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EXPLORING THE USE OF CHATBOT AS A MEDIA IN MOTIVATING THE STUDENTS TO LEARN SOLAR SYSTEM AND ENGLISH

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Abstract: The fact that teachers only rely on books as a learning aid for students is unfortunate, especially for elementary school students. They have high desire to explore and love to play with their imaginations. Therefore, an easy and practical technology is an alternative. Through a chatbot, educational materials comprising images, videos, and texts can motivate students in learning English. This study aimed to create a Chatbot AI Zeno to motivate the students in primary school to learn Solar System and English. The research method used in this study is the Research and Development method (R&D).The chatbot design is by the Rapid Application Development (RAD) method, to create the application fast and iteratively. The research subjects in this study were 30 grade 6 elementary school students at Tanjung Barat 04 Jakarta. Data collection techniques used questionnaires, interviews, documentation, and tests. The questionnaire consisted of questions about students' perceptions of chatbot design, about understanding of the material presented on Zeno the Solar System Patrol Man chatbot, and the students' perceptions about it. The results of the chatbot testing received positive responses from the teachers, and the students. Based on the evaluation, 90% of students reported feeling motivated and assisted in their learning while using the chatbot. Thus, the conclusion is that the Zeno chatbot can motivate and aid the learning process.

Keywords: Chatbot, Artificial Intelligent (AI), Solar System, English for Young Learner (EYL)

INTRODUCTION

The development of the times is directly proportional to the development of technology, meaning that along with the development of the times, technology is also developing. Technological developments affect almost all sectors of life, one of which is education. The application influenced the learners in any level to develop professionalism (Warni, Komara, Kaniadewi, 2023). Nowadays, thanks to technology, students do not need to bother looking for subject matter and also don't need to bring lots of books to school; everything is available on the Internet. Today's students can learn through social media, websites, applications, and others. The use of online applications is an effective alternative in the teaching and learning process. Chatbot AI is one of digital media that can motivate the student in learning process (Alifandra & Wijirahayu, 2022).

One of digital media that is suitable for supporting the abilities of elementary school children is chatbot. It is a computer program that can communicate with humans interactively through voice, video, or writing media. Chatbot itself includes artificial intelligence (AI). Chatbots are on various platforms, including desktop, Android, iOS, and others. With the development of the internet, it is easier to access because the average community already owns and can use gadgets properly.

According to the Central Statistics Agency (BPS), 67.88% of the Indonesian population of 5 years and over already have a mobile phone. The male percentage was 72.76% and 62.91%

female (BPS, 2022). The platform was the best for developing chatbots as a learning multimedia. Interesting media in learning English could reduce the students' anxiety (Wijirahayu & Sutiwan, 2023).

Chatbots are a medium for presenting interactive material. It is interesting because the question-and-answer method on chatbots is the same as the method used by teachers in class. With chatbots, it is enabling two-way communication between students and chatbots as mentors (Zulkarnain. et al., 2020). Another thing that needs attention is the design and method of using chatbots that match to the students' interest. The students could have high motivation to repeat learning independently using the chatbots. Therefore, it is necessary to create an attractive and easy-to-use interface, since it will motivate the students to use it.

Based on interviews with teachers at state elementary school (SDN) 04 Tanjung Barat, the classes need digital media that can display text, video, and images would assist the student learning process, especially for the enrichment process of limited learning time in class. The observation in the preliminary study in one of the English classes at SDN 04 Tanjung Barat showed that only a few students were confident to present Solar System in English. It was because they rarely listen, watch videos and communicate in English.

Solar System is one of the themes in elementary school grade 6 science subject. Yet the material in the text book used at SDN Tanjung Barat 04 Jakarta is limited on text book in Bahasa Indonesia and is not multimedia. In international primary school, there are evident that the students could present Solar System in English fluently. Therefore, action to overcome the gap is needed. by creating multimedia by using AI technology to support and motivate the students to express the ideas in English especially about Solar system.

