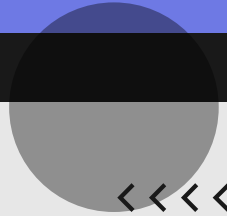




TASK-BASED AI VOICE CHATBOT FOR EFL YOUNG LEARNERS

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01.

BACKGROUND OF THIS STUDY



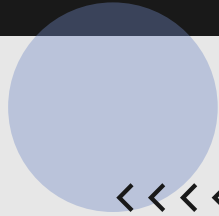
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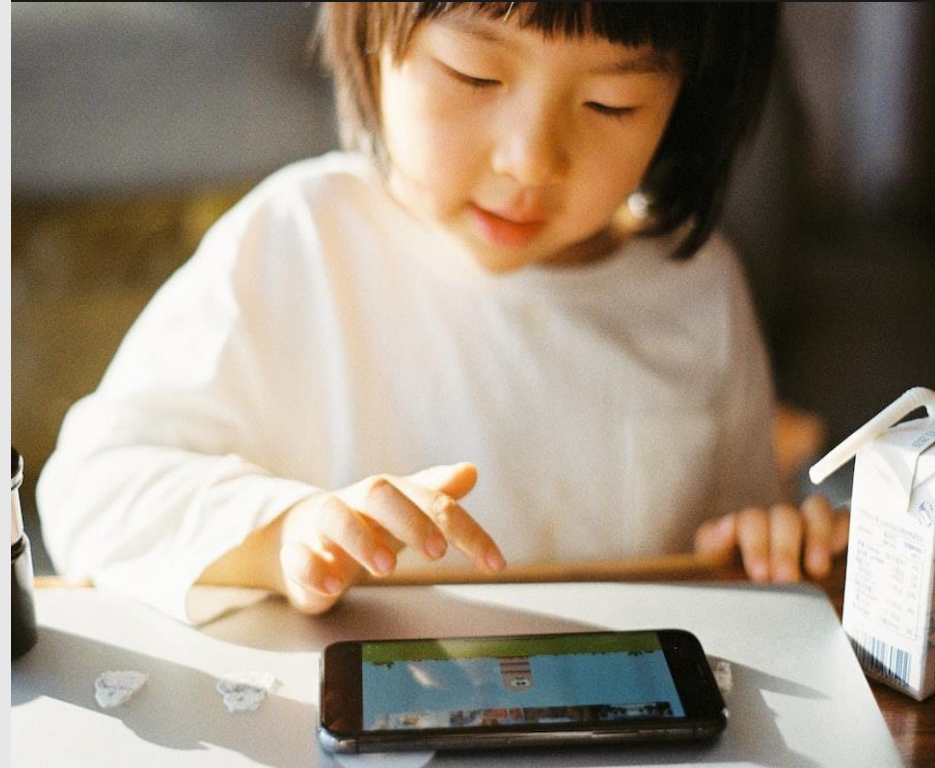
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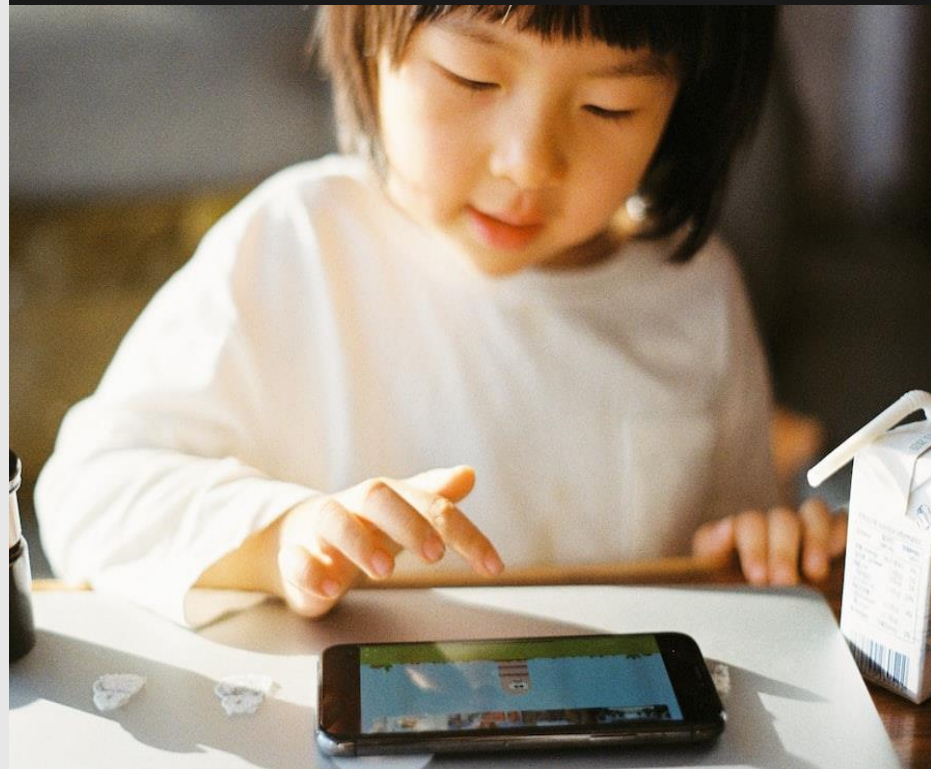
THE PURPOSE OF THIS PROJECT

