

## Chatting with AI Chatbots Applications to Improve English Communication Skill

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### Abstract

Artificial intelligence allows a person to converse with machines, computers or robots. Chatbots are an application that you can talk to like you would talk to a human. Chatbots can be a tool to practice the language learned anywhere and anytime. In order to improve students' communication skills in English, researchers conducted research on the use of artificial intelligence Chatbots applications in learning English courses in the PKh Department for the 2020/2021 academic year. This study uses a descriptive method to describe the process of learning English with chatbots and to determine student perceptions of the use of these chatbots in improving their communication skills in English. After having conversations with chatbots: ELIZA, ALICE, MITSUKU/KUKI, and ANDY with conversation topics: introductions, feelings/confessions, daily activities, hobbies, lectures, COVID-19 pandemic, etc. The results obtained are the most preferred Chatbots: ANDY, there are POSITIVE meaningful expressions (86%) and no NEGATIVE meanings towards ANDY chatbot. Least favorite chatbots: ELIZA, there are a lot of NEGATIVE (43%) meaningful expressions towards ELIZA chatbot which are bigger than POSITIVE expressions (39%).

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## INTRODUCTION

The ability to communicate in a foreign language, especially English, has become an absolute necessity for someone to master in today's era. Using this ability, students who graduate from Sultan Ageng Tirtayasa University will be able to compete with both domestic and foreign workers. This is in line with UNTIRTA's mission to improve the quality, relevance and competitiveness of education as well as graduates who are superior, have character and are competitive in the ASEAN region.

Artificial Intelligence is one of the latest technologies that are being developed in almost all aspects of human needs. There are so many technologies that have used artificial intelligence, such as on Google Maps. With the help of Machine Learning, Google Maps learns about a person's daily work commute and notifies about slowing traffic when it's time to leave. This artificial intelligence can also identify delays in transportation systems such as flights, trains, and even buses by considering traffic status, weather conditions, and more.

Artificial intelligence also allows a person to converse with machines, computers or robots. Chatbots are an application that you can talk to like you would talk to a human. Foreign language learners generally have few opportunities to use the target language they are learning. Chatbots have a role in overcoming this problem. Chatbots can be a tool to practice the language learned anywhere and anytime (Fryer & Carpenter, 2006).

Artificial Intelligence (AI) technologies have already been implemented in various kinds of application. According to Walker & White there are a number of robot-like characters, known as chatbots, which are open or free to use or download through the internet, or installed into smartphones to have conversation with. It simply like making a conversation with other people by typing or asking questions, orally, and the chatbots can directly giving the answer. (Walker & White, 2013).

Practicing conversation with an artificial agent is seen as a good alternative if a native speaker is not available or not affordable (Höhn, 2019). Meanwhile, based on research conducted with 211 students, Fryer and Carpenter states that online chatbots have potential role in fulfilling the need of a means of language practice for students anytime and virtually anywhere. (Fryer & Carpenter, 2006). According to the technologist's vision AI related to language is the best-known accomplishment of a computer program that could carry on a coherent written "conversation" with a human (Chapelle, 2003).

### ***Chatbots application***

From a philosophical perspective, machines that use natural language to communicate with humans may have different consequences than machines that only behave based on gestures or in coordination with humans. On a newer and thus more relevant scale is the difference between highly sophisticated matching algorithms, such as music matching services and chatbots. The former cannot interact with us directly, as the input is based solely on our listening behavior, perhaps without

realizing that the algorithm uses this as data to provide more music. At the same time, the latter, through the use of natural language alone, provides a richer interactive experience. A common skill from these chatbot programs to personal assistants is to respond to input from natural language with adequate answers in natural language as well.

