Utilization of Chatbot Telegram AI to Promote Students' Creative and Innovative Entrepreneurship in Learning Context

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ABSTRACT

The development of technology in the current era is advancing very rapidly. Along with digital learning materials, they can increase verbal communication and various visual, audio and motion texts. This study aims to develop students’ 4C competencies (Creativity and Innovation, Critical Thinking and Problem-Solving, Communication and Collaboration) in 21st-century learning through creative entrepreneurship learning materials of the Telegram Chatbot Artificial Intelligence with Natural Language Processing (NLP) Method. The scope learning materials are focused on Personal Business Plans, Customer Interviews, Customer Observation, Selling Products, and being a Creative Entrepreneur, which will be uploaded to the Telegram Chatbot as e-learning students’ material. This research will use the Research and Development approach of Borg and Gall (1983). The series of research and development steps are carried out in stages, and each action will be taken to the results of the previous step until a new development product of learning materials is finally obtained. Product development design of the preliminary stage needs analysis is carried out by collecting related data and developing Creative Entrepreneurship learning materials for the Telegram chatbot model. The Creative Entrepreneurship learning program will involve 50 students of the English Literature Department, Universitas Negeri Medan, to analyze the feedback from the questionnaire Google form.

Keywords: Chatbot, Telegram, AI, Creative, Innovative.

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1. Introduction

21st-century learning is designed for the 21st-century generation to keep up with technological developments. Therefore, students are required to be able to master four learning skills (4C), namely: Creativity and Innovation, Critical Thinking and Problem Solving, Communication and Collaboration. It is one of the instruments to be able to achieve the future. Because of its significant influence, students are expected to be able to adapt to the times so that they can compete well in the future.

In this 21st century learning, it is indispensable to master technology, especially in the application of Artificial Intelligence (AI). AI aims to expand humanity’s capacity to organize society through intelligent machines to realize that humans and machines coexist. Many learning media utilize AI, one of which is hybrid media. Combining online activities with traditional classroom instruction is commonly referred to as web enhancement. A chatbot is a computer program simulating communication. The program answers questions posed by the user. This tool is equipped with artificial intelligence (AI) technology and is very commonly used in various e-commerce platforms where these designed automated messages can increase sales or service productivity. Using chatbots can also save time.
Based on the phenomenon and explanation above, the author wants to conduct research related to how the Telegram Chatbot Application development model in Creative Entrepreneurship learning through the Natural Language Processing (NLP) method in the context of 21st-century learning, which is learning designed for 21st-century generation to be able to keep up with the flow of technological developments. This research is essential because technological advances are now increasingly affecting education. Therefore, learning by utilizing AI, such as Chatbot, is carried out. The integrated system helps the teaching process from various fields of science.

2. Literature Review

2.1 Telegram Artificial Intelligence Chatbot App

Research on designing a Chatbot as a virtual assistant at Raharja University (Sudaryono et al., 2020) uses agile software development methodology using the scrum framework. The development is very complex and unpredictable, so scrum is used. The Agile concept is also applied so that new technologies can be done quickly. The findings are that this design produces a chatbot prototype using AIML (Artificial Intelligence Markup Language), translated by ALICE (Artificial Linguistic Internet Computer Entity), and the system can motivate entrepreneurs to get information from entrepreneur forums and other tutorials on entrepreneurship. This research starts with analysis, design, implementation, testing, deployment, and maintenance.

Research related to the application of Chatbots using Natural Language Processing (NLP) as an effort to learn English based on Android (Tifanny Martavia et al., 2022). The methodologies used are library research and questionnaires, as well as pre-test and post-test. It was found that NLP in chatbot design is an alternative method in learning English, which provides explanations of 16 tenses. Chatbot users can ask questions related to 16 tenses in English, such as understanding in English and Indonesian.

Chatbot Design Using Natural Language Processing (NLP) was again carried out. However, it was built using Dialogflow tools from Google for the Ordering System at Coffee Shops (Chandra et al., 2020). It uses a qualitative descriptive approach method that uses a natural setting to understand the phenomenon experienced by the research subject by describing data in words and language and utilizing various natural methods. It was found that this Chatbot can serve transactions and display menu options at the Coffee Shop.

