

Development of Artificial Intelligence-Based Digital Video Media with the ADDIE Model for Intrinsic Elements of Short Stories

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Abstract: The aim of this development is to produce a digital video learning media based on Artificial Intelligence for the intrinsic elements of short stories so that students can easily understand the material and learning is more interesting. In this development research, the development of short story learning media in the form of text into digital video was produced. The development of this learning media uses various Artificial Intelligence applications, namely ChatGBT, Google Docs, Leonardo, ElevenLabs, Capcut, and Canva. Artificial Intelligence-Based Digital Video Media with ADDIE Model for Intrinsic Elements of Short Stories has been refined based on expert validation data analysis and trial data analysis. The aspect that was improved was the development of animation by adding material explanations and adding questions according to the learning objectives placed in the close scene. Based on the results of the assessment given by material experts, design experts, and media experts on Artificial Intelligence-Based Digital Video Media with the ADDIE Model for the Intrinsic Elements of Short Stories, it is very feasible, meaning that the Development of Artificial Intelligence-Based Digital Video Media with the ADDIE Model for Intrinsic Elements of Short Stories has great potential to be applied in Indonesian learning, especially for the intrinsic elements of short stories. Based on the results of the assessment of the Artificial Intelligence-Based Digital Video Media trial with the ADDIE Model for the Intrinsic Elements of Short Stories given to Al-Islam Krian High School students, it means that this media is very feasible to be widely used in Indonesian language learning at the secondary education level.

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Introduction

In the current digital era, the development of information and technology plays a very important role in the world of education. The development of information and technology makes the learning process easier because it increases the efficiency and effectiveness of learning methods. Technologies such as e-learning and digital technology make learning more flexible. Technology also allows teachers to create more creative learning strategies

(Nento & Manto, 2023). Technological developments that have an impact on the world of education include the use of digital-based technology assisted by internet media. The use of the internet as the main means of learning brings a transformation in more innovative teaching methods. Internet technology not only has a positive impact on education but also a challenge for teachers to adjust to these developments (Julita & Purnasari, 2022). One of the challenges for teachers is in providing learning media that makes the learning process interesting. Learning media is anything that can convey messages from teachers to students so that they can stimulate students' thinking (Syahputra & Pradana, 2020). In essence, learning media is a tool to make it easier for teachers to teach (Solichin, 2022). With the use of learning media, it is hoped that students will not have difficulties in understanding learning. Such as the difficulties faced by students when learning Indonesian subjects.

One of the characteristics of Indonesian subjects is that the skills developed can be achieved by students are receptive skills (the ability to listen, read, and watch) and productive skills (speaking and presenting and writing). The students have difficulties when faced with the achievement of reading and viewing skills. Based on the results of the analysis of the summative assessment questions of short story material at Al-Islam Krian High School, it is known that students have difficulties in understanding short story material because: (1) lack of mastery of vocabulary so that many students do not understand the vocabulary contained in short stories, (2) lack of understanding of the storyline of short stories, (3) lack of understanding of the implicit meaning contained in short stories, (4) lack of interest in the topic of short stories.

Based on observations from the summative assessment of the short story text material of students in grades XI-3 of Al-Islam Krian High School on Monday, August 26, 2024, it shows that most students have difficulty understanding the material. Of the 37 students, the distribution of scores was (1) 23 students got scores below 70, namely 61 (4 students), 62 (1 student), 63 (13 students), 64 (4 students), 65 (1 student). (2) A total of 15 students got scores above 90, namely 91 (1 student), 92 (8 students), 93 (5 students), 95 (1 student). From the results of these scores, it can be seen that students who get low scores are more than those who get high scores.