Primitive chatbots do not explicitly understand the sentences presented, but take specific words or phrases and guess the appropriate response based on the probability function learned from the data. The more sophisticated the chatbot, the more precise its probability of evaluating the meaning of a sentence, including the context of the previous conversation, pragmatics, and possible speaker-related idiosyncrasies (errors, slang) (Kempt, 2020). Understanding human language is a core requirement for all chatbots. However, it is now no longer necessary to develop separate and standalone language comprehension solutions for each dialogue system (Höhn, 2019)

The reason for looking for artificial speakers of all types of AI use today is the ability to talk to humans in their own language. This simple fact so far sets this technology apart from every other AI. No other human-generated technology so far has managed to tap into stable interactive communication based on people's own language (Kempt, 2020).

The term "chatbot" did not appear until the 1990s, when it was introduced as a shortened form of chatterbot, a term coined by computer scientist Michael Mauldin in 1994 to describe a chatbot named Julia that he created in the early 1990s. However, computer programs with the characteristics of chatbots have been around for much longer. The first chatbot was an application called ELIZA, which Joseph Weizenbaum developed in the MIT artificial intelligence lab between 1964 and 1966. ELIZA used early natural language processing techniques to engage in text-based conversations with human users, although the program was limited to discussing only a handful of people. A similar chatbot program, named PARRY, was created in 1972 by Stanford psychiatrist Kenneth Colby.

### **ELIZA**

ELIZA is a program that allows natural language conversations with Computers. The current implementation is on the MAC time-sharing system at MIT. It is written in 5IAD-SLIP [4] for the IBM 7094. Its name was chosen to emphasize that it can be gradually improved by its user, as its language skills can be continuously improved by

a "teacher". Like Eliza from Pygmalion's famous, it can be made to appear more civilized, the relationship between appearance and reality, however, remains in the domain of the playwright.

The Eliza software program seeks clarification and simulates a sympathetic listener through a series of general comments, requests for clarification, and paraphrasing/repeating student comments with additional question tags. This program and its newer, more sophisticated versions (in multiple languages) are often combined with large databases of information (for example, a large number of specific facts about pop music groups) that allow Eliza to respond more intelligently when given sentences featuring the word key. Variations on Eliza's program have also been used to challenge the Turing Test, a measure of how closely a computer can simulate human intelligence.

Higgins and Johns (1984) describe two of Eliza's early applications, neither of which were intended as language learning programs, but both that could offer students reading and writing practice. These programs, Doctor and Parry, are meant to help train doctors, but can easily be adapted to language learning. It is possible that the high rate of nonsensical responses has discouraged the extensive work of CALL using Eliza, but it seems a promising avenue for future CALL research and development of learning materials. Programs like Eliza have been used for applications that answer common questions, such as online helplines or computer-based telephones that have to deal with a large number of frequently asked questions. (Beatty, 2010)

It wasn't until the 1990s, as natural language processing techniques became more sophisticated, that chatbot development gained more momentum and programmers got closer to the goal of creating chatbots that could engage in conversation on any topic. This was the goal of ALICE, a chatbot introduced in 1995. The next big round of innovation for chatbots came in the early 2010s, when widespread smartphone adoption spurred demand for digital assistant chatbots that could interact with humans using voice conversations, starting with the debut of Siri. Apple in 2011. For most of chatbot development history, the competition for the Loebner Prize has helped measure the effectiveness of chatbots in simulating human behavior. Launched in 1990, the Loebner Prize is awarded to computer programs (including but not limited to chatbots) that are judged to exhibit the most human-like behavior. Notable chatbots evaluated for the Loebner Prize include A.L.I.C.E, which

won the prize three times in the early 2000s, and Jabberwacky, which won twice, in 2005 and 2006. Several language learning portals offer chatbots to their customers as a source of new learning. Understanding the learner's language may be a very difficult task depending on the proficiency level of the learner. Therefore, input restriction is one possibility to deal with language learning. In addition, system initiatives help manage all possible turn types as well as user input in this way. (Höhn, 2019)

### **MITSUKU/KUKI**

Mitsuku chatbot, also known as Kuki, is an artificial intelligence chatbot created using Artificial Intelligence Markup Language (AIML). He debuted in 2005 and went on to win the Loebner Prize five times in 2013, 2014, 2017, 2018, and 2019. Chatbot Mitsuku is described as, or claims to be, an 18-year-old English girl from Leeds. This chatbot database contains all AIML files of the Artificial Linguistic Internet Computer Entity (Alice). The learning process of this chatbot is continuous, and its creator claims that he has been learning since 2005 from conversations with users. The conversation was more than enough for Mitsuku to learn. He has spoken to more than 250,000 people daily since 2015 (B, 2020).