To provide a task-based chatbot to young EFL learners for a more extended oral interaction opportunity and for the basic oral communication skill development



THE PROBLEM

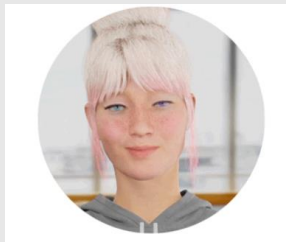
- Korean young learners begin to learn English very early
- Oral interaction is limited
- Teacher-centered speaking drill or phonic lesson
- No meaning negotiation



<<<<ENGLISH SPEAKING CHATBOT >>>>

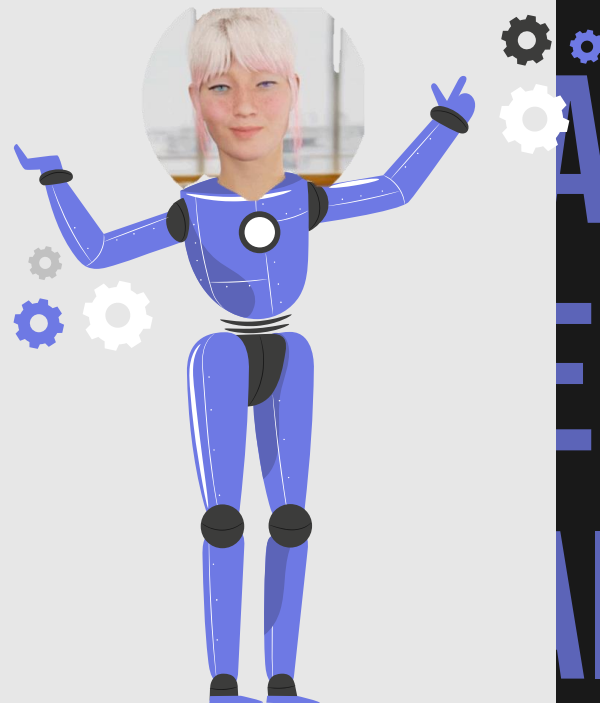
Open conversation chatbots

- Kuki, Replika, Character.AI
- AI Assistant bots (Devices, Speakers)
 - Google Assistant
 - Amazon Alexa
 - Microsoft Cortana