Other causes of difficulties experienced by students include the following. (1) Students have difficulty understanding the intrinsic elements (theme, plot, characterization, mandate, setting, language style, and point of view) of short stories. The reason is because students do not understand the language and majas used in short story texts. (2) Students experience boredom in the process of reading short story texts. The reason is because students are faced with text in the form of writing without attractive images and no visual effects. (3) The short story text material is imaginative material. Meanwhile, the learning media available so far is static, in the form of writing that cannot explain the abstract concept of the short story text. Students whose imagination is less will have difficulty in understanding abstract short story concepts, and (4) Interest in reading in Indonesia is still low, even though short story media in the form of text requires students to read.

These various problems must of course be solved. One way to solve this is by creating interesting learning media that can turn abstract short story concepts into visual concepts. The creation of such media can use various kinds of Artificial Intelligence applications. Abstract

short story text material can be visualized using digital video media. This media is able to increase students' understanding of the material of abstract intrinsic elements of short stories (Gleneagles, Larasyifa, & Fawaiz, 2024).

Previous research that develops learning media using AI applications was conducted by Harahap & Rahmawati who used AI applications to edit videos and concluded that AI applications for video editing can improve video quality and improve speech skills (Harahap & Rahmawati, 2024). Research on the use of the Sparkol AI application was conducted by Purnomo et al who concluded that the successful video-based learning media attracts students' interest and increases student involvement in automotive engineering subjects in vocational schools (Purnomo et al., 2022). Another researcher, Solichin, used the Platagon application to create an animated dubbing learning media and concluded that the media was interesting and improved students' speaking skills in Indonesian subjects and increased the learning motivation of grade V students (Solichin, 2022).

From these previous studies, it is known that researchers for the development of new media utilize one type of AI application in each product and no media has been developed for Indonesian subjects, especially the intrinsic element of short stories. As for this research, the researcher combines various kinds of AI applications to develop Indonesian learning media, especially the material of intrinsic elements of short stories.

This development research will produce AI-based digital video media with the ADDIE development model for the intrinsic elements of short stories. The learning media developed in this study is a visual learning media made by utilizing several AI applications at once, namely ChatGPT, Google Sheet, Google Docs, Leonardo AI, Hailuo AI, EvenLabs, Canva, and CapCut so as to produce interesting learning media and are able to present abstract concepts of intrinsic elements of short stories into easy-to-understand visual concepts.

The development of this product is theoretically useful, namely to provide information related to AI applications that can be used for the development of learning media and provide information about interesting, creative, and effective learning media. Meanwhile, the practical benefits of this product are: (1) it can help students understand the material of the intrinsic elements of short stories in a more in-depth and interactive manner. The AI technology used in the development of learning media allows learning to be more adaptive, and interactive, (2) it can help teachers in organizing more effective learning, saving time because students can repeat the material independently so that teachers can focus on activities by providing guidance for analysis and evaluative activities, (3) the use of AI for the development of learning media makes schools can improve the quality of learning so that educational goals can be achieved, (4) This research can be used as a reference for other researchers who want to develop AI-based learning media for various types of learning.

Learning media is one of the tools used by educators so that learning activities take place effectively. Learning media is used to convey messages. In order for messages to be received effectively, learning media that suits students is needed. The right learning media is a learning medium that is in accordance with the needs of learning activities that will create effective and efficient learning activities so that the material delivered by the teacher is absorbed optimally by students (Hasan et al., 2021).

Development is the process of shaping existing potential into something more or perfecting the product into a product that can be accounted for (Ritonga, Ilkimah, & Andini, 2022). Research and development, also known as research and development, is a research method to develop and test products that will later be used in education. Development research not only evaluates educational theory but especially to develop effective products for learning, such as learning materials and media (Maydiantoro, 2021). So the development of learning media is a process of designing learning, one of which is to design learning media so that it can simplify and make the learning process easier. The specifics of the design include printing technology, audio-visual technology, computer-based technology, and integrated technology.

