# The Satisfaction of Undergraduate Students Towards the Development of Chatbot to Enhance English Question Formation

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## Abstracts

This study is part of a larger study that examines the development and effectiveness of using chatbots to enhance question formation. A new approach for language learners to engage in language learning is through technology. Chatbot is one of the valuable language learning tools that can be utilized for education. This study aimed to develop the language learning tools for enhancing the target structure of English question form, and evaluate the satisfaction of language learners based on social interaction. The participants (n=20) in this study were Thai university students which selected by intact classes sampling method. The research instruments were the role-play card activities and a chatbot. The information of conversational interaction was used as the language sample that obtained in the databased of a chatbot which was derived from the conversation setting throughout the interactive activities. The participants were required to enroll to interact with a chatbot. After four weeks of interactive activities accomplished, a perception questionnaire of a chatbot was evaluated by the intervention group. The results revealed that all aspects of chatbot performances on the questionnaire survey were significantly high. Additionally, a chatbot in this study was high potential to be used freely as language learning tools.

**Keywords:** chatbot interaction satisfaction opportunity

## Introduction

Technology has been incorporated into the education area. As it applies to Education 4.0, one of the most essential facets is to integrate technology to language teaching and learning. Smart phone technology, social media, and artificial intelligence (AI) are expanding rapidly. Chatbots are one of the most recent and popular artificial intelligence-based learning technologies. A chatbot is a computer program that is programmed with text messages or speeches to simulate human conversation in a scripted manner (Rouse, 2017:online). For a decade, artificial intelligence (AI) has received greater attention by the linguists. For instance, Jia (2004:55-249) applied chatbot through web-based as the application for learning Germany language. Fryer (2006) developed chatbot to assist English language learning tools. Similar to Jia (2009:1272) created CSIEC chatbot as English language learning tool. Goda) used chatbot in EFL classroom for enhancing the critical thinking of L2 learners. Fryer compared chatbot and human performance in language learning**.** According to earlier studies, linguists mostly employed chatbots to aid in their language acquisition. However, it is infrequent to see the

* Received: September 8, 2022; Revised: September 29, 2022; Accepted: September 30, 2022

definite feature of English question formation in chatbot functionality. Therefore, this study aims to develop a chatbot which is involve a particular function in order to foster language learners' ability in producing question form.

## Research Objectives

1. To examine the satisfaction of undergraduate students towards the development of chatbot for improving question formation.

## Research Methodology

This study is a mixed-method study. According to the available accessibility, a chatbot in this study was set up through Facebook platform. Two main parts of the methodology were described separately by the scope of the study as follow;

### Scope of the study

Scope of Chatbot function

A chatbot of the study was created by using Dialogflow, a Google chatbot building platform that utilized machine learning Natural language processing (NLP) to assist in understanding the intent and the entity in users' conversations and respond to questions in accordance with user needs in accordance with rules or flows that developers trained the machine to follow. Moreover, the sentences that the chatbot received became more flexible thanks to dialogflow. To stated, Dialogflow is capable of determining whether the input sentences did not entirely match the conditions indicated in the rules.

For databased input, a generative question and answering model was used to answer context-specific questions. The coding data collected from conversation setting which were divided into three sets. According to Taghipour and Ng (2016), Farag et al and Hussein et al ,the dataset for training the system consisted of 60 %, 20% was used as a developing set, and 20% was for a system testing set. The chatbot also feedback to the user such as "Can you say that again?" "Are you sure?" "Do you really mean that?"

Additionally, the specific of four situations were included in the database of a chatbot function that mostly dealt with answering user questions. The feedback respond to the user's queries were contained in the specific scenarios. The Facebook API is used by the chatbot to receive messages from people when they communicate with it. The Dialogflow was then contacted with messages via a webhook. Following that, the Dialogflow read and helped the users' messages grasp the intent and entity, and used machine learning to determine what the users' needs. The messages were subsequently transmitted to the database-connected backend server. The information was then retrieved from the database and presented as feedback via the backend. The chatbot's working process was shown in Figure 1.