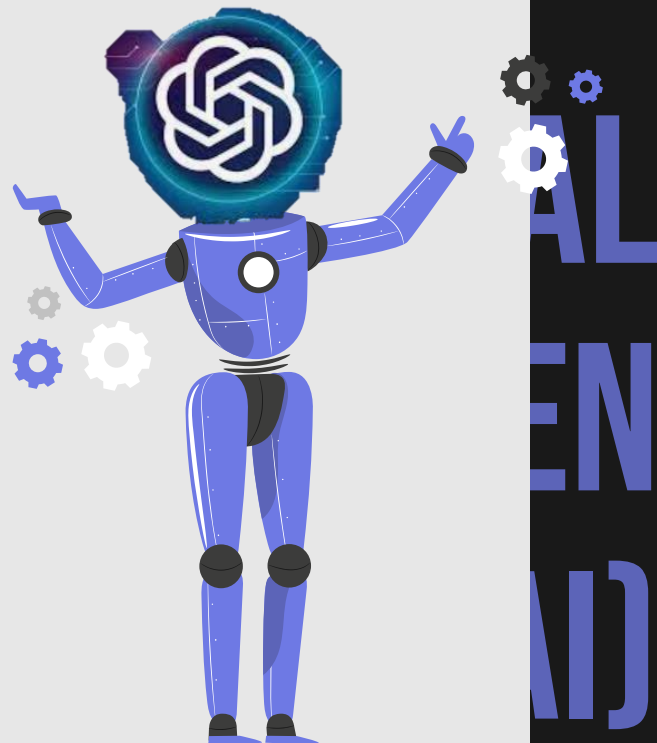
<<<<ENGLISH SPEAKING CHATBOT >>>>

Can **L1 Chatbot** assist
L2 learners effectively
develop English
proficiency?



<<<<ENGLISH SPEAKING CHATBOT >>>>

Can **ChatGPT** assist L2 learners effectively develop English proficiency?



<<<<ENGLISH SPEAKING CHATBOT >>>>

Then

Can **human NES** assist
L2 learners effectively
develop English
proficiency?



AL
EN
AD

ARTIFICIAL

INTELLIGENCE

[AI]

THE ANSWER IS NO



[AI]

- It is crucial for a language learning chatbot to offer more than just natural human-computer interactions.
- An L2 chatbot should also serve as **a language curriculum**, providing appropriate tasks and references that contribute to successful L2 learning.

Hi! What's
your name?

Um.....

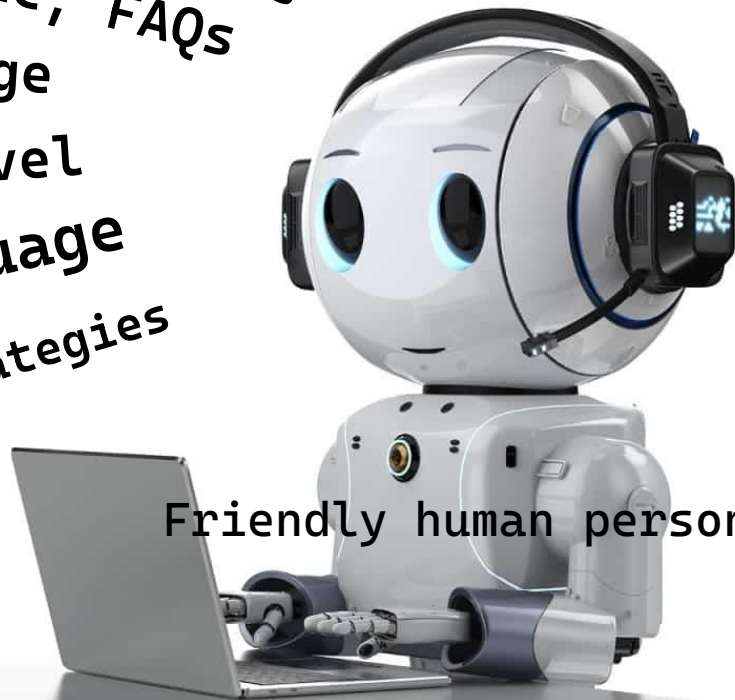


My name is
Gobot. I am your
friend. Ask me
anything.

**TO ENSURE EFFECTIVE
AND SUSTAINABLE USE
FOR L2 LEARNING**

Language Learning needs
Intriguing topic, FAQs
Interlanguage
Age & cognition level
Easy language
Ice breaking strategies

Friendly human persona



TO ENSURE EFFECTIVE AND SUSTAINABLE USE FOR L2 LEARNING

Closed domain Chatbot, Task-based chatbot

- Call center, customer service bot, and other commercially developed human Assistant bot.
- more goal-oriented and functional
- predefined domain knowledge, topics, and contexts for conversation
- Higher recognition rate than in open domain chatbots under the same conditions (Shum et al., 2018).