Digital video is a development of audio-visual media. Audio-visual media allows students to capture audio and visuals simultaneously so that students get messages or information from the visualization of words or images equipped with sound (Pagarra et al., 2022). The development of audio-visual media into digital media has the benefit of helping teachers convey abstract material into concrete, providing and adding real experience for students, learning materials can be learned repeatedly, allowing for the correct equations and perceptions of learning materials, attracting students' attention, and making it easier for students to understand the material in a concise manner (Hafizah, 2022). The development of learning media in the form of digital videos is greatly helped by the existence of various Artificial Intelligence applications. AI helps in saving time and effort. The efficiency in question is that with the use of AI, the creation of video media will be faster. In addition to time efficiency, the visual quality produced is also better. Content customization is also easy. Customization means that the products produced are according to the needs (Harahap & Rahmawati, 2024).

In this media development research, the researcher focuses on the material of the intrinsic elements of short stories. A short story is a work of fiction that focuses on the narration of a single character and is an acronym for a short story, consisting of 500 to 5000 words (Fitriyani, Setiadi, & Agustiani, 2019), made up of two types of elements, namely intrinsic elements and extrinsic elements. Intrinsic elements are elements that can be found in the text of short stories, consisting of themes, plots, characterizations, mandates, settings, language styles, and points of view (Huda, 2022). In short story material, which is a work of fiction, digital video media can be used to make it easier to analyze its intrinsic elements.

The application of AI in learning has the potential to provide students with a more flexible learning experience and help students achieve a better understanding of learning materials. Literary learning in this study is short story text material, often facing difficulties in terms of understanding abstract concepts and interpreting complex texts. AI can help in analyzing intrinsic elements such as themes, characters, settings, and conflicts. AI can be used to analyze literary texts, making it easier for students to understand and interpret literary works without going through a manual analysis process that often requires time and reading carefully (Bindu, 2024).

AI can not only analyze text but also provide visualizations that support narrative understanding. For example, with visualization technology, AI can provide an interactive picture of story elements such as characters, conflicts, and plots. This visualization allows

students to "see" the story in a more realistic form. AI-based visualization helps students to understand the emotions, motivations of characters, as well as the dynamics of storylines in short stories, which are often difficult to understand just by reading the text (Ambarita & Nurrahmatullah, 2024).

Methods

The media product development method in this study uses the ADDIE model. ADDIE is an acronym for Analyze, Design, Develop, Implement, and Evaluate. The acronym ADDIE indicates the steps taken in its development research, namely analysis, design, development, implementation, and evaluation. The ADDIE model framework chart in this study is as follows.

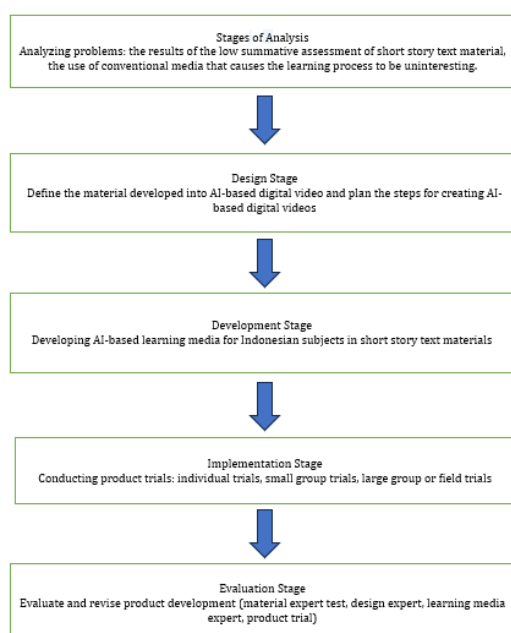


Figure 1. ADDIE Framework Chart on the Development of AI-Based Digital Video Media for Intrinsic Elements of Short Stories

The stages of ADDIE in this development research are as follows. The analysis stage is the stage to find out the initial problems in developing this learning media, namely analyzing the results of summative assessments and media analysis that have been used in the Indonesian learning process.

