Artificial Intelligence (AI) For Learning Listening And Speaking in the Era of Industrial 5.0

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Abstract. This study aimed to develop Video Artificial Intelligence (AI) in listening and speaking for the State University of Medan students. The study was conducted using the Research and Development method. The development stages include data collection, product design, validation, design revision, and final product. The data were collected through questionnaires of 23 students as the subject. This study found that most students still found it difficult to listen through audio especially due to the lack of proper listening activities provided during the teaching and learning process. More attractive and interesting media was required for conducting the listening and speaking activities in the classroom. The product contents included text, images, animation characters, video, and sounds such as sound effects and conversations. The result of this research was a video of Artificial Intelligence that has been validated by experts and scored 95% for the final average. It was considered to be very eligible to be used for teaching listening and speaking.

Keywords: Industry Revolution 5.0, Media Learning, Video Artificial Intelligence (AI), Listening and Speaking

1. Introduction

Universities and educators have a crucial role in moving towards the 5.0 era. The Industrial Revolution 5.0 is an advance of the previous era and integrates technology into various aspects of human life, including education. In addition, teachers must learn how to use technology and need adequate educational infrastructure and resources [1]. Learning activities are not just focused on one source, like books; teachers must learn to use technology-based applications and media.

Applications as an educational tool are something interesting and new in the world of education. Previously, artificial intelligence technology was used only for general applications like robotics, games, language translation, expert systems, and so on.

However, AI is the ability of machines to perform tasks that are considered similar to human intelligence [2]. In addition, its diverse and exciting features allow AI to encourage learners to interact more actively with each other. There is a possibility that using this application will result in learning that meets the standards of the 21st century, namely the four C skills: thinking creatively, critically, solving problems, collaborating, and communicating.

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Based on the ratings of the 2023 English Education students who took the listening and speaking matriculate, they had a percentage achievement score of 60 in pronunciation but still low in intonation 50, grammatical suitability 50, and fluency 50. This causes students to be rigid and unwilling to start speaking because they do not know the meaning of the vocabulary and do not match the grammar. Likewise, the media used in learning, which is still using books and audio media, so that learning activities only listen to audio, and then answer the questions that are in the module.

Based on the above description, the development of AI-animated video-based learning media is the best for improving learning in colleges, especially in English language learning.

2. Methods

This research aims to develop and create items to help the learning process. In this case, the researchers are developing a product consisting of animated video media created by artificial intelligence. Research and development (R&D) is the perfection of a new or existing product [3]. "Research and Development method is a research method used to produce a particular product, and to test the effectiveness of such a product" [4]

This development research uses the stages or steps of development of the Borg and Gall model (2003) [5] with 6 stages: 1. Stage of Data Collection, 2. Stage Data Analysis, 3. Stage Product Development, 4. Stage Validation and Field Testing, 5. Stage Revision, 6. Final Stage.

3. Results and Discussion

Result

This development research uses the stages or steps of development from the Borg and Gall models. The application of the steps is adapted to the needs of the researchers. As for the results of research carried out based on the steps or stages in the Borg & Gall development model (2003) namely:

1. Information Data collection

In the early stages of information data collection became the basic guidelines for researchers in developing learning media namely by analyzing learning indicators in RPS and choosing learning topics to adapt to the learning video that will be developed later.

2. Data analysis

After giving a questionnaire to students related to the analysis of the needs in learning activities and learning media for the listening and speaking course which will be further developed. The questionnaire contained 15 questions given to 23 students of English Language Education who attended listening and speaking classes.

a. Students' Lacks

Student shortfall in English speaking skills indicates that 91.3% of students argue that speech skills are the hardest skills to learn in English.

The next question is do you feel the need to improve your ability to speak English, especially in the context of everyday conversation, 87% of students said that their speaking skills need to be developed. The majority of students (30.4%) have a lack of confidence or shame in speaking English. (34.8%) fear of error in pronunciation and grammar, lack of English vocabulary (26.1%), and lack of grammar (Grammar) as much as 8.7%.

The conclusion revealed most students stated that speaking skills are hard skills to learn in English. Students felt the need to improve their speaking skills but they have the most dominant constraints: lack of confidence in speaking English and fear of error in pronunciation and grammar.

b. Students' Wants

Students' desire for the learning process results in the first question that tested students' desires for learning activities Speaking English is more enjoyable using audio, video, or text media. Most students answered that they wanted to learn using Audio and Video Animation (91.3%). Out of 65.2% of students responded that listening and speaking media provided less Training to improve English speaking, 13% of speech material was too low and focused only on textbooks, and 8,7% were less innovative and boring. What competencies students want to enhance in listening and speaking learning is to focus on improving English speaking (56.5%) and mastering the English language system (34.8%). Then on the question of whether you agree to add new learning media in the learning of listening and speaking, students agree 100% to add more effective English learning media and choose to use video media in learning to make it more interesting.