TO ENSURE EFFECTIVE AND SUSTAINABLE USE FOR L2 LEARNING

The design rationale of task-based chatbot

CALL tasks should be designed primarily based on the identification of L2 learners' needs (Chapelle, 1998; González-Lloret, 2003).

- **language learning potential** should be considered in designing CALL tasks, eg. interactional modification, modified output, time pressure, modality, and support from task-based language teaching (TBLT) literature (Ellis, 2003; Nunan, 2004; Skehan, 1998; Willis & Willis, 2001).
- the tasks should be designed in view of the **learner fit**, eg. language proficiency, age, learning style, and other important individual differences into consideration.
- the tasks should be organized to focus primarily on accomplishing **social goal-oriented tasks**, such as decision making, information exchange, and problem solving.
- CALL tasks should have **some level of authenticity**, indicating that they should be similar to real-life tasks that learners are likely to encounter outside the classroom.

THE PREVIOUS STUDIES

L1 Chats

- ALICE, and Kuki, Cleverbot, Amazon Alexa, Google Assistant, Apple Siri
- designed for L1 users' general use, but implemented in a language curriculum (e.g., Jia & Ruan, 2008; Lee et al., 2020, Kim, 2018; Shin, Kim, Lee, & Yang, 2021).

L2 chatbots

- CSIEC (Jia & Chen, 2008; Jia & Ruan, 2008), Dave ESLbot, or Lucy (Wang & Petrina, 2013), GenieTutor (Choi, Kwon, Lee, Roh, Huang & Kim, 2017), Mondly (see Fryer et al., 2020).
- enabled English learners to practice diverse expressions on given topics at a restaurant or a shopping mall, among others.
- close to form-focused dialogues.
- have centered more on pattern drills in certain situation
- limited opportunities to practice diverse meaningful exchanges in target languages
- not fully able to generate follow-up questions or relevant, natural responses to develop continuous conversations (Gallacher, Thompson, and Howarth, 2018)

TALK WITH ELLIE

<https://chatbot.smartteaching.or.kr/>

(Yang, Kim, Lee & Shin, 2022 in *ReCALL*)

(Kim, Lee, Yang, & Shin, 2022, in *Language Learning and Technology*)



- **THE FIRST task-based L2 chatbot**
- predefined as a female native English speaker and EFL teacher living in South Korea.
- 71 tasks "Mission Challenge".
- Three levels sorted into task complexity levels,
- expected to exchange conversation turns at least 3–8 times for task

Guide (type 3-8)
Please keep Google Chrome up to date

Order burgers and drinks

Look at the menu and order a burger and a drink one by one. The three missions you need to do are:

- ✓ 1. Looking at the menu and choosing a hamburger
- ✓ 2. Understanding and answering a clerk's questions
- ✓ 3. Choosing a drink and a payment method



Burger Menu	Drink menu
1. Big burger	1. Coke
2. Cheese burger	2. Sprite
3. Shrimp burger	

English chatbot Ellie

Ellie
Look at the menu and order a burger and a drink one by one.

Ellie
The three missions you need to do are: 1) **Choosing a hamburger from the menu** 2) **Understanding and answering a clerk's questions** 3) **Choosing a drink and payment method**

Ellie
When you're ready, hit the [Click and Speak to Ellie!] button, say "Hello" and start the conversation.

Click and speak to Ellie

Task types

Reserve your order

- Amusement Park Reservation ★
- Change restaurant reservations ★
- Cancellation of restaurant reservations ★
- Best** Order hamburgers and drinks ★
- Best** buy a sandwich ★
- Best** order bubble tea ★
- Best** order ice cream ★
- Best** cell phone case shopping ★
- Best** baseball game reservations ★★
- flight booking ★★
- New Year's Party Venue Reservation ★★
- Change your snorkeling reservation ★★
- Cancel hotel reservation ★★
- ordering food in a restaurant ★★
- bus reservation change ★★★
- train ticket cancellation ★★★
- take food order ★★★
- Call the airline's call center to find lost ★★★

make an appointment

- Make a shopping appointment with a friend ★
- Best** karaoke appointment ★
- Best** game promise ★
- Best** Ask for homework by phone ★
- Make an appointment for a weekend movie with a friend ★★
- Set a place and time to meet up with friends ★★

go shopping

- Best** buy shoes 1 ★
- Best** buy shoes 2 ★★
- pants exchange ★★
- pants return ★★★

Task level



Mission Challenge

Challenge various English missions with Ellie.