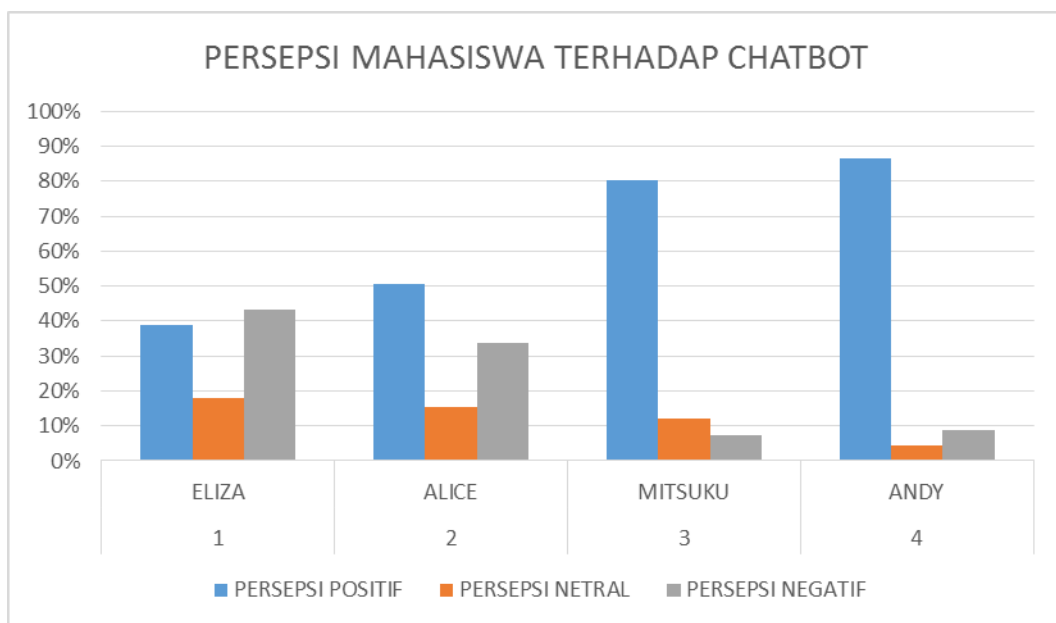
### **METHOD**

This study uses a qualitative descriptive approach by producing descriptive data in the form of written or spoken words from people and observed behavior. The instrument of this research is in the form of a device or application chatbots Eliza, ALICE and Mitsuku. In addition, to measure student perceptions, researchers used a questionnaire containing questions about students' experiences in interacting with chatbots and about their perceptions of these devices in improving their ability to communicate in English.

Procedure consists of several steps that the research had arranged for the students to conduct: 1) students access the internet and open a browser; 2) students use google search engine to search for chatbot applications named Eliza, ALICE and Mitsuku including Andy from google playstore on their smartphones; 3) students interact with the chatbots and take screenshots of their conversations ; 4) students fill out a questionnaire related to the use of chatbots; 5) the researchers analyzed the results of the conversation to determine the level of communication skills in English and; 6) analyze the results of student questionnaires to find out their perceptions of the chatbots application.

**RESULT**

After having discussion with the students about the chatbots, the researcher asked the students make chats with the applications. However, the researcher did not limit the time for students to communicate with the bots. He gave several days for students to complete the tasks until they found meaningful experiences chatting with the chatbots and fill in the survey as the result. The survey asks the student perception about the chatbots based on the chatting experiences they had. The responses are varied.