Therefore, it can be concluded that students' main desire for the English language learning process in class, especially in the speech process, is to use interesting media that can support the learning process with more complete material.

c. Students' Needs

The results of student needs according to the questionnaire, namely about what material you need in learning to speak English, the average student answers on topics related to youth (music, movies, sports) 34.8% and topics related to fiction and non-fiction stories 56.5%.

Then what features are expected from the learning media developed to improve English speaking skills, the dominant student answer chose animated videos with AI media, namely 65.2%. While, activities in AI-based learning media developed so that it can help students in improving English speaking skills, namely containing 52% animated story videos. Furthermore, the last question that tests the needs of the media by students, is in question 15. This aims to find out the readiness of students in learning listening and speaking by using new learning media, namely whether you feel more motivated to learn English speaking skills when learning materials using AI Animation Videos. The results show that 100% of students answered that they are very motivated to learn by using AI Animation Video.

Therefore, it can be concluded that most students need more interesting media with the support of good animated videos and also sound sharpness and exercises as a visualization of English-speaking activities.

Developing Artificial Intelligence Animated Video Media (AI)

The media design process is carried out after the authors analyze the needs, shortcomings, and students' desire to learn based on the answers. After that, the author began developing the media using AI by first selecting animated cartoon characters according to the available characters. Properties and background settings are tailored to the learning material.

The results of the AI animation video were then modified and combined with a variety of listening activities with an interesting background. At this stage, several edits and corrections were made to the animated video to obtain the required audio media result completely and interestingly.

1. Make the Story Script

   Create a story script that will be developed into a video format. The story script can be accessed through an AI medium called ChatGPT. By typing the title of the video, the desired script will be obtained in ChatGPT. In ChatGPT are also available Characters, Backgrounds, locations, and more.

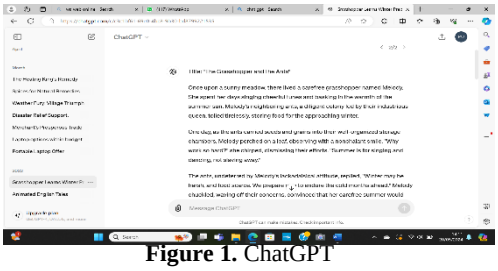


Figure 1. ChatGPT

2. Make the animation video using Plotagon
   The application used to make the animated video is Plotagon Story which can be downloaded on the Google Play Store and App Store. Make sure your device is connected to an internet connection.

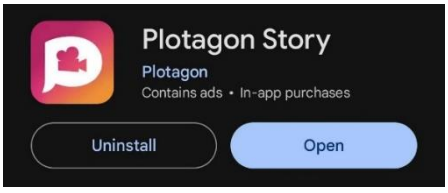
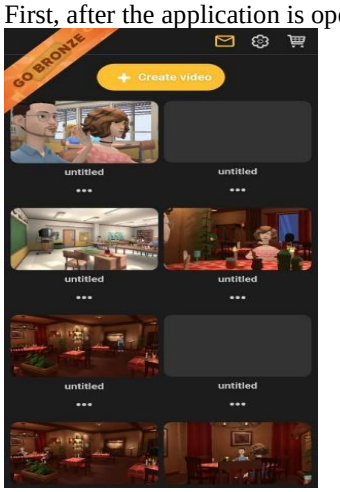


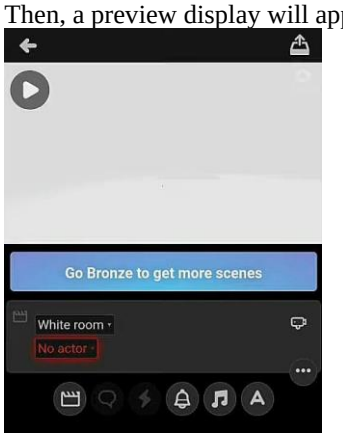
Figure 2. Plotagon application

First, after the application is opened, the main page will appear.