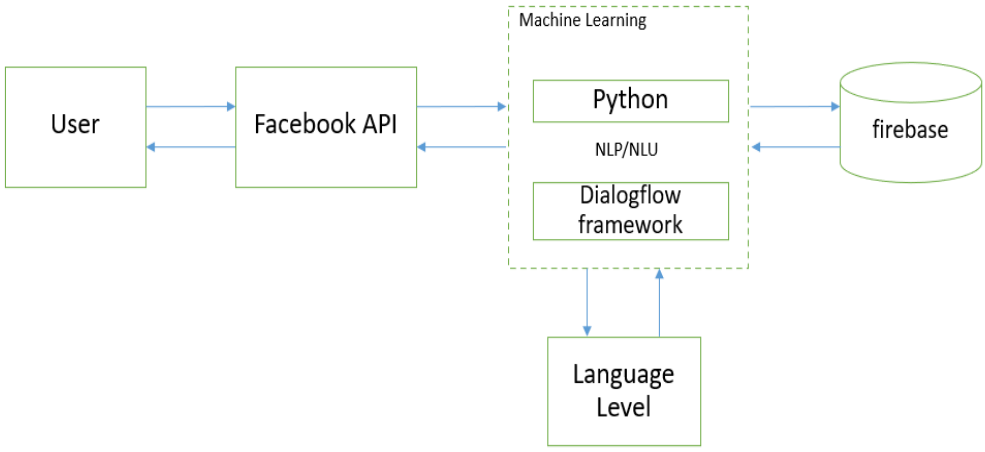


Figure 1. The chatbot's working process

Scope of the Participants

The participants in this study were 20 Thai EFL university students from the Faculty of Humanities and Social Science at Mahasarakham Rajabhat University in Thailand which selected by intact classes sampling method. In terms of homogenously, the participants were successfully completed the essential English course from Thailand's public schools. They have also been taking a basic English course for eight years in addition to the length of their English studies. Although the sample size did not allow for a generalization to all EFL students in Thailand, it may be assumed that the performance of the individuals who were chosen was similar.

## Data Collection

The data of the study was carried out by the 20 participants. In the intervention session, the participants were engaged to the activities for four weeks. Before the intervention begins, the researcher informed the essential information of the activities and also provided the consent form to all participants (Appendix A). The participants were allowed approximately 10 minutes per each situation in text-chat with a chatbot. All chat script were recorded by the researcher. This process placed a strong emphasis on the effectiveness of the chatbot and the satisfaction of the participants.

After using the chatbot, the 20 participants were invited to complete a perception questionnaire of a chatbot (Appendix B) . This survey was adapted the Technology Acceptance Model (Davis, 1989: 319-340) to predict how participants accept the employment of the chatbot to this study. 10 items were provided as the questions. Also, there were four categories of questions: perceived usefulness (PU), perceived ease of use (PEOU), attitude (ATT), and behavioral intention (BI). The degree to which people perceive a piece of technology to be user-friendly is known as perceived usefulness. In terms of perceived usability, people's perceptions of how useful a technology are measured. The difference between behavioral intention and attitude is how a person feels about using and comprehending technology.

Behavioral intention relates to a person's desire to utilize a specific technology, which directly influences actual utilization.

### Data analysis

After interactive with a chatbot, all questions items of a questionnaire were presented in Thai and the responses were coded in a 5-way Likert scale (Likert, 1932) with the anchors being 1 (strongly disagree), 2 (disagree), 3 (agree), 4 (moderately agree), 5 (strongly agree). The third section included an additional open-ended space for comments. The participants were asked to give their opinion towards a chatbot.

To measure the research question 1; What is undergraduate students' satisfaction towards a chatbot, a descriptive statistic was employed for the analysis of Mean score and Standard deviation of the 5-Likert scale perception questionnaire, and the content analysis was employed to analyze the open-ended question. Moreover, the 5 participants were randomly chosen to express their feeling after using the chatbot.

