that the Hertovid learning media is highly suitable for implementation in the learning process and is effective in improving student learning outcomes regarding the Sendang Duwur Tomb Site material.

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