Development and Evaluation of Intelligent Tutoring System for Chinese Language Teaching Based on Natural Language Processing

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Abstract:

The development of computers capable of storing, processing, and responding to inquiries from diverse sources has the potential to transform how individuals learn about the places they visit worldwide. This study investigates the Industrial Training System (ITS), an educational framework designed for the tutoring system for Chinese language teachng effectively. The ITS integrates artificial intelligence (AI) and natural language processing (NLP) technologies to enhance its teaching capabilities. One notable feature of the ITS is its interactive tool that provides assistance to learners when needed. As part of this research project, a prototype computer system was developed to teach the use of Scratch, an art-based application designed to introduce medical student to the fundamentals of coding. By incorporating an open-source tool for natural language understanding (NLU) or processing (NLP) and a Slack-based user interface, the system was capable of answering student queries with accurate responses. The prototype underwent two evaluations to assess its ability to locate objects and facilitate communication with computers to retrieve data. Results indicated that the ontology models employed for this learning tool performed effectively, suggesting that the system holds promise for future implementation as a cloud-based educational solution.

1. Introduction

of text from various sources such as news stories, social media, schoolwork, and business records. It was this that led to the field of Natural Language Processing (NLP). There is a lot of information to look through, which makes it challenging to come up with excellent ideas. Writing things down by hand takes a lot of time, and mistakes happen because people are human. This is why [1]. We need quick and easy digital ways to get a lot of data together right away. In the 1950s, language theory and machine translation were the first steps in the history of NLP. The first systems and symbols used to build this area were based on rules and centered on language and order. People began to use numbers more in the 1980s and 1990s. With a lot of text data and statistical models [2], we can use these techniques to make language processing better. The early 2000s saw the public release of new machine learning techniques. It was a big improvement. Since then, we have created models using deep learning and transformers. We are currently working on the next step in the process.

Language processing (NLP) has advanced significantly in recent years, especially in the last few months. Transformer models and deep learning techniques like BERT and GPT-3 can now cut down long texts for you. Still, it's not always simple to find and fix data errors [3]. This study shows a new way to quickly make things smaller. This method works because it uses strong tools for dealing with normal language and organized review methods. A careful study looks at the whole world in the same way. Finding out what things mean is another type of natural language processing (NLP). These tips will help you read well and find important or helpful things. It is possible to write short reports that are easy to understand [4]. Sometimes, you can use the Internet of Things (IoT) as a teaching tool. When teachers use tools to teach, it's like having a teacher work with you one-on-one. ITS is also known as tech-based training. Over the past 20 years, teachers and students have used a variety of instructional tools (ITS) to improve learning and teaching. These ITS are designed to read what students write in order to assist them. Also, they think about what makes

each medical student unique. Using smart tools that enable communication while working is a great way to enhance learning. The medical student and teachers can talk to each other, which makes it look like a real school [5]. This makes medical student excited about going to school. Is Is it possible to make a tool that every kid can use in various ways? Tell them what you think. It's ITS's fault that they can't handle all the things that could go wrong during these talks. It is essential to use tools that give your stats right away and in real time. We have added two crucial new components to this job. First, we'll talk about how modern machine learning (ML) and natural language processing (NLP) can be used to give replies and tips based on data, math, and Wikipedia [6].

You don't need anyone to help you change the way You take notes. You don't have to make rules to do it. It thinks about each medical student' wants too. It also makes a big difference in how much medical student learn and how well they understand things in real life, which we show. This is Korbit, a big computer system that can figure out what people are asking and answer them. If you tell us to, we'll do it. Language models that had already been trained came out a few years ago [7]. More and more, tools that use deep neural networks are being used to fix Chinese mistakes instead of tools that use rules. We now have more information [8-24]. There are two ways for PCs to Learn how to use correct words. Three of them are built on different types. The the other two are about how to make things. To do this, they train on a lot of sets. of "error-correct" parallel sentence pairs. This lets people check and fix their own writing and language problems.

