


# Chapter 7

## Edubot: A Framework for Chatbot in Education

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### ABSTRACT

*Recently, chatbots have been used in various domains including health care and entertainment. Despite the impact of using chatbots on student engagement, there is little investment in how to develop and use chatbots in education. Such use of advanced technologies supports student learning, both individually and collaboratively. The effective use of chatbots in education depends on different factors, including the learning process, teaching methods, communications, etc. In this paper, the authors focus on the systematic utilization of chatbots in education. A proof of concept has been developed and tested using two MSc module, i.e., cloud computing and software engineering. The authors have used AWS Services to build the backend of Chatbot and integrate it with Facebook Messenger to allow students to learn via an additional venue, i.e., social media. The use of EDUBOT proved that chatbot can improve student learning and engagement especially at the time of COVID-19 where higher education is moving towards online teaching. Extending EDUBOT framework will help to support students' admin and other queries.*

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## **INTRODUCTION**

Education is a very important aspect of our daily life, with the aim of developing a community/person's character, abilities and social awareness. The central concern is to update the education system and make it interesting for the students to attract them and keep them engaged all the time. The reception of innovation in the learning procedure causes people to improve their aptitudes, learn by their own time and spot. Additionally, in the ongoing time, the quantity of students per one class has increased, where a considerable part of them is not fully engaged or performing. Also, teaching at scales is getting more popularity in colleges or online such as massive open online courses (MOOCs) (Kuhail et al, 2022). However, such problems can be solved by intelligent learning tools such as chatbots or virtual assistants. A chatbot is an automated system designed to initiate a conversation with human users and other virtual agents. Chatbots provide a natural language interface to communicate with students through text or speech. Chatbots in education provide significant benefits to students but still in the early stage of in education.

Chatbots expand traditional learning and tutoring systems functionalities and outcomes. Traditional tutoring system are human-like interfaces between stakeholders in any learning scenario. Chatbot frameworks are computerised frameworks that provide prompt guidance to students (Bahja et al, 2019). Chatbot in education accompanies noteworthy positive results for study fulfilment (Kuhail et al, 2022). The utilisation of chatbot frameworks maintains additional channels for interaction with students, lecturers and teaching assistants (TAs). They also provide guidance to individuals to support learning goal achievements.

### **History of Chatbot**

Chatbot applications in various domains have a long history returning in the time between 1964 - 1966 when the first chatbot Eliza made by Professor Joseph Weizenbaum in MIT Artificial Intelligence Lab (Zemcik, 2019). Eliza used to break down information sentences and make its reaction dependent on reassembly manages related with a deterioration of the information. Another well-known chatbot has been introduced by Kenneth Mark Colby at Stanford's Psychiatry Department in 1972 (Zemcik, 2019). The aim was to simulate the diseases and their spread processes. This technology was advanced then Eliza. In 1988 Jabberwacky has created another chatbot which has been designed to simulate a natural human conversation using a voice-operated system. In 1995, the Noble prize-winner Richard Wallace created A.L.I.C.E (Artificial Linguistic Internet Computer Entity), which uses heuristic pattern matching rules to human inputs. Furthermore, iPhone launched Siri in 2010, which is an intelligent personal assistant. Its discourse speech recognition engine

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