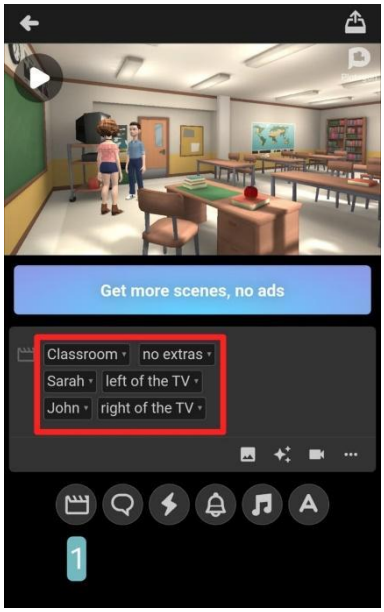


Next, click "Create video" to create an animated video.

Then, a preview display will appear which we will customize later.

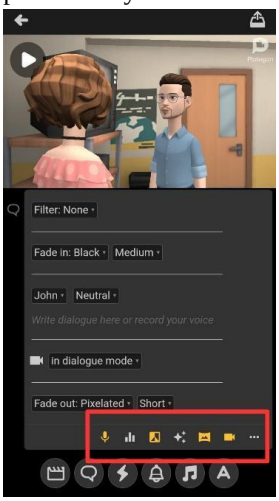


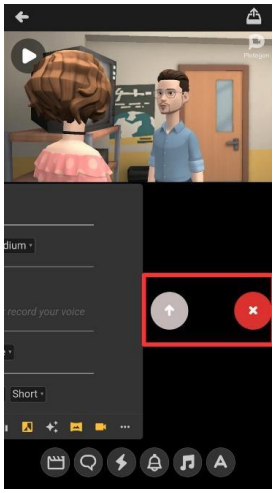
Pay attention to the number in the picture below. Clue number 1 indicates the "Scene" of the animation. Here, we are asked to choose the setting of the story or the "Scene". Apart from that, in this section, we are also asked to choose between "no extras" (no additional actors) and "with extras" (with additional actors). Then, choose the actors we want to include in our animated video. We can choose the actors from those already available or we can create new actors too. The actor only has a maximum of 2 people. Finally, in clue number 1, we will be asked to choose the position of each actor.

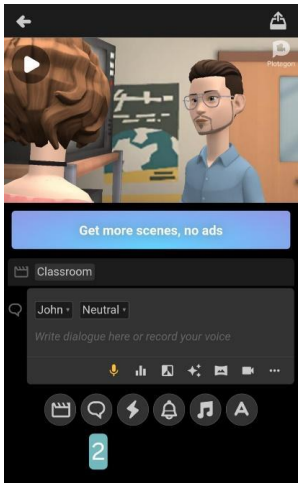


Clue number 2 is the part where we can fill in the conversation between the actors. After we click on the speech bubble, we are asked to choose which actor (from those we have previously selected) will speak first. Then, we can fill in the contents of the conversation in the column provided. Here, we can add our own voice to the dialogue by pressing the microphone button. Then, we can adjust the volume and pitch of the desired sound by pressing 1 button on the side of the microphone. We can also change the video display effect by pressing the third button after the microphone. For the fourth button on the microphone, its function is almost the same as the previous button. We can use the fifth button after the microphone button to adjust the field of view. We can use the next button to make the video view move left, right, and many more options. The last button is used to temporarily delete the video display (up arrow) and to

permanently delete all settings that have been made in the chat bubble.

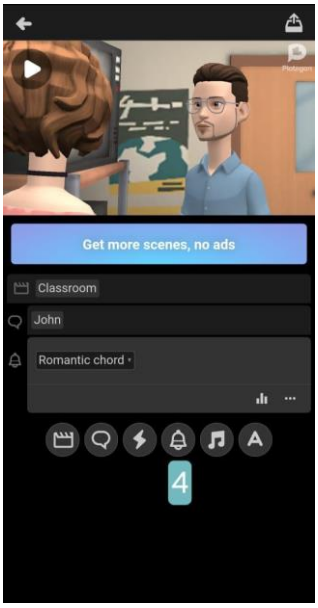




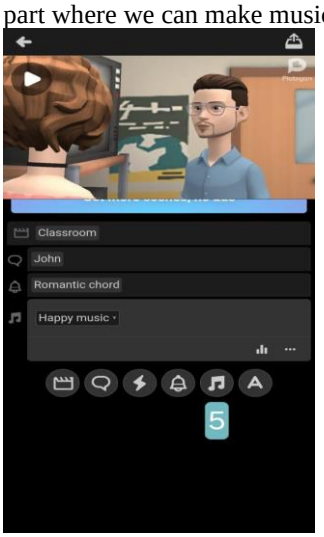


Clue number 3 is a part where we can provide action between Actor 1 and Actor 2. First, we can choose which actor 1 will be the perpetrator of the action. Then, we can choose the action that Actor 1 will perform on Actor 2.

