



# CHAT2LEARN

## Chatbot technologies for digital entrepreneurship education and adult learners

*Project n. 2020-1-CY01-KA204-065974*

*IO1: Developing a chatbot learning environment in the field of digital  
entrepreneurship*

*1.1. Collecting best practices and tools on Technology Enhanced Learning and  
creation of a resource library on topic*

PREPARED BY





# Good practices template

## **Good practice definition**

A “good practice” can be defined as follows:

A good practice is not only a practice that is good, but a practice that has been proven to work well and produce good results, and is therefore recommended as a model. It is a successful experience, which has been tested and validated, in a broad sense, which has been repeated and deserves to be shared so that a greater number of people can adopt it

## **Good practice criteria**

The following set of criteria will help us to understand whether a practice is a “good practice”:

- **Effective and successful:**

A “good practice” has proven its strategic relevance as the most effective way in achieving a specific objective; it has been successfully adopted and has a positive impact on individuals and/or communities

- **Technically feasible:**

Technical feasibility is the basis of a “good practice”. It is easy to learn and to implement

- **Replicable and adaptable:**

A “good practice” should have the potential for replication and should therefore be adaptable to similar objectives in varying situations

- **Environmentally, economically and socially sustainable:**

A “good practice” meets current needs without compromising the environment and/or the social cohesion of the territories



<b>QuizBot</b> (What is the name that best describes the good practice?)	
<b>2018-2019</b> (When was the good practice documented/published/carried out?)	<b>University of Stanford (USA)</b> (Who – person/organization – wrote/carried out the good practice?)
<b>ASSET</b> (who collected the practice)	

Element	Guiding question
<b>Type of practice</b>	<i>Technical application</i>
<b>Publisher (optional)</b>	<i>website; informative article (<a href="https://hci.stanford.edu/research/smartprimer/projects/quizbot.html">https://hci.stanford.edu/research/smartprimer/projects/quizbot.html</a>); academic paper: QuizBot: A Dialogue-based Adaptive Learning System for Factual Knowledge (Ruan, Jiang, Xu, Tham, Qiu, Zhu, Murnane, Brunskill, Landay)</i>
<b>Target audience</b>	<i>College students</i>
<b>Objective/Aim</b>	<i>QuizBot is an AI-powered chatbot to help college students review questions through natural-language conversations.  A great deal of learning involves factual knowledge (e.g., numerous topics in medicine, language, and law). Further, such information is often learned outside of a formal classroom setting. Developing more effective automated methods for accelerating or improving factual learning, therefore, has the potential to benefit a multitude of students on a broad scale.  QuizBot is a dialogue-based agent that helps students learn factual knowledge in science, safety, and English vocabulary better than a flashcard app.</i>
<b>Location/Geographical coverage</b>	<i>USA - University of Stanford</i>
<b>Description</b>	<i>QuizBot consists of two modes: a state-machine based quiz mode and a casual chat mode. The quiz mode is based on a rule-based chat system combined with a supervised sentence semantic similarity model.</i>



	<p>In the quiz mode, QuizBot asks a user a question selected by our question sequencing algorithm. A user then has three options: type in the answer if they know it, tap on the “Hint” button, or tap on the “I don’t know” button. If a user types and sends their answer to QuizBot, the chatbot will evaluate the correctness of the response by using an answer similarity computation algorithm. The model will return the cosine similarity between the correct answer and the user’s. Based on our empirical evaluation, QuizBot uses a threshold of 0.9 to decide if the user’s answer is correct and then passes the binary response to the spaced repetition model for selecting the next question.</p> <p>If the user asks for a hint, the chatbot will present the correct answer together with a list of distractors. The user can respond by tapping on any of the choices presented. After the user sees the correct answer, they can tap on the “Why” button for a short explanation. The interactions between the user and QuizBot are mixed between both typing and button selections; while inputting an answer is typing based, selecting from multiple choices and asking for an explanation are button based. The reasoning behind this mixed modality is to ensure both flexibility and efficiency regarding user interactions with QuizBot</p>
<p><b>Methodological approach</b></p>	<p>While building QuizBot, the research group iterated on the design with 47 university students and used their data to tune the models and improve the conversational and graphical design of QuizBot. Next, they launched QuizBot and recruited 80 college students and alumni through fliers, social networks, and mailing lists.</p> <p>Based on the order they were recruited, 40 of them participated in the first within-subject study that controlled the number of repetitions, and 40 of them (4 dropped out) participated in the second within-subject study that evaluated the engagement levels of the two apps. The 76 students who finished the studies came from 12 different universities and over 20 different majors including computer science, mathematics, biology, history, communication, psychology, and more.</p>
<p><b>Finance</b></p>	<p>Private donor (TAL Education Group).</p>



<b>Constraints (optional)</b>	No constraints reported in the paper.
<b>Outcomes</b>	Quizbot has certainly been made, but no information has been found on where to find it!
<b>Replicability and/or up-scaling</b>	3 The best practice should be easily replicable in other geographical and social contexts, but not having been able to prove it personally, it is not possible to express other opinions
<b>Conclusion (optional)</b>	The cited article reports very good results in terms of learning and engagement of students who tested QuizBot
<b>Opinion (optional)</b>	Express your opinion on a scale from 1 (=min) to 5 (=max) about: <ul style="list-style-type: none"> <li>● Usability: Unknown</li> <li>● Relevance (the degree to which the problem addressed by the good practise is experienced as significant) : 5</li> <li>● Granularity (the degree to which the good practice is detailed): 5</li> <li>● Integration (the degree to which to good practice can be integrated into the Chat2learn project) : 5</li> </ul>
<b>Further considerations</b>	