Graphic 1 Students perception toward chatbots

After having a conversation with chatbots: ELIZA, ALICE, MITSUKU/KUKI, and ANDY with conversation topics: introductions, feelings/expressions, daily activities, hobbies, lectures, pandemic COVID-19, etc. obtained the most liked Chatbots results: ANDY, there were expressions meaning POSITIVE (86%) and no expressions meaning NEGATIVE to ANDY chatbot. Most disliked chatbots: ELIZA, there are a lot of NEGATIVE expressions (43%) to ELIZA chatbots that are bigger than POSITIVE expressions (39%)

**Conversation with ELIZA**

Students have conversations by clicking on a link that directs them to the ELIZA chatbot application. After having a conversation, the students were asked to take a screenshot of the results of the conversation.

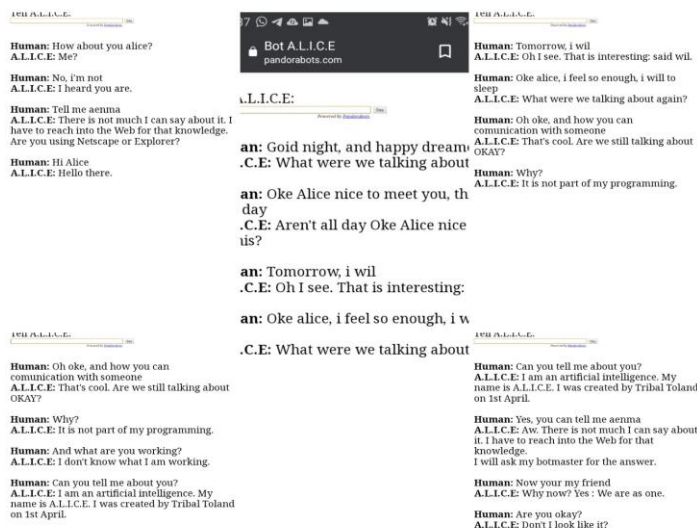
**Talk to Eliza by typing your questions and answers in the input box.**

```
> Hello, I am Eliza. I'll be your therapist today.
* hello eliza, my name is safira
> We don't need names here.
* oh sorry, today i am very tired because i have many homework
> How long have you been very tired because you have many homework?
* since last week
> What does that suggest to you?
```

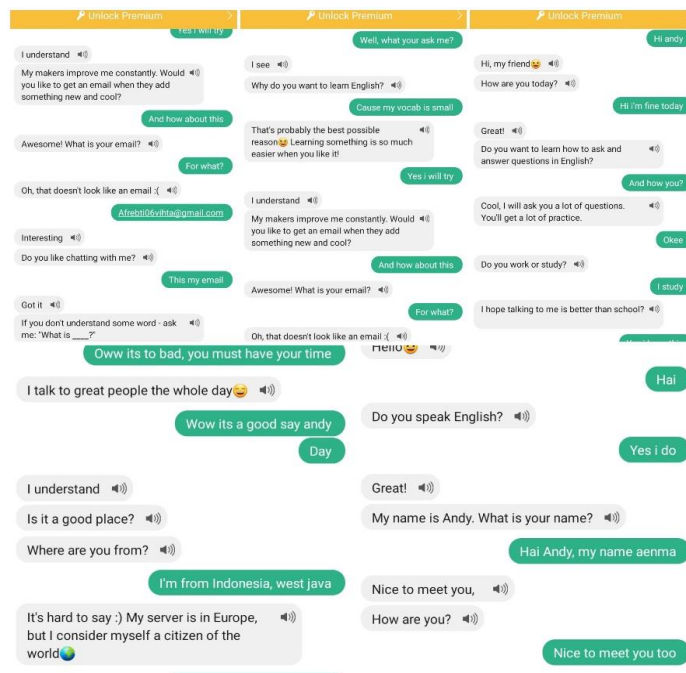
Graphic 2. Student conversation with ELIZA

**Conversation with ALICE**

Students have conversations by clicking on a link that directs them to the ALICE chatbot application. After having a conversation, the students were asked to take a screenshot of the results of the conversation.