The second stage is the design stage which includes the stage of material creation and the stage of media creation. At the planning stage, short story text material for Indonesian subject class XI phase F is prepared. Next is the stage of drafting the concept, namely (a) determining the theme of the struggle during the Dutch colonial period in Indonesia, the 19th century involving three main characters, (b) the preparation of short story texts using the AI ChatGPT application, (c) the creation of video scripts made with the Google Docs application, (d) the creation of images using the Leonardo AI application, (e) converting

images into videos using the Hailuo AI application, (f) voice acting using the ElevenLabs application, (g) creation of PPT materials and assessments in the close scene of the video using Canva, and (h) video editing of video editing applications, namely Capcut and Canva.

The third stage is Development. At this stage, the researcher continues to make learning media based on the design that has been set. The media that has been created will be validated by design experts, material experts, media experts, and peers. If the media that has been created has not reached the positive criteria, then the researcher will revise it according to the advice of experts. After the AI-based digital video media is said to be positive, the researcher will test it on grade XI students of Al-Islam Krian High School in individual trials, small group trials, and large group or field trials.

The fourth stage is the Implementation stage. At this stage, a trial of AI-based digital video media products was carried out on grade XI students of Al-Islam Krian High School. The media will be implemented in real situations, namely in the classroom. During the implementation of AI-based digital video media that has been developed, it will be implemented in stages, namely individual trials, small group trials, large group or field trials. The material presented is in accordance with the AI-based digital video media material developed.

The fifth stage is the evaluation stage. At this stage, the researcher will conduct a final stage revision of the developed learning media. The researcher also gave a questionnaire to students which will be used as a measuring tool to assess the success of making learning media. Based on suggestions and inputs from students, the researcher revised the learning media developed so that the learning media developed was really appropriate and suitable for use.

The types of data required at this trial stage include: (a) the accuracy of the content of AI-based digital video media materials obtained from questionnaires filled out by content experts which include the suitability of learning outcomes, suitability of learning objectives, and suitability of AI-based digital video media content with the material, (b) the accuracy of learning media obtained from questionnaires filled out by learning media experts which include the suitability of images, writing, and the clarity of the video, as well as the clarity of the voice displayed, (c) the ease of playing the video obtained from the questionnaire tested by individuals, (d) the clarity of the video audio from the small group trial (9 students of grade XI students of Al-Islam Krian High School) through filling out the questionnaire, (e) the attractiveness and ease of the video being studied as a whole was obtained from the results of the field trial (21 students) through filling out the questionnaire.

The instrument used for data collection for this research is a questionnaire. There are two types of questionnaires used in development research, namely (a) closed questionnaires are used to collect data which includes the suitability of learning outcomes, suitability of learning objectives, the accuracy of practice questions used to evaluate the learning outcomes that have been achieved, and the suitability of AI-based digital video media content, suitability of images, writing, video clarity, clarity of sound displayed, attractiveness and ease of video playback. The scoring score of each question moved from 1 to 5 according to the Likert scale (Sugiyono, 2021), (b) an open-ended questionnaire was used to collect data on suggestions that complemented the closed-ended questionnaire.

Data were analyzed by quantitative descriptive analysis techniques and descriptive statistics. Quantitative descriptive data analysis techniques are used to process data collected from product validation and trial results. Descriptive statistics were used to process data from expert validation questionnaires, individual and small group tests as well as field tests.