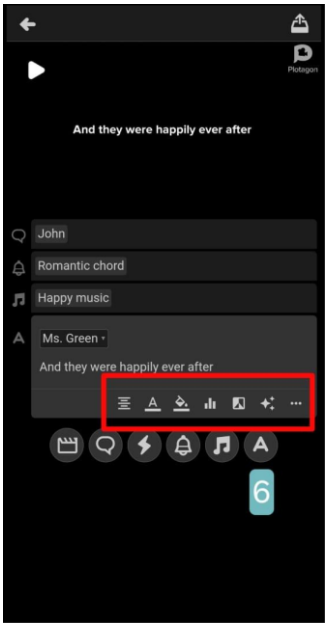
In clue number 4, we can adjust the background sound.



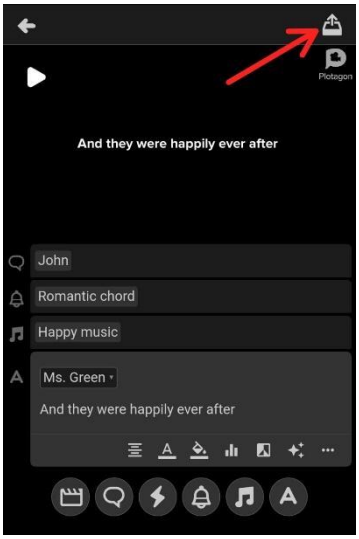
Different from clue number 4 which will convey the emotion of a scene, clue number 5 is the part where we can make music that can complement the video to make it more interesting.

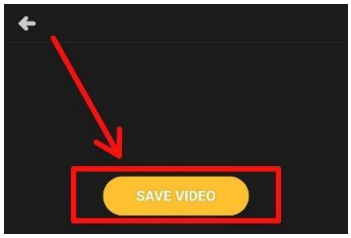


The last one is clue 6. This will allow us to create the words at the end of the video. The words will have text and sound. We can choose the voice actor from among the 3 choices. We can also adjust the text by clicking the red box sign below.



The final step to creating the animation video is to save it. We can click the red arrow below to save the video made. The last is clicking the "SAVE VIDEO" button.





3. Validation by Expert Team

After the product has been successfully developed, the next step is to conduct product validation. Product validation is carried out after the initial manufacture of the product. In conducting validation, the validation questionnaire sheet is given to lecturers as material experts and technicians as media expert validators.

This questionnaire identification uses a Likert scale assessment with 5 assessments, namely, 1 = Very Eligible, 2 = Eligible, 3 = Fair, 4 = Less Satisfied, and 5 = Very Bad. Respondents give their opinion by putting a check mark (√) in the available assessment column. For the classification of qualitative data, the Likert scale consists of 5 categories, namely very low, low, medium, high, and very high. The following is a table of categories based on Likert scale intervals.

Table 1. Likert Scale Interval Categories

Score	Categories
81.00 % - 100 %	Very Eligible
61.00 % - 80.99 %	Eligible
41.00 % - 60.99 %	Fair
21.00 % - 40.99 %	Less Satisfied
0.00 % - 20.99 %	Very Bad

The results of the Validator Assessment are as follows:

A. Product and Content Dimension

The product and content dimension is used to determine whether the learning media has fulfilled the relevance and suitability of the product content to the topic and learning needs. Based on the assessment results, the average validator score meets 96% which is classified as appropriate and classified as highly qualified.

B. Linguistic Dimension

The linguistic dimension aspect generally identifies whether the learning media has met the linguistic standards used in explaining recount text or not. The table above shows the average score of the two validators on the "Linguistic Dimension" aspect is at 95% Therefore, the assessment on this criterion is considered highly qualified.

C. Process

The product presentation section is used to identify the relevance of learning media to the learning process. Based on the results table, the average validation score given by the validators on the "Product Presentation" aspect is 96%. It is considered highly qualified. In conclusion, the media presentation component is categorized as qualified by the validators.

D. Layout Dimension (Layout)

Layout dimension is used to find out whether the learning media has met the relevance in arrangement, including the quality of visualization such as color combination, font, and animation. Based on the table above, the average score given by the validator for the layout dimension is 93%. Therefore, the assessment of this aspect is highly qualified. Overall, this component of the layout dimension was categorized as highly qualified by the validators.