In Turkey, chatbot related to Matter and the changing state of matter' unit in the 5th grade science course has been used, and positive contribution to the learning (Topal, Eren & Geçer, 2021). It was fun, and the students would like to use it for other courses. In one primary school in Sumedang Indonesia, the use of chatbot as learning media on earth rotation and revolution material showed that it could overcome difficulties in learning science (Rosmiati, Sujana & Aeni, 2022). Yet, specific study in the use of chatbot about solar system in primary school has not been reported.

Therefore, in this study the researchers created a chatbot application as an e-learning medium about Solar System. The users are the primary school students for the teaching-learning activity to increase motivation to enrich the teaching materials so the students could access it independently, anytime, and anywhere. This study seeks to answer the question of what way the development of Chatbot Zeno could motivate elementary students to learn Solar System and English.

METHOD

The research method used in this research is the Research and Development method (R&D). This method refers to innovation activities to develop and improve products or services that have been created (Gustiani 2019).

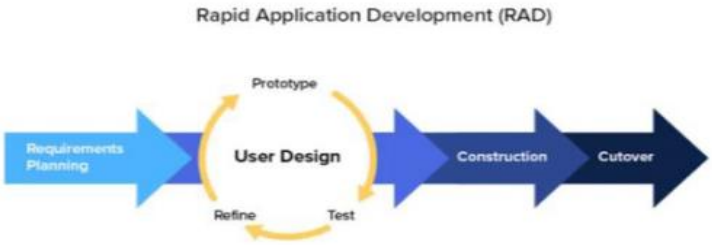
Implementing the research is by designing a chatbot Zeno with Solar System in English as the content and implementing the innovation in one class of elementary school students. The exploration of using Chatbot Zeno in classroom practices is to develop and improve the Chatbot to motivate the students to learn more (Figure 1).

The research subjects in this study were 30 grade 6 elementary school students at Tanjung Barat 04 Jakarta, with 15 females and 15 males. Data collection techniques in this research used questionnaires, interviews, documentation, and tests. The questionnaire used consisted of

questions about students' perceptions of chatbot design, questions about understanding of the material presented on Zeno's chatbot, and students' perceptions of YouTube videos.

In this study, we developed the chatbot Zeno Application as a medium for learning the solar system and English using the RAD (Rapid Application Development) development method. This method places emphasis on efficiency according to needs.

Figure 1: The stages of RAD in Zeno's chatbot development

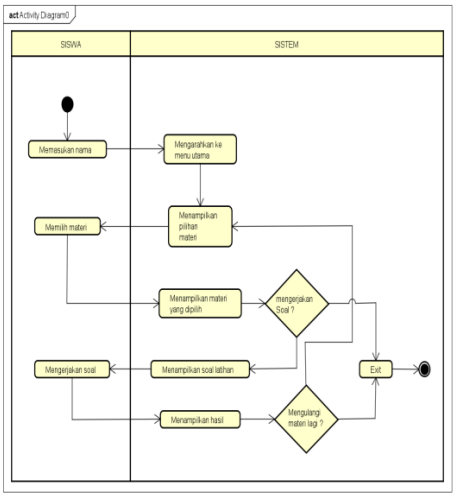


FINDINGS AND DISCUSSION

The first stage in the design process is to conduct a literature study regarding the material in the chatbot. The Zeno chatbot contained science material about the solar system and English. The next step is adjustments to the syllabus used by elementary school students, especially the syllabus for 6th-grade students. The literature study was from various sources, including from the partner school teachers.

Program architecture is a general description of the program. We displayed the program description as an activity diagram. An activity diagram is a diagram of the processes that occur in the system (Figure 2).