## Research Conceptual Framework

According to interaction hypothesis, EFL learners are affordable at least three opportunities; input, negotiation, and output to interact in language processing. Interaction is underlying the process of language learning and social interaction. Long (1996) mentioned that interaction can foster learners' notice things through interactions. If learners are given the opportunity to interact with language partners appropriately, they will be able to achieve the target language in communication. Input is one of the essential components of interaction hypothesis that several researchers have been interested in how learners receive language. The input from native speakers may help L2 learners modify language (simplify, interactional modify)


Figure 2. Conceptual Framework

## Results

This study aimed to develop a chatbot in language learning and also examine the satisfaction of learners after interacted with a chatbot. The Dialogflow and Natural language processing (NLP) were composed to construct a conversation chatbot. Giving users feedback and repeating the message were two of a chatbot's features in this study. Moreover, this study aimed to examine the participants' satisfaction after using a chatbot. 20 participants were participated in the study. They were asked to respond to the questionnaire regarding to "the satisfaction of the survey". According to the Technology Acceptance Model (Davis, 1989: 319-340) which included four categories of questions: perceived ease of use (PEOU), perceived usefulness (PU), attitude (ATT), and behavioral intention (BI).

The results of perceived ease of use revealed that a chatbot was easy to use was M=2.56/SD=0.77, the participants felt confident in using a chatbot were (M=2.52/SD=0.96), the participants have to learn several things before using a chatbot were ( M=2.32/SD=0.95). The results of perceived usefulness shown that the various functions in a chatbot are well integrated (M=3.12/SD=0.93), there was well feedback in a chatbot (M=2.36/SD=0.81), using a chatbot helps me to improve my English skill (M=2.04/SD=0.89). The results of attitude towards a chatbot, I look forward to use a chatbot in other classes (M=2.64/SD=0.91),
I like to improve my English skill with a chatbot (M=2.68/SD=0.99). The results of behavioral intent discovered that I think I would like to use a chatbot as an out-of-class language learning tool frequently (M=2.44/SD=0.87), I intend to use a chatbot in the future (M=2.8/SD=0.87).

Additionally, five participants were asked to express their feeling in the aspect of using a chatbot. The questionnaire classified four aspects of satisfaction. Firstly, in perceived ease of use perspective, student 1 said that a chatbot was composed an uncomplex function. It makes the users feel fun to use in practicing question form. Secondly, in perceived usefulness perspective, student 2 said that a chatbot was useful in practicing language freely. Also, it performed well in creating particular question form. In attitude perspective towards a chatbot, student 3 said that a chatbot could be a language assistant tool and be use in language learning in the classroom. Next, in attitude perspective, student 4 said that she would use a chatbot intentionally in practicing question form. Lastly, in behavioral intent perspective, student 5 said that he would use a chatbot again in practicing question form.

## Conclusion

This study has provided some empirical evidence for the capacity of text-based online chat with a chatbot to promote learners' noticing which could enhance learners' noticing of their own mistakes. Therefore, the study aimed to develop a chatbot for improving question formation and also examine student's satisfaction towards a chatbot. A chatbot was built using the findings to highlight Dialogflow and natural language processing (NLP). The function of a chatbot possibly provided feedback and repeat the message to the users. At the end of the intervention, the current study gave participants a questionnaire to express how they felt about engaging with a chatbot. Apart from a chatbot's function, the questionnaire survey was employed to the session of conversation practicing with chatbot. To measure learners' satisfaction, the questionnaire survey was classified into four categories of questions: perceived ease of use (PEOU), perceived usefulness (PU), attitude (ATT), and behavioral intention (BI). All aspects of chatbot performances on the questionnaire survey were significantly high. A chatbot in this study was high potential to be used freely as English language learning tools.

## Discussion

The findings showed that the chatbot in this study could respond by providing feedback and repeating the message to the students. This could make the student aware of whether their sentence is correct. According to Schmidt (1990: 129-158.) presented the Noticing Hypothesis, stated that new forms should be first noticed in the input before they arise. Similar to Jia (2004: 1201-1207) used chatbot to encourage students practicing English writing. It made students realized the correct form of sentence structure while typing. However, the amount of information in the databased might be limited due to the specific scenarios of conversational context. Also, the number of participants might not generalize to others.

## Suggestion

A chatbot in this study has a great potential performance to assist language learning, particularly for forming questions. However, some features of a chatbot need to progress and the number of participants should greater for intervention. Also, a variety of data should be involved in scenarios. This may guide to further study construct a chatbot for interaction in language learning.

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