The formula used to calculate the percentage of each expert test subject and individual test is as follows.

$$Persentase = \frac{\sum(\text{selected answer} \times \text{selection weight})}{n \times \text{highest weight}} \times 100 \%$$

Information:

$\sum$ = sum

N = number of all iteks

The data obtained from the small group test was processed using the following percentage formula.

$$Persentase = \frac{F}{N} \times 100$$

F = The frequency with which subjects choose alternatives

N = The total number of test subjects

To give meaning and make decisions in revising products, level qualifications are used which have the following criteria (Sugiyono, 2021),

Tabel 1. Rating Scale Table

Rating Scale	Classification	Information
81% - 100%	Excellent	No Revision Required
66% - 80%	Good	No Revision Required
56% - 65%	Not Good	Revision Needed
0% - 55%	Very Bad	Revision Needed

Result

This study is a type of Research and Development (R&D) which aims to develop interactive learning media based on edugames with the topic of odd and even numbers for 2nd grade elementary school students. The development model used in this study is the ADDIE model which consists of five main stages, namely Analysis, Design, Development, Implementation, and Evaluation. This model was chosen because it is systematic, flexible, and has been proven effective in developing various technology-based learning devices (Branch, 2016).

The learning media developed in this development research is a video medium. This media is designed to convert short story texts in the form of narrative writing into videos. Videos are made as engaging as possible with AI-based. This AI-based digital video can be used in classical learning as an alternative media or teacher aid in Indonesian subjects.

How to use AI-Based Digital Video Media for Intrinsic Elements of Short Stories as a learning medium in Indonesian subjects in grade XI is as follows. (1) The teacher conveys the

learning objectives, namely analyzing the intrinsic elements of the short story builder. (2) The teacher asks questions and answers to the students to find out the basic knowledge of the students related to the short story and its building elements. (3) The teacher conveys the activities that will be carried out in the learning process, namely the teacher will play the short story video, the student listens to the video, and the student answers questions related to the intrinsic elements of the short story according to the content of the video. (4) Teachers or students can access AI-Based Digital Video Media for Intrinsic Elements of Short Stories on the <https://youtu.be/6L1vzxjPa58> youtube page. If there are laptops, projectors, and speakers in the classroom, then teachers can play classically. If there is no such facility in the classroom, teachers and students can play from their respective mobile phones. (5) After the video playback is complete, students answer the questions contained in the close scene of the video. (6) In turn, students convey the answers to the questions. (7) The teacher and the students conclude the learning activity.

Some of the displays of AI-based digital video media for the intrinsic elements of short stories are as follows.



Figure 2 Media Name Display



Figure 3 Short Story Title



Figure 4 Short Story Orientation



Figure 5 Conflict of Short Stories



Figure 6 Short Story Resolution



Figure 6 Initial View of Material



Figure 7 Intrinsic Elements of Short Stories



Figure 8 Assessment of Short Storie

Discussion

The results of the validation of material experts in this development study obtained a percentage of 92%, showing that this medium has excellent material quality and is worthy of further development. The percentage of 92% also shows that the material presented in the media has met the aspects of completeness, concept truth, integration between elements, and relevance to learning outcomes and learning objectives in Phase F of compulsory Indonesian subjects. The validation assessment of the above material experts is in accordance with the results of the study which states that AI-based media is able to simplify abstract literary concepts such as plots and characters to be more visual and narrative, thus making it easier for students to understand (Aini, 2023). Meanwhile, there is research that shows that AI-based digital media sometimes still contains rigidity in the delivery of narratives and is less flexible in adapting to the local cultural context which is important in short story learning (Yunda & Aliyah, 2025). The results of the validation of design experts in this development study obtained a percentage of 95%, showing that the media has excellent design quality and is very worthy of further development. The percentage results reflect that aspects of visual design, typography, color selection, integration of graphic elements, and information layout have met the standards of attractive, communicative, and user-friendly learning design. The results of the validation of the design experts are in accordance with previous research which states that the success of digital learning media is highly determined by the quality of interface design that is able to maintain students' attention and cognitive comfort during the learning process (Bassir, 2018). However, there is a previous study that contradicts these results which states that media with a very interactive but poorly controlled design can actually trigger a high cognitive load for students, especially if not adjusted to the age level and digital literacy of students [24]. The results of the validation of design experts in this development study obtained a percentage of 94%, showing that the video media has a very good category and is very worthy of further development. The results of the validation of the media experts show that technical aspects such as video quality, audio, navigation, interactivity, and media compatibility have met the feasibility standards of modern learning media. Another study that supports the validation results of the design experts states that the success of AI-based digital media is greatly influenced by the quality of audiovisual technology integration that is able to create a multisensory learning experience and improve student information retention. Meanwhile, research with different results states that the use of AI in learning media is often still one-way and does not provide space for active feedback from students. (Kisno et al., 2023). Meanwhile, research with different results states that the use of AI in learning media is often still one-way and does not provide space for active