Wijaya et al. (2019) researched making Web-Based Chatbot Applications at CV. Unomax Indonesia. The method used in this research is a prototype method based on Hypertext Preprocessor (PHP) programming and My Structure Query Language (MySQL) Database. The results showed that the web-based Chatbot runs well and can answer questions as expected. The Chatbot has been declared ready to be implemented by CV Unomax Indonesia.

Other research related to chatbot design (Luqman Hakim et al., 2020) was conducted to improve the efficiency and effectiveness of Customer Support work at Proklamasi 45 University for prospective students. This research develops a chatbot using Machine Learning techniques and the waterfall method. The system will be tested by the Black-box method by entering input and then evaluating the output generated when the program runs. The test results will be analyzed using quantitative data analysis techniques by calculating the percentage of correct answers generated by Chatbot. It was found that Chatbot can be used to automate the work of Customer Support because the resulting accuracy reached 97.75%, and the response time was quite fast. The built Chatbot is very dependent on the amount of training data. Therefore, the amount of training data must be increased to improve the resulting accuracy.

The article entitled Implementation of English Learning Chatbot Using Social Media (Sarosa et al., 2020) develops a chatbot application for learning English structures, and the chatbot application is integrated with Facebook social media called ELA-bot using the Chatfuel framework. NLP (Natural Language Processing) is the method used; the method was also used in previous studies. The results showed that 97.5% stated that the Chatbot had helped them learn English, 90% said that the material presented was quite exciting, and 72.5% said that the chatbot application did not burden their mobile phone performance.

Digital learning media has a comprehensive and significant influence on education today. Every teacher must create creative and innovative learning media that can be used in delivering learning materials. Having suitable learning media can increase interaction between the two parties concerned so they are not bored following the learning. The suitable digital learning media in the teaching and learning process will produce satisfactory output. Using suitable media in delivering material will give good results. In the digital era, teachers must have creative ideas related to learning media. One of the learning materials that utilize digital media is Creative Entrepreneurship. The design of a Chatbot through the Telegram application is done in this research. In this research, Chatbot functions as a material provider in the form of text and audio. This tool delivers material following the procedures in the program. Especially in the discussion of Creative Entrepreneurship, audio
material is delivered so that chatbot users can learn, understand, or model how to convey entrepreneurship material clearly and integrated.

2.2 NLP (Natural Language Processing)

Natural Language Processing (NLP) enables machine-to-machine or human-to-machine interaction using human-related Natural Language. Natural Language Processing is a set of theoretically motivated computational techniques for analyzing and representing naturally occurring text at one or more levels of linguistic analysis to achieve human-like language processing for various tasks or applications. Natural Language Processing (NLP) methods are widespread in creating Telegram chatbots. This method is considered simple because it only involves a few tools.

![Figure 1. Machine Learning](image)

NLP methods work by retrieving queries or information from databases and software users use to request information. The bot takes simple queries, analyzes them as input and classifies the data into text for the simple response required. The system will automatically redirect the conversation to the actual user if it is found to require a complex response.

Research on Natural Language Processing in the journal An Automated Conversation System Using Natural Language Processing (NLP) Chatbot in Python shows that the NPL method is very suitable for creating a simple chatbot because it does not require a challenging and high computer system for its application. NPL provides various methods, functions, and pre-made models that can be used for various text and language analysis operations. Although categorized as relatively simple, it is so flexible that it can be easily customized for any scenario per the user's command.

![Figure 2. Natural Language Processing](image)
2.3 21st Century Learning

21st-century learning is designed for the 21st-century generation to keep up with the latest technological developments. Especially in the realm of communication that has entered the joints of life, students are required to be able to master four learning skills (4C), namely: creativity and innovation, critical thinking and problem-solving, communication and collaboration. When drawn from humans, 21st-century learning aims to make humans relevant to their times, especially Indonesian humans, forming the initiation of 21st-century learning. It is one of the instruments to buy the future. Because of its significant influence, students are expected to be able to adapt to the times so that they can compete well in the future.