A lot of training data is usually needed for these ways to work. The people who name these sets also need to know a lot of Chinese. Making good sets of word fixes takes a lot of money. They have a lot. of free books in Chinese that you can use to improve your language skills. The notes used in these works were written by users [8]. There is a lot of noise in these comments, so it's not always easy to tell how good they are. You learn in steps when you take a lesson. The job has many steps, and each one gets harder. This way helps models learn faster and better when they use less good data. [25]. Now the fix works better. Digital Assessment of Learning, or DAL, is what it stands for. It makes your Chinese better. To be clear, the part of the program that rates problems does so using a model of language that has already been taught. In this case, you can see how hard it is to understand the source. words. After that, each line is given a score based on how hard it is to understand. It changes its weight right

away at the end of each training step. [9]. The new model is then used to make the test model.

This makes the model's rating more accurate over time, and the training examples get harder over time. As part of the learning program's training plan, multi-stage Growing training is carried out [26]. They are chosen at random, and the Lessons get harder as they go.

As a whole, we made the following contributions:

➢ We believe this is the first time we have used what we learned in school to fix wrong language use.
➢ [10] We show you a cool way to see how hard the words are used while you're on the go. We can quickly change the order of the practice sets if the level of the language changes. This method for figuring out how hard a line is is known as the "dynamic rating method."
➢ There are planned ways to learn Chinese that work. better. This is called "learning."
➢ Our model is better than the strong baselines, as Tests on two sets of Chinese text mistakes demonstrate this.
➢ This is a faster way to get rid of Chinese. mistakes.

2. Literature Review

After That way, you can pick the best way to get there. Bowman says that a good standard should be able to stop models that aren't fair, have called data that is the same for all users, and look closely at language elements. To see how well a computer can understand words [11], there should be a lot of projects, strong models that can be used in other situations, a lot of changes, and a lot of people who agree with it.

When discussing standardization, "tasks" refer to the language problems that NLP models should be capable of solving and ranking. You need to be able to mix and match words to ask questions, find out how people feel about something, and quickly change text. But some of them are on this list. We use a distinct group and set of rules to evaluate an individual's performance in these roles. The goal of these tests is to see how well models of natural language processing handle different kinds of language issues [12]. You can use these tips to compare models based on how well they do their job. It could be important for the job. What kind of score do you get—F1 score, memory, accuracy, precision, or another? score. What does the word "task" mean? The term "task" in natural language processing (NLP) refers to a question that a test aims to answer. You might need to tell someone

about a text message or find out what they think about it.

2.1 State of the Art

Two main types of rules are open-domain and closed-domain. They both deal with daily English. It checks how well words that are like real language, can understand different types of words. I have a different kind of measure that I call an open-domain standard: "GLUE." stands for "wide Language Understanding Evaluation." What is it? It looks for many things. There are several places where you can find the open domain standard. This list has things from Google or Wikipedia. One can find this kind of question and its answer in several books, papers, and online groups. A lot of information about the rules for the open area can be found in shops that sell information. This group includes QALD, WebQuestion, and SimpleQuestion [13]. In this test, how smart a model is shown by how well it can think and use well-formed information. They are given a knowledge base or graph ahead of time to help them figure out the right answer to some questions or jobs on this type of test [27]. The point of the study is to check if the model can find the information source, understand it, and use it.

Some, like SQuAD, GLUE, and SuperGLUE, might always work well even if they don't have sources of information. A model is tested to see if they can understand things and use them without having to look them up. This test won't care about what you already know. You might have to sort facts, figure out how someone feels or explain what words mean on this type of test. The test is meant to see if the model can adapt and understand normal writing. without needing to use a certain set of skills. The hand-trained data has been used in both the open domain and the closed domain in other books [14]. This had to be done to get the training data. The set that was chosen had 77,860 training tokens and 7544 testing tokens. They learned how to label POS that are in the open domain. Two sets of coins were used in a study that was a lot like this one. There were 5,000 tokens in the test set and 14,369 tokens in the training set. It had point-of-sale (POS) tags written in Persian on it. You could use the five million tokens that were out in the open to learn. There were 11,000 coins in the test set. But it's possible that the sample that was marked properly wasn't big enough for the models and scores to work well when it was used.

It's hard not to think that teachers will use the skills they learn in normal schools in open, mixed, and online schools too. For a long time, people have been working on TEL lessons that are both fun and useful. Checked out what's hot right now and what school tech is being used [15]. There is more information in one review about how TEL can be used to Change the order of science and math in school. Tech can help people learn in this way. It's tough to keep up with all the data the system creates [28]. This is because more and more lessons are being put online so that anyone can take them. AI is now useful in many more places. Now this can be used to help old students learn and teach new ones. important things.