Yang et al (2022)

- 314 Korean EFL learners aged 10–15 years performed three speaking tasks with Ellie in their school classroom.
- The participants took **9.63 turns per session** on average using the first 1000-word band, indicating that the chatbot highly encouraged students to engage in conversation, which rarely occurs in general EFL classes in Korea.
- **The high task success rates (88.3%)** showed the design appropriateness of both L2 tasks and operational intents in terms of users' successful understanding and completeness of the given chatbot tasks.

Kim and Lee (2023)



Task-based vs. scripted role play chatbot

- Six elementary third-graders participated in four different chatbot-based speaking sessions designed in two types.
- **More varied meaning-negotiations** were observed in the 'task chatbot' than the role-play ones.
- **The young learners recalled more words** in the delayed test and **showed more interest** and preference in the 'task chatbot'.

02. KAI PROJECT

Task-based Smart
Mirror Chatbot



- **Design Principle I: The establishment of a consistent and context-specific chatbot persona**

- Defines a distinct and **recognizable persona** with a human name, Kai
- Conversation UI has been anthropomorphized;
- 8- year-old boy who travels many countries with his parents and a sister
- The Kai profile further includes details concerning his family, living experiences, personality, and preferences.
- Culturally coded, context-specific



Design Principle II: Chatbot provides task-based conversation as well as open conversation, so that L2 learners enjoy their own message exchanges and also focus on target forms.

Free Talking

- Open conversation like
- Currently 500 intents
- Asking & responding real-life questions, small talks
- Covers common topics for EFL children (age 6-12)
- CEFL A1-A2 level



Missions

- Problem-solving tasks with Seven topics for young learners
- Requires cognitive process
- Target words
- Mission is completed after 7-8 turns
- Age 7 and above

Games

- Three games: memory game, order-up, quiz games
- Aimed at vocabulary study
- Required cognitive process, not repeated drills or exercises