Figure 2: Architecture activity diagram of Zeno Chatbot

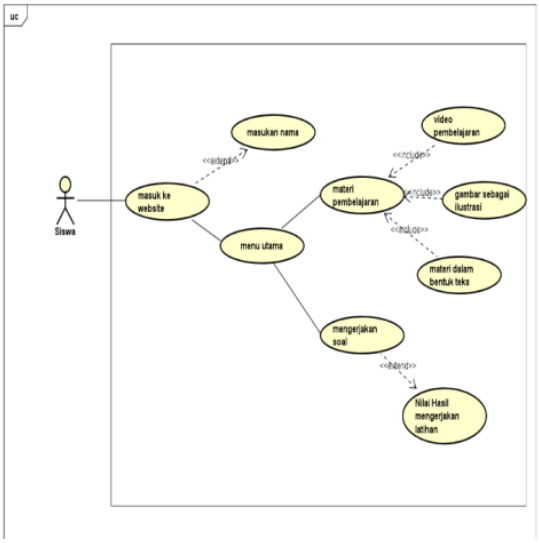


As can be seen in the diagram above, students will enter the website after clicking on the link provided, entering the system, and the students will answer whether they are ready to study. Once ready, the student should write the student's name, then there will be a menu to direct to the main menu. In the main menu, there are four choices displayed. The students can choose by clicking a button or typing the title of the material. Each material will provide teaching materials such as text, images, and videos. After studying all the material, the students can test their understanding by answering the questions. After seeing the results, the students can determine whether they are happy with their understanding. If already done, the students can choose the exit menu. However, if they are still curious, they can return to the main menu and repeat material they do not understand.

An interrelated interaction between actors and systems that function to model the behavior of the system created is the Use Case. In short, the use case functions to know the needs in the application function and who may access these needs (Rosa, 2013). We made User Cases based on the development. Therefore, the applications developed are effectively under what the user needs.

The system built is a learning chatbot for solar system material and English for 6th-grade elementary school students. We designed the Zeno chatbot using the Rapid Application Development (RAD) development method. Based on the analysis, the students need chatbots that can help the learning process or enrich teaching materials while at home.

Figure 3: Use Case of Zeno Chatbot

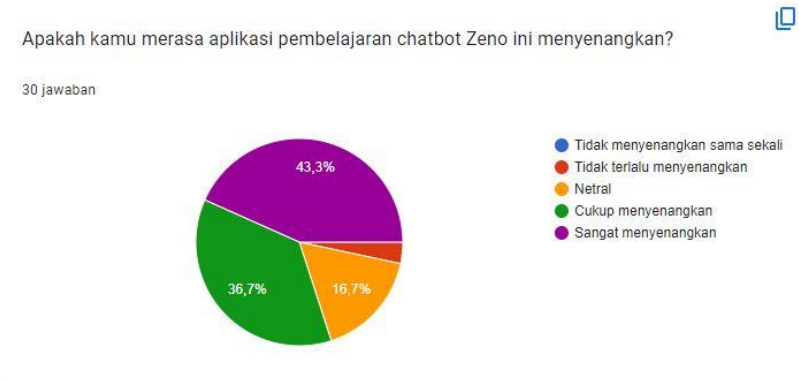


The designer adjusted the interface to the material from the chatbot. Because the chatbot contains material about the solar system and English, the interface of the Zeno chatbot also uses a space theme dominated by blue, black, and purple (Figure 4). We made the user interface display of the chatbot similar to chat applications such as WhatsApp, Messenger, Line, and others. The purpose of making this interface is to stop the feeling that students will learn when using chatbots. We hope students will feel like they are chatting or chatting with their friends; we expect this to make students motivated to use chatbots as a medium for continuous learning.

Figure 4: Zeno Chatbot Interface

Developments made from templates are mostly as interface changes. We made chatbots to help the learning process as digital media display images, videos, and text. With chatbots, we can assist the students in learning the subject, especially when doing independent enrichment at home. Based on our study on video media, image illustrations, and text, continuous repetition can increase students' understanding of the material by 90%, and we made chatbots to help students reach this stage.