ITSs could help schools be better in several ways. with artificial intelligence (AI). It's okay to compare forms fairly. This can Teach us more, and medical student can use what they've learned over time [16]. It was important. to make sure that experts could easily understand and use different parts of the reviewing process. These tools were also used for this job. There are two main ways that AI can be used with teaching tools. Our main goal is to improve. the way we teach and keep records that we can use later. This is one way that Data processing and grouping are used to find trends in how people learn. One The usual way to learn is to work on projects with other people. Another is to Learn by yourself. The model doesn't work well because there isn't enough "ground truth" data [17]. Some tools and traits can also help you Learn in a way that helps you figure out what will work.

You shouldn't mix these two things; they fit into different groups. You might want to think about how this kind of app can help. You learn something new. But the AI tool has been around for a while. You can learn new things from it that will help you reach your goals. You need to think. about how the system is set up and how rigid it is to get to this level of unity. AI-powered ITSs might be better at adapting to how students are learning. right now and more likely to help them right away when they need it. It has been thinking about how to keep medical student interested and make sure they don't feel left out too much [18]. How your medical student look can tell you a lot about how they're feeling. An AI machine can tell if a student is going to drop out of an online class if you tell it what to look for in old system logs. The teacher can also Use this to get the medical student excited.

What can Does AI have the potential to outperform other educational methods? Likely, many people don't know. Explainable artificial intelligence (XAI) is a type of AI that is getting more and more attention. But schools still use it. "Counterfactual" was used to show how an AI computer could help teachers by telling them what might happen. In the second study, we used SHAP, a younger XAI algorithm, to explain what we thought would happen.

2.2 Related Work

Rules-based feedback doesn't look at the specifics. of the student's answer or the situation in which it was given; it only looks at the rules. In other words, it doesn't always work with ITSs. The time and place where the information was given are also not taken into account by this method. For each person, this won't mean that the comments will be useful or helpful enough. It will be too general. NLP has been getting more and more attention as a way to look at student replies and give them feedback in ITSs [19] over the last few years. Tools that understand everyday words will give You better give feedback if you let them hear how you talk. Think about what the student wants and how well they understand what you say as well. This method could make a big difference in how info is given in ITSs. This will help medical student. learn more in the long run. Computers that work like brains are called Convolutional Neural Networks (CNNs) and Recurrent Neural Networks (RNNs). In ITS, they know how to use everyday words well to teach computer programming [20]. Question-based feedback was talked about in the piece. This method is used to get students to think about their code and find mistakes or better ways to write it. A machine learning model is talked about in the study. This model can quickly figure out how much data an ITS has so that It can teach programming. It was shown how to make a smart system for teaching. programming by using deep learning and natural language processing [21]. They talked about how to use natural language processing to write down notes on how to look over code. If you want To get a better sense of how good the feedback is, you should read it that way. Make sure the notes you leave are helpful and make sense to the person reading. them by following these steps [22]. Plus, it will help them learn Java code. better. We understand a lot more now that we've read this. It might make its work better.

3. Method

You can use natural language processing (NLP) to read the Chinese language effectively. A computer information store should also contain the subject. There should be a lot of real questions on a wide range of subjects to test the learning helper [23]. Questions that sound like things medical student might say can be used to talk to robots.

3.1 Choice of Knowledge Base Subject

It's beneficial that school makes medical student think differently. Schools and colleges all over the

world have been using Scratch since the beginning of this decade. This is also how most medical student learn to code at school. A lot of medical student learn how to use computers there. Blocks make the drag-and-drop method easy to understand. Not only smart medical student can learn in enjoyable ways. Medical student will want to learn after seeing this. With Scratch, medical student can make quizzes, videos, simple games, amusing movies, and chats. They can be creative in any way they want. Medical student should try new things more than anything else. The best way to learn something is to do it over and over again. They now know how to use computers and learn new ones, like how to repeat, use variables, and put things in the right order. They can think things through and figure out how to fix them. However, due to their educational approach, most children struggle in "hands-on" classes such as Scratch. Between twenty and thirty percent of the medical student we teach Scratch to in their first year ask their parents to help them with their Scratch projects and tasks. People from several well-known schools participated in a study that provided this information. Are you aware that technology can be a fun and useful "learning assistant"? AI that understands natural language (NLP) can help people learn. Build an AI that can do this. That's the point of this project. Medical student could learn Scratch faster and better with this robot.