Table 2. Validation Results

No.	Item Assesed	Validation (Persentage)	Criteria
1.	Product and Content Dimensions	96%	Very Eligible
2.	Linguistic Dimension	95%	Very Eligible
3.	Process	96%	Very Eligible
4.	Layout Dimension	93%	Very Eligible
	Overall Assessment	**95%**	**Very Eligible**

The table above shows the average score of the validation process conducted by the validators (Medan State University Lecturer and Head of Language Lab, Faculty of Language and Arts, Medan State University). They validated the media based on four aspects including product and content dimensions, linguistic dimensions, process dimensions, and layout. The media that has been validated gets an average score of 95% which is very feasible. Therefore, based on the validation score given by the validator, the media is considered feasible to be used in the listening and speaking learning process in the English Education department total of 23 people.

The experts' criticisms and suggestions can be seen as follows:

1. Lecturer: Visualization and aesthetic of the media are revised as well as possible.

2. Head of Language Lab: The display of competencies and objectives should use the same subject, there should be a sub-title that can be read and practiced the expression learned, and on the weather video there is no competency information.

3. Thus, based on the results of media expert validation, it has been categorized as good and suitable for use by students majoring in English Education.

4. Revising Learning Media

This stage was carried out to improve the quality of the media by adjusting some suggestions and comments given by media experts as validators. Revisions include improvements to aspects that are still considered lacking in visualization, display of competency writing, and also sub-titles.

5. Final Product

The final product is obtained after going through the validation and revision stages. The final product of this research is an AI animation video designed based on the results of the validation stage, and considering input and suggestions for product improvement from validators. The validation of lecturers and media experts is a benchmark for the feasibility of learning media products developed by researchers. The components analyzed to determine product feasibility

include material/content components, presentation components, language components, display components, and manufacturing processes. Then the researcher revises the product according to the comments and suggestions given by the validator. This stage is important in developing products so that the media is more suitable to use in learning. And in the end, the final product was produced in the form of AI Animation Video learning media.

4. Discussion

As a Product-Based Research, this study aims to develop learning media based on Video Animation. Researchers conducted the steps of the R&D cycle proposed by Borg & Gall (2003). The first stage of analyzing the needs of students whose purpose is to assess how the right product is to be developed. Because the material to be developed is listening and speaking learning, researchers took 23 students who attended the lecture. The results of the questionnaire answers revealed that most students enjoy learning English in class but they need additional learning media to improve speaking skills. Because the previous media only used audio and only answered exercises on the module. This caused students to still have difficulty understanding vowels and nervousness in speaking English. Most of the students answered that they wanted to learn media in the form of animated videos with good audio and interesting visualization to motivate them during the learning process. So, it is concluded that it is important to develop more interesting and attractive video media to support them.

Therefore, the researcher has developed a learning media that focuses on students' speaking skills. The media is created using an Artificial Intelligence (AI) application and can stimulate students' understanding in listening and speaking and encourage their critical thinking to understand the meaning of the video. To get a quality final product, the researcher submitted it to the validator for validation. The validators were Medan State University English lecturer Prof. Dr. Sumarsih, M.Pd as the first validator and the Head of Language Lab of the Faculty of Language and Arts, Medan State University, Rika, S.Pd., M.Hum as the second validator. Based on the research findings regarding student needs and the results of expert assessments, the media was developed in accordance with the stages. Therefore, this AI Video media is considered appropriate for use in learning. Based on the results of the validators, the average evaluation value of all aspects is 95% which indicates that it is very good to use. Therefore, it is concluded that the media is suitable for listening and speaking learning.

5. Conclusion

Learning media development must always be carried out by the educator, this is due to the demands in the Industrial Age 5.0 which is full of technological innovation. The development of AI Animation Video media as English-speaking media for listening and speaking learning uses the Research and Development (R&D) method by Borg and Gall. In producing the product, six stages of research were followed. The six steps include information/data collection, data analysis, media design, expert validation, media revision, and final product. A needs analysis was conducted and 23 students were taken as respondents in this study. After analyzing the shortcomings and needs, the media was designed based on the category of student desires. Following these steps ultimately resulted in a final product that has been validated by experts to produce media that is in accordance with the value of the media that has been validated to get

an average score of 95% which is included in the very feasible category. The product content includes text, images, videos, and backgrounds in the form of auditory recordings and sound effects. The results of the development of AI animation videos are highly qualified to be used as learning media because they have met several criteria as good media.

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