The 21st century is also known as the knowledge age. In this era, all alternative efforts to fulfil life needs in various contexts are more knowledge-based. Efforts to meet the needs of knowledge-based education, knowledge-based economic development, knowledge-based community development and empowerment, and development in the field of knowledge-based industry (Mukhadis, 2013: 115).

Kemdikbud formulates that the 21st-century learning paradigm emphasizes the ability of students to find out from various sources, formulate problems, think analytically and cooperate and collaborate in solving problems (Litbang Kemdikbud, 2013). 21st-century learning includes many things. Skills that are classified as 21st-century competencies include Critical thinking, Creativity, Collaboration, Communication, Information literacy, Media literacy, Technology literacy, Flexibility, Leadership, Initiative, Productivity, and Social skills (https://www.ruangkerja.id/blog/kompetensi-pembelajaran-abad-21).

The skills that are the focus of learning in the 21st century are skills in mastering information media and technology. Today, Indonesian people no longer create or search for information only with books, but the internet almost dominates all aspects of life to improve skills and develop abilities. Technological literacy is required in 21st-century learning to be responsive in accessing information effectively and efficiently, competent and criticizing information, and using information accurately and creatively.

3. Method

3.1 Research Method

This research uses a research and development approach because it follows the objectives to be achieved. In contrast, the development research model chosen is the educational research and development model developed by Borg and Gall (1983: 772). According to Borg and Gall, "Educational research and development (R & D) is a process used to develop and validate educational production". With this understanding, a series of research and development steps are carried out in stages, and each step taken refers to the results of the previous step until a new development product is finally obtained.

The research and learning approach in this research is utilized to produce a Digital Learning Model with the Telegram Chatbot application as an effective and integrated learning to improve the learning competencies of Creative Entrepreneurship and the implementation of 21st Century Learning.

4. Results and Discussion

4.1 Results

Competency achievement of Merdeka Belajar -Kampus Merdeka (Independent Learning- Independent Campus) based on the ten projects of modified International Toastmasters will be shown based on the Pie Chart below:
Figure 4. Respondents’ Understanding of Chatbot Telegram Artificial Intelligence

The use of chatbots in various circles is increasing and developing. One of these AI (Artificial Intelligence) technologies has been used on various digital platforms, such as social media, to become a practical and innovative business medium. In Figure 4, out of 61 respondents, 34.4% know and understand Chatbot AI well, especially bots in the Telegram application. The widespread use of chatbots really helps businesses run well, customer satisfaction and effective communication. In promoting student creative and innovative entrepreneurship, the use of chatbots is one of the right solutions because the automatic responses provided by chatbots are very structured and relevant to questions or statements given by users.

Figure 5. Respondents’ Perception on The Role of Chatbots in Developing Creative and Innovative Learning

In Figure 5 above, most of the participants, that is 46.2%, strongly agree that Chatbots can play an active role in developing creative and innovative learning. Chatbots can be used as an interactive form of learning, for example, in assisting students in answering questions, providing clear and structured feedback and providing additional learning materials according to individual needs. Apart from actively developing creative and innovative learning, chatbots are also used as learning media because learning can be done anytime and anywhere.

Figure 6. Respondent’s Perceptions of Chatbot Supports on Studying Creative Entrepreneurship

In Figure 6, most participants (44.3%) felt that using Chatbot Telegram to support creative entrepreneurship learning was quite satisfying. Using Chatbots in creative entrepreneurship is a great solution. In supporting learning, Chatbot can function to:

- Provide information on course material
- Help complement the learning material to be more varied
- Give quizzes and suggestions/tips
Apart from these three things, Chatbot can be used as a medium that helps provide ideas or ideas following the objectives of learning creative entrepreneurship, namely the ability of a person to express ideas and ideas through creative thinking. Of course, the use of Chatbot can be interpreted as a practical, innovative and creative function. We must be able to use it and be responsible for its use.