3.2 Rasa NLU Chatbot Prototype Implementation

We built this talking robot from the ground up using the Rasa Stack. Rasa NLU and Rasa Core are two well-known robot-making open-source Python tools. It's wonderful that they have the tools they need to learn on their own, deal with people, and understand everyday things. We've connected a fake bot named "SCRATCHAI" to Slack to create a web interface. A lot of people thought that these two groups should work together. Figure 1 illustrates how Rasa's drone can respond to a message.

- Every Each time a question is asked, Rasa NLU receives a message. Therefore, they have the ability to select the desired outcome and the actions that will be taken.
- This Tracker lets you see what's going on in the chat right now. It gets a new message from someone.
- The rule says you need to find the tag right now.
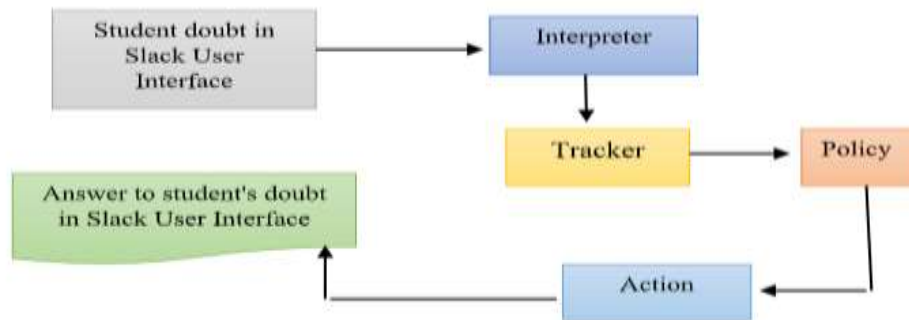- The rules Spell out what needs to be done next.

Figure 1. High-level Rasa architecture

- ➢ To perform the selected action, you must sign into the Tracker.
- ➢ Ø They finish the job and find out the answer to their question.

3.3 Training The Chatbot

Planning is a crucial aspect of running the talk, as it determines the goal and the people who will be present. Just by hearing someone talk, Rasa NLU can tell who they are and what they want to say. What someone wants to do is their goal. What people send shows what they mean. If someone writes "Hello," they mean "Greetings." This is not the same as "Ask" when the question is "What is a Sprite? "The Entity" refers to the knowledge gained from writing down information. "What is a Sprite?" the message asks. It then talks about a "Sprite."

Before it can do anything else, an NLP bot needs to learn how to read messages. Before we can teach the NLU model, we need to train and test it. You can use this type of model for any purpose. First, we will try to figure out what the written data means. This helps the computer figure out what the student wrote and put it in the right group. With the "SCRATCH AI" project, you can tell Visual Studio which file to use for the main project. To instruct the AI, locate the "data" file within "SCRATCH AI" and utilize it. This is where the training files and data go. You can talk about what the bot wants to do or how people talk to each other. The build file will discuss the key components of the model and its natural language understanding capabilities. (NLU). The process of "pre-trained embeddings spacy" will also be brought up to date. Once the explanation is complete, the NLU model takes shape. The NLU checks sample intents to ensure it can receive and group them adequately. If it can, it moves on to the next step.

3.4 Deploying The Bot On Slack

Slack 3.9 is our favorite chat app. A lot of people talk on Slack. It's visible on phones and computers. With the Slack API, bots can do a lot on the Slack app. Anyone in Slack can send a message to the bot, and the bot can also send a message to the person who sent it. The messages may contain a variety of text, images, and other types of data. You can also show who you are on Slack by making an account. This gives them an extra chance. The Scratch AI bot connects to Slack through a small program known as ngrok. It's easy to connect to both Slack and the SCRATCH AI program with this tool. Bot users can create an OAuth access token in Slack. Read this ticket to find the codes. We will use the YML file from the SCRATCH AI project to build a tunnel with ngrok. The tunnel will be in Port 504. This is why Slack and the SCRACHAI bot need to talk to each other. To listen to an event in Slack, use the same URL you created for the ngrok account. You can make the tunnel URL with ngrok, as shown in Figure 2.