Figure 5 : Zeno for fun learning

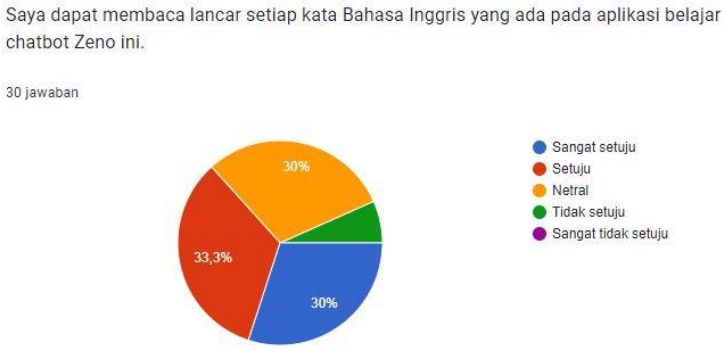


Therefore, the chatbots should be as attractive as possible to increase student motivation for better learning achievements. Since chatbot has a function to strengthen short memory, the e-book with the same theme would support the learners' long term memory and creativity in classroom practices (Wijirahayu & Roza, 2022).

Figure 6: The frequency of using Zeno chatbot

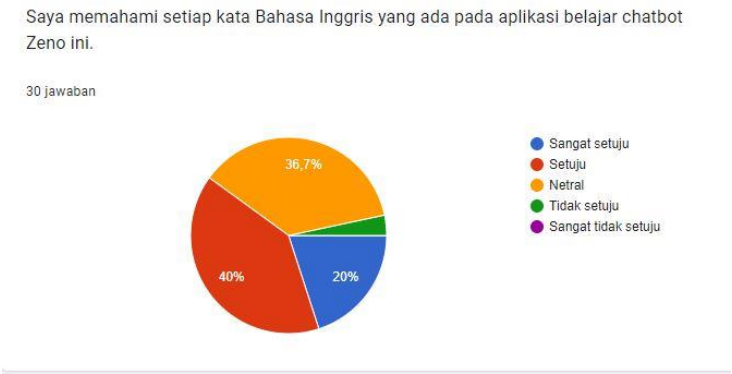
Based on the needs above, we created the chatbot of a website to make it easier for elementary school students to access. The website is also for various devices such as computers, mobile phones, tablets, and others as long as they can access the internet and a browser. Apart from that, to make it easier after accessing the website, students do not need to register, register, or even link to any social media. Enthusiasm in using interactive media in language learning lead the learner tobe more autonomous (Wijirahayu & Mustika, 2019)

Figure 7: Zeno chatbot for reading



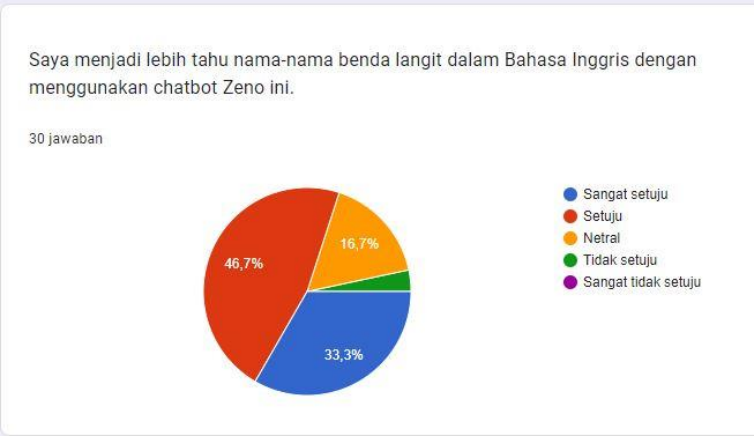
Students need to write their name and can directly access the main menu. In the main menu, they can click on an existing button or write the title of the material according to the chat column. The students can learn various messages from the images, visuals, and text media in the Zeno chatbot. It will increase their creativity in learning English (Wijirahayu, Priyatmoko & Hadianti, 2019)

Figure 8: The use of Zeno in improving vocabulary



Based on the test results of the 6th-grade students at SDN 04 Tanjung Barat, the Zeno chatbot received a positive response from teachers and students. Around 10% of students felt unmotivated using chatbots, 21% felt quite motivated, 43% felt motivated by using chatbots Zeno, and 26% felt very helpful and highly motivated in learning when using chatbots. Based on the existing data, the chatbots can help teachers and students in the learning process. It also showed that students are interested in using chatbots as learning media. Chatbot developed the students' research knowledge and led them to have positive learning outcomes that increase their personalized learning experience (Vanichvasin, 2022). It also motivated the students to develop their English mastery (Aulia & Wijirahayu, 2022).