![Figure 7. Respondent's Perceptions on the Role of Chatbot in Promoting Products](image)

Figure 7. Respondent’s Perceptions on the Role of Chatbot in Promoting Products

Figure 7 shows that most of the participants, namely 44.3%, believe that this Chatbot can promote products as the final project for the Creative Entrepreneurship course. The results of the participant's responses to this question were the same as those of the participant's responses to the previous questions. It shows that the two questions are related. The final assignment for Creative Entrepreneurship courses can be in the form of products or services. An effective tool like Chatbot is very capable of promoting products/services.

- Offering and promotion of products and services
- Provide product and service information
- 24/7 service

Chatbots must be used wisely, such as sparingly sending messages or offering and promoting products and services. It has the potential to annoy customers, resulting in losses.

![Figure 8. Respondents' Perceptions of the Benefit of Chatbot in Supporting Creative Entrepreneurship Learning](image)

Figure 8. Respondents’ Perceptions of the Benefit of Chatbot in Supporting Creative Entrepreneurship Learning

In Figure 8, some participants agree that Chatbot helps support Creative Entrepreneurship learning. Like the narrative previously described, the use of Chatbots has a significant influence in supporting the Creative Entrepreneurship course. Chatbots provide supporting materials, arrange learning schedules, provide exercises such as quizzes, provide input in ideas and suggestions, provide an overview of planning in making products or services as a final assignment, and provide feedback and evaluation.

4.2 Discussion

Many respondents gave positive answers regarding the question. Most of them said it is helpful to use Chatbot Telegram Artificial Intelligence. It can assist their work related to promoting their final work in marketing the product. Most of them also said learning how to use Chatbot Telegram Artificial Intelligence was easy. It also mentioned that the Artificial Intelligence tool can also help them improve their understanding and mastering of technology. This skill is advantageous when we know how to use Artificial Intelligence, especially in the 4.0 industry era. Artificial Intelligence has an essential role in helping someone's business or study.

An example is an automatic Artificial Intelligence Bot in Customer Service. This Chatbot is very helpful in product marketing; the seller does not have to answer customer questions individually. The system will
automatically respond to prospective buyers’ questions, and prospective buyers can immediately respond to the message. It also makes it very easy for marketing, especially in working on projects we do in entrepreneurship. On the other side, some of the respondents have different answers. Some of them need help in using Artificial Intelligence. They also mentioned that utilizing the bot tool needs much effort. Sometimes, it can be an error or bug. However, compared to traditional marketing methods, Chatbot can be a cost-effective solution for engaging potential users and promoting the product. Chatbots can handle repetitive tasks and provide immediate responses, saving time and effort for both providers and users.

On the other side, a view of respondents never use Chatbot Telegram Artificial Intelligence at all. Unfortunately, they did not know and use the Artificial Intelligence tool. In summary, this Chatbot Telegram Artificial Intelligence would bring a huge positive impact to the people. It was helping promote products to everyone who might be interested in the product. Then, it also helps people to answer similar questions already set up by the provider. It will be more effective and efficient.

5. Conclusion

- To promote student creative and innovative entrepreneurship, the use of chatbots is one of the right solutions because the automatic responses provided by chatbots are very structured and relevant to questions or statements given by users.
- Chatbots can be used as an interactive form of learning, for example, in assisting students, answering questions, providing clear and structured feedback and providing additional learning materials according to individual needs.
- Chatbot can be used as a medium that helps provide ideas or ideas under the objectives of learning creative entrepreneurship, namely the ability of a person to express ideas and ideas through creative thinking.
- Chatbots for Creative Entrepreneurship courses can effectively and very capable of promoting products/services.

References


https://wartaguru.id/pembelajaran-abad-21-pengertian-model-dan-konsep-4c/
https://www.techtarget.com/searchcustomerexperience/definition/chatbot
https://clevertap.com/blog/natural-language-processing/
https://youtu.be/UkODQwZABSA
https://www.dewaweb.com/blog/nlp-adalah/#Virtual_assistant_dan_chatbot

Imamah, F., & Dores, A. (2018). Aplikasi chatbot (milki bot) yang terintegrasi dengan web CMS untuk customer service pada UKM MINSU. *Jurnal Cendikia*, 16(2 Oktober), 100-106.


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