Figure 2. Ngrok

4. Results

4.1 Study 1: The Goal-Setting Chatbot

Behavioral Engagement

A robot That helps medical student set goals, and it helps these 29 medical student write down their school goals before the first class. This scale's number 0.859 means that it agrees with itself a lot... People assigned a score of 0.742 to items they considered simple to use. The adults in the lab watched the medical student use the robot. In Table 1. They write down what they saw. There was a difference of 1.36 points between not being able to talk to the robot at all and eight times (M = 7.97). For about 2.65 to 4 minutes, they talked and shared

their ideas. The chat logs show that 14 of the students, or more than half of them, were able to set goals in just seven steps. After that, eight groups of medical student could talk to the robot. eight times. The ten rounds (n = 2) and thirteen turns (n = 1) for three medical student were over. Once the medical student reached their goals, they could talk to the robot and ask it many questions. One thing they asked the robot was, "Can you say more words?" And, "When is the due date for the assignment?" There was nothing else to do.

Table 1. *Goal-setting chatbot utterance turns and duration.*

	N	The least	The most	Mean	Standard Deviation
Turn of voice	29	7.00	13.00	7.97	1.35
Session length	29	1.00	11.00	4.00	2.65

Usefulness and Usability

The table shows that sixteen different medical student replied. The goal-setting computer received positive feedback from the students. The medical student liked the goal-setting computer more for its ease of use than for its usefulness (M = 3.91, SD = 0.59). A lot of the medical student thought the robot could do more. The medical student liked talking to them, and they helped them make plans. The medical student could use the robot with goals to help them make their own. The robot performed and communicated precisely as intended.

Student Goal-Setting Perspectives Aided By Chatbot

28 medical student wanted to talk. They talked about how they believed the robot helped them plan. We examined the kid talks in the context of real-life events. Based on what the medical student said, we could create several groups. The teacher read everything the medical student wrote and came up with these three main points. Table 2 shows that how handy and easy the goal-setting chatbot.

The second researcher used random numbers to code about a quarter of the poll data to make sure that the way it was studied was right.

The ten hackers all agreed on one thing. After talking to each other, the two researchers were able to work out their differences. The study made three main points, which can be seen in Table 3. Talking The robot assisted them in understanding the lesson more clearly. There are two ways to see what the medical student thought about it. When they got there, they had no idea what the class was about. We still don't know how future generations will

learn. Because of this, they might not be able to set goals that are clear and

Table 2. *How handy and easy the goal-setting chatbot*

	Item	N	Average (SD)
How useful	1. The assistant helped me set goals for my learning	16	3.94 (.77)
	2. It was easy for me to set goals when I used the robot.	16	4.00 (.73)
	3. The assistant made it easier for me to set learning goals.	16	3.69 (.87)
	4. In general, I thought the robot helped me learn.	16	3.94 (.68)
Simple to use	1.1 thought it was simple to talk to the robot.	16	4.19 (.54)
	2. The robot usually acts the way you'd expect it to.	16	4.00 (.89)
	3.1 thought it was easy to fix problems they had with the robot	16	3.19 (.66)
	4. The robot was easy for me to use in general.	16	4.25 (.68)

Clarify Learning Objectives

Table 3. *Interview data summary*

	Number of students	Main ideas
Define learning goals	7	Course outline
		Clarify and envision the approximate aim.
		Helps guide future learning
Methods for establishing objectives	3	Learn about goal-setting techniques.
		Applicable to future practice
Raise awareness	6	Understand goal-setting before learning.
		Encourage thoughts about expectations and plans.

useful. People had to think because there was more than one right answer. The medical student had to think of new ways to finish their work because of this question. Based on the "Relevant" question, we asked the medical student to share what they wanted to learn most from this class. They did

many different things, which made them think about how they could stay in school longer. That's why this had to be done. Before medical student can say what they want, the school must explain its benefits. I think it looks like a fun event. I'm glad about it. The robot helped the medical student a lot. The robot guided them on the correct route to school.

They also said they had big ideas. However, they were uncertain about how to bring these ideas to life. After answering the five SMART questions, students were able to say and describe their learning goals clearly. Bots had plans for what they would do and what they thought would happen. To be clear, students could first type their answers and then pick one from the chatbot's list. Some have said that most students don't talk to their teachers or plan their lessons before class. If they have the opportunity, their teachers may advise them to set clear learning goals. If If bots and people can talk to each other more, they will. A person and a robot are both less likely to make a mistake when they both have options. They are also more likely to pick an answer when they are given a list instead of being asked to come up with one on their own.