feedback from students. Learning media that have high technical quality can also be less effective if it is not accompanied by adaptive and contextual pedagogical strategies (Sappaile et al., 2024).

After the AI-Based Digital Video media for the Intrinsic Elements of Short Stories was validated by experts, the researchers then conducted individual, small group, and field trials. The test results were obtained with a percentage of 91% for individual trials, 95% for small group trials, and 95% for field trials. The results of the trial percentage showed that the video media obtained excellent results at all stages of the trial. Based on the learning media feasibility assessment criteria, the above score range is included in the category of excellent and very feasible to use (Sugiyono, 2021). The findings of the trial results are in line with previous research which showed consistent test results in video development research on Indonesian language learning, namely the individual trial produced a score of 94.53%, the small group trial reached 92.32%, and the field trial obtained 91% (Priantini, 2022). These results show that learning video media is very well received by students in various learning contexts, both individual and group. The impact of the use of video media in learning is that it is able to significantly increase student understanding. Based on observations from quantitative data from the test results and paying attention to the results of previous research, it can be stated that AI-based digital video media developed through the ADDIE model is very effective and feasible to be used in learning the intrinsic elements of short stories at the high school level or equivalent. The development of this media is also a form of technology implementation in education that supports the achievement of the Pancasila Student Profile, especially in the aspect of critical and creative thinking through interesting and contextual literary literacy activities. The limitations of this development research are (1) the media has not been widely tested for all students in one school, so it is not known to what extent students' understanding and interest in learning has increased significantly after teachers use this media, (2) the AI applications used to develop media are still presentative (displaying automatic visuals or narratives), not yet adaptive or responsive to user interaction, and (3) the assessment contained in the close scene section is still narrative so that students cannot directly answer interactively.

Based on the analysis of the limitations of the development of Artificial Intelligence-Based Digital Video Media for the Intrinsic Elements of Short Stories, it is suggested that the next development: (1) conduct extensive trials, namely trials for all students in one school so that the effectiveness of the media to increase students' understanding of the intrinsic elements of short stories can be known more definitively, (2) integrate interactive AI features so that the developed media is responsive to the students, (3) the development of AI features based on Natural Language Processing (NLP) that enable two-way interaction, and the integration of media with Learning Management Systems (LMS) so that it can be widely used in online and hybrid learning.

Conclusion

Based on the data and questionnaires of material experts, design experts, and media experts that have been discussed in the previous chapter, namely chapter IV with the results of the Content/Material Expert validation is 92%; Design Experts are 95% and Media Experts are 94% showing that AI-Based Digital Video Media for Intrinsic Elements of Short Stories in terms of material has met the aspects of accuracy, completeness, and relevance to learning

objectives. In terms of design, the media shows an attractive visual appearance, is easy to use, and is in accordance with modern learning design principles. From the technical side of the media, the audio, video, and navigation elements have functioned optimally and supported the student learning experience. These three validation results show that media has great potential to be applied in Indonesian language learning, especially for the material of intrinsic elements of short stories.

Recommendations

The recommendation for the development of this product is to integrate this product with interactive AI features so that the media developed is responsive to students, integrate the product with AI features based on Natural Language Processing (NLP) that allows two-way interaction, and integrate the media with the Learning Management System (LMS) so that it can be widely used in online and hybrid learning.

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