Figure 9: Zeno chatbot in improving knowledge about Solar System in English



Most of the students in this study (80%) agreed that the use of Zeno chatbot assisted them to be more knowledgeable about Solar system expressed in English. They informed that this media made it easier for them to learn English too (83%). It is presented in figure 9 and 10.

Figure 10: Improving knowledge about Solar System and English mastery with Zeno chatbot

The images and video explanation in the chatbot about planets in Solar system attracted the respondents of this study to gain more knowledge (90%) in figure 11. Yet, there should be more efforts to equip the students with more information about the formation of a star including the sun as the centre of our solar system. Even though, the figure 12 showed that 70% of the respondent has satisfaction about it. The primary teacher's prior knowledge in using digital media in increasing the students' vocabulary mastery plays important role in classroom practices (Wijirahayu, 2017). The teachers' creativity in implementing chatbot in their practices is necessary to be developed (Dewi & Jonathan, 2022)

Figure 11: Zeno chatbot in improving knowledge about planets in Solar System

Figure 12: Animation video in Zeno chatbot about the Formation of the Sun

Visual aid in Zeno chatbot provided in the form of YouTube video gained 83% positive responses from the elementary school students in this study (Figure 13). It is part of the nature of their learning process as English for Young Learner golden age. It helped the to gain more new English vocabulary (86.7%). Figure 14 showed the strong agreement from the respondents about it (40%). YouTube videos provided authentic learning material for listening that assisted the learner to be more active in speaking (Lorenzo & Wijirahayu, 2022)

Figure 13: The use of illustration in YouTube video in Zeno chatbot

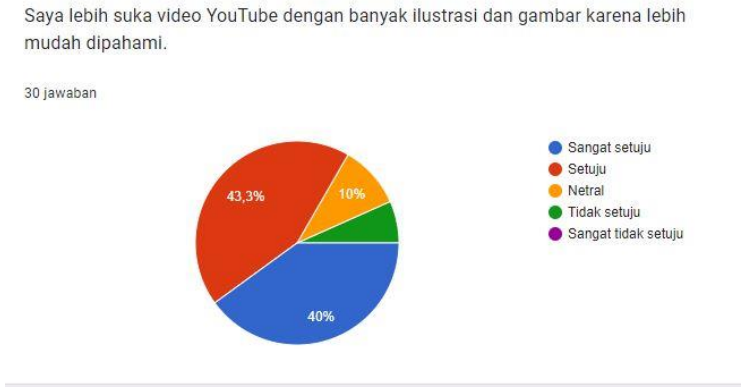


Figure 14: The use of illustration in Zeno chatbot for new English vocabulary

There are some suggestions for Zeno chatbot development. Figure 15 showed the students' enthusiasm in writing comments. Zulkarnain (2020) stated that need analyses were the bases in designing chatbot in Education. Wijirahayu & Roza (2022) also argued that e-book and chatbot produced by teacher are potential digital tool as an enrichment for text book.

One of the suggestions from the respondent was to provide Zeno chatbot in Bahasa Indonesia. The students also admitted that the process of English learning is fun. Moreover, the use of Zeno chatbot also motivated them to learn more about Solar System with the videos and pictures in it.

CONCLUSION

After a series of development, testing, and research, it can be concluded that Zeno chatbot development design produces a good response from teachers and students. The Zeno chatbot application can run well, all the buttons and functions in the chatbot can work properly. Easy access to the Zeno chatbot also makes students happy to use it. Based on the data over seventy percent of students feel motivated to learn when using the Zeno chatbot and will use the chatbot to enrich learning materials at home.

In further research, the interface of the chatbot will make it better and more attractive. Student research data included the student scores after working on the questions in the chatbot is to monitor how the chatbot influences students' understanding. The students' knowledge of the materials measured showed an increase. In the Zeno chatbot, there is a Solar System material in English. We also made an Indonesian version to help the students understand the material better. The application of chatbots would expand, not only to contain material about the solar system.

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