Free Talking



Hi how are you 🔊

Everything is going well, what about you? 🔊

I'm okay 🔊

Hope you have a great day. 🔊

what are you doing now 🔊

I'm talking with you now 🔊

do you like computer games 🔊

I love board games. 🔊

what board games do you like 🔊

Chess is fun to play. I also like Scrabble, Candy land, and Monopoly. 🔊

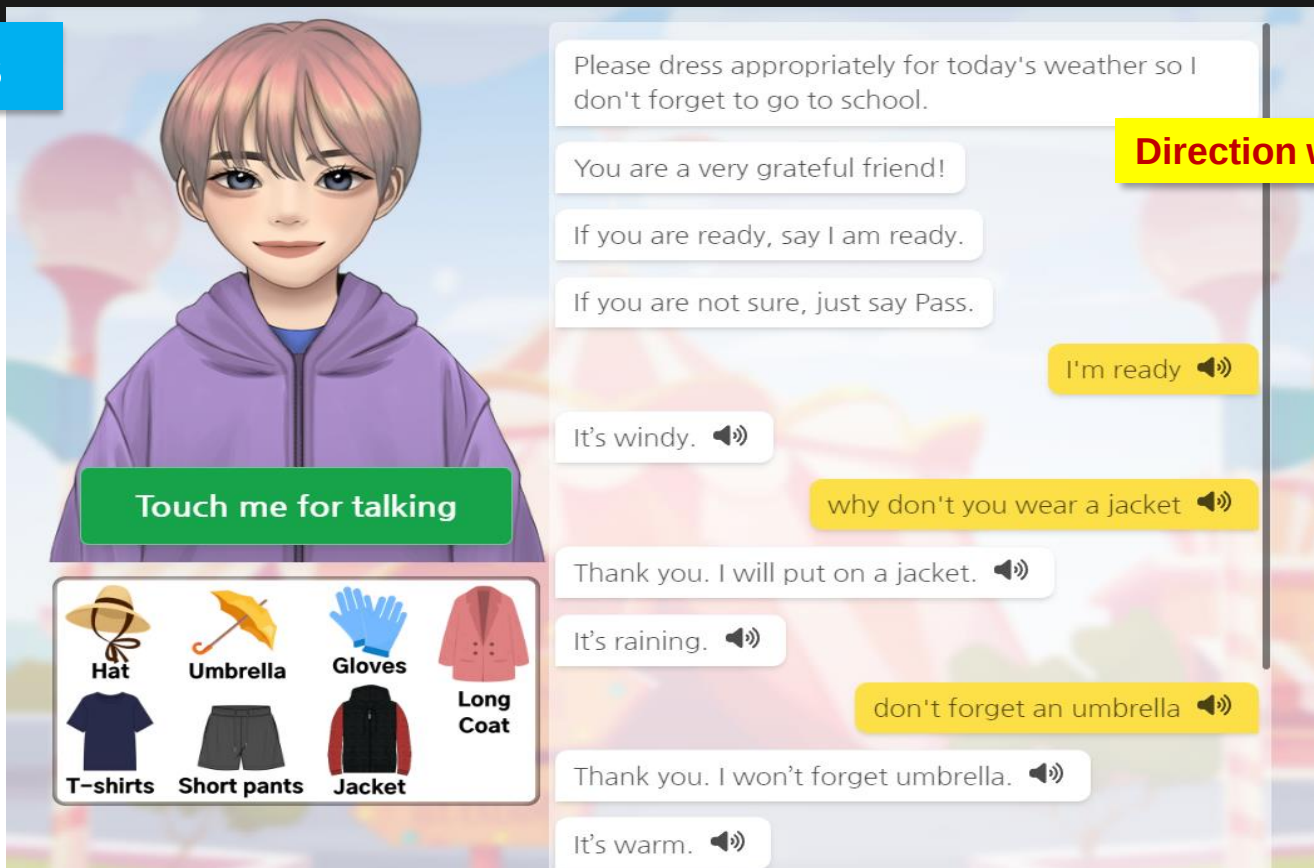
Free talking

Missions

Games

- L2 chatbot tasks should foster goal-oriented communication, in view of the suggestions from the TBLT literature

Missions



The screenshot shows a chatbot interface with a female avatar on the left. Below the avatar is a green button labeled "Touch me for talking". At the bottom, there is a grid of clothing items with labels: Hat, Umbrella, Gloves, Long Coat, T-shirts, Short pants, and Jacket. The chat history on the right includes the following messages:

- Please dress appropriately for today's weather so I don't forget to go to school.
- You are a very grateful friend!
- If you are ready, say I am ready.
- If you are not sure, just say Pass.
- I'm ready
- It's windy.
- why don't you wear a jacket
- Thank you. I will put on a jacket.
- It's raining.
- don't forget an umbrella
- Thank you. I won't forget umbrella.
- It's warm.

A yellow callout box on the right side of the chat history states: "Direction was given in L1".



The screenshot shows a chatbot interface. On the left is a female avatar with short brown hair wearing a purple hoodie. Below her is a green button that says "Touch me for talking". At the bottom left is a menu of clothing items with icons and labels: Hat, Umbrella, Gloves, Long Coat, T-shirts, Short pants, and Jacket. On the right is a chat window with a series of messages. The user's messages are in yellow boxes, and the chatbot's responses are in white boxes with speaker icons. The chatbot's responses include "Sorry, could you say that again?" and "I didn't get that. Can you say it again?".

why don't you wear short

Sorry, could you say that again? 🗣️

why don't you wear

I didn't get that. Can you say it again? 🗣️

your pants

I missed what you said. What was that? 🗣️

short pants

OK, Thanks. Anything else? 🗣️

t-shirts

You're right. I will wear T-shirts only. 🗣️

It's very hot. 🗣️

short

Sorry, could you say that again? 🗣️

Negative feedback

Modified output

**Cognition process
Freedom to choose**

Some degree of freedom in the chatbot-based tasks, meaning-negotiation, which involves a divergence from scripted dialogue or situational drills



Game tasks require an active cognition process, such as decision making, problem-solving, and critical thinking of the target age level.



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THANKS

Do you have any questions?

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