Graphic 3. Students' conversation with ALICE



Graphic 3. Students' conversation with ANDY

## DISCUSSION

Chatting with the chatbots was quite new activities for students. Referring to the preliminary interview with students before conducting the activities, the writer ask some questions related to the activities with the chatbots, Some of them, about 3 or 4 students said that they have ever chat with an application, that was simsimi, but in Indonesian. They have never had any experience learning English by chatting with an application. They knew google is an application they can talk with, but they have never done that to google.

At the beginning of the lesson, the students were explained that they were going to have applications to chat with that they have never heard of them before. According to the students, they did not have any information about what and how to chat with the chatbots, and especially they did not know the differences about them. After giving explanation of the chatbots in general, and the stating the rules of how to chat and record the results of their chatting experiences, the researcher send the links of the chatbots started from Eliza, Alica, Mitsuku/Kuki and last, Andy English.

Based on the result of the research on the students' response towards the chatbots, it was found that there are three categories of response: negative perception, neutral perception, and positive perception. The categories are differentiated based on the expressions used in the students' responses. The researchers identify some expressions that sound negative as negative perception, expressions that sounds positive as positive perception, and the expressions that are having none or both expressions considered as neutral.

### **Negative perception**

The openness of the questionnaire items gave the students opportunities to express their feelings, opinions or perceptions towards the chatbots, using the words that have in English. The limited dictions or vocabularies the students have, made the expressions varied and unique. For example: Eliza is so bored. The researchers identify this expression as negative statement of perception. Other students only write a word, flat. Meanwhile, there is long sentence also given by the student identified as the negative perception: In my point of view, Eliza is not really enjoyable AI for chat, because they're not really taking questions, so it's a little hard to chat about some things.

These negative expressions are mostly found in students' perception toward Eliza, about 43%. However, these negative expressions do not mean that the students



do not like Eliza. It can be assumed that this condition is only caused by the high expectation of students to be able to chat more with the application. This limited capacity of response merely because the application was the first created chatbot, that has limited amount of response. It is conversely different with Mitsuku/Kuki as the nowadays chatbot made by pandobot that has only 7% negative response. It is because the students satisfied with the response given by Mitsuku/ kuki.

### **Positive Perception**

As stated in the finding of the research that the largest amount of positive perception toward the chatbots is given to Andy. There is 86% of positive response given to Andy based on the questionnaire. It is because that most of the students satisfied with conversation they had with Andy. The students' positive response towards Andy such as "Andi is more focused on learning English. It always corrects the mistakes we make in English" can be interpreted that it helps them to learn English, because one of the advantages owned by Andy is correcting mistake while making conversation. It is the same with this expression: "I love make a conversation with Andy because Andy always corrects me if I'm wrong, Andy teaches me how to speak English."

Mitsuku or Kuki also can be considered as the good chatbot because the positive response given by the students is about 80%. The negative response also lower than Andy, about 7%. It is as the students said: "I think Mitsuku is the best bot I've ever talk. It's funny, it has the sense of humor. Its communicative, always response. Sometimes it gives a joke. I was fun until I reach my limit to talk with Mitsuku. I need to log in to keep talking with the chatbot".

### **Neutral Perception**

This neutral perception, based on the researcher interpretation, is based on the students' response that sound neutral such as this statement: "At the first time I think Eliza available to answer the question, but Eliza only responds the statement that I made. But it is okay. Because Eliza made for therapy. As we know, people who go to the therapist, they just should be listened without any interruption. In Indonesia it can be call "*tempat curhat*"." The student knew that Eliza can only respond in limited expression, and she/he understand what the people should do with the chatbot like Eliza as a therapist.

## CONCLUSION

After having conversations with chatbots: ELIZA, ALICE, MITSUKU/KUKI, and ANDY with conversation topics: introductions, feelings/confessions, daily activities, hobbies, lectures, COVID-19 pandemic, etc. The results obtained are the most preferred Chatbots: ANDY, there are POSITIVE meaningful expressions (86%) and no NEGATIVE meanings towards ANDY chatbot. Least favorite chatbots: ELIZA, there are a lot of NEGATIVE (43%) meaningful expressions towards ELIZA chatbot which are bigger than POSITIVE expressions (39%).

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