Techniques of Setting Goals

The parts The previous section introduced you to the concept of SMART. That's how the robot thought of its main ideas. We formulated our questions to assist them in achieving their science objectives. We created them using the SMART style. They didn't have to make up hazy goals at the start of the course; that was already done. It gave them a link to learn more about the SMART project after they talked about it. When the medical student could use what they had learned to teach the robot something new, they liked making plans even more. The medical student who worked there said it helped them set goals that would help them further in school. I can think of ways to use these ideas now that I've read this. Before I start to learn, I need to make a plan. Also, tell me what I need to learn every week. It sounds like these ideas will help me when I start school again. (The eye and the E)

Raise Awareness

SRL isn't important since what? What individuals learn isn't as important as how they learn it. This is why many students don't understand how important it is to learn various SRL methods. They don't always know what they want to learn when they first start. We're going to talk about how important it is to learn with clear goals today. Medical student stated, "After doing this activity, I understood how important it is to set goals and track my progress while I was learning." (The eye F) Some students

also said that the chatbot's questions made them think about their plans and goals for this class, which they hadn't done before because they hadn't thought about what they wanted to get out of it: "The chatbot's questions and chats make me think and reflect." When you first sign up for the class, you might not have any plans or goals. That's how I felt. I need to think about what I want right now. (12-year-old in Joint)

Students' Suggestions To Improve The Chatbot

We asked online voters to select the actions they believed would increase the robot's goal score. The medical student handled their work with excellent care. Getting the robot better is one way to change it. It could be better in two ways. It will last longer now. They were the first in their group to think the robot could make a better "tailored suggestion." For each question about making goals in this study, there were three possible answers: A, B, and C. This is what the medical student did to thank the people who helped them. However, Students A and B expressed their expectation of having "more choices." Students J and C said that one robot that helps them set goals "answered faster" and "chatted like Siri" more. Thirdly, as the discussion progresses, the list could expand to include more intriguing items. They agree with L and K that adding "emojis to the sentences" might make the robot-speak more interesting. Is the task still incomplete? Two groups of people said they wanted to plan more lessons on robots. Student E thought the robot could help them plan and tell them what to do on Moodle.

4.2 Study 2: Learning Buddy Chatbot

Behavioral Engagement

38 medical student did those things after school. With the robot friend, they learned how to listen better. The medical student used Table 4 to show what they did with the robots. They talked to the computer at least 17.06 times a day. There were times when they did it 66 times. (M = 6.84, SD = 6.08) A lot of people talked for seven minutes. They had to choose the best answer to a question based on what they had heard nine times. They had no idea. Additionally, students who were given thirty opportunities to express their thoughts

***Table 4.** Learning buddy chatbot utterance turns and duration.*

	N	The least	The most	Mean	Standard Deviation
Turn of voice	27	8.00	20.00	06.05	5.47
Length	27	0.00	23.00	5.73	5.07

of session					

continued to engage in unnecessary activities such as inventing words and filling in blanks. It was possible to reach 92% of the goals.

Social Presence Perception by Students Aided by Chatbot

They worked on their ears while taking the IELTS. We asked each They independently expressed their feelings about receiving assistance from the robot. learns. Eleven medical student were delighted to talk with us. We inquired about their thoughts and feelings during their conversations. Garison's 2011 plan for social presence helped us make our own rules. You can find out more about the different types of social presence signs in Table 5. They are open communication—communication between people—and communication that works well with each other. Someone made a code with all the medical student' answers. To make sure the first researcher did a good job, a second researcher picked 25% of the data at random and coded it. Two coders could agree on what the words meant 96% of the time. To put it another way, they had a fantastic time. Table 6 shows how the results were put together.

Interpersonal Communication

Nine We asked people to rate how socially present they felt when they touched other people. Nine of the students liked the pictures the robot showed them because they were simple and straightforward to understand. When student 3 used emojis, it "brought the thought to life." Student 2 said that it made their connection with the robot stronger. That

Table 5. Students' Chatbot Social Presence Perception

Type of	The main idea	Size of the class
Communication between people	People interact using emojis.	9
Open lines of dialogue	Communication is encouraged.	7
	Citing others' remarks to show shared issues	
	Giving feedback continues the discourse.	
	Showing gratitude, praise, and encouragement	
Communicating cohesively	Referring to pupils by name helps communication.	2

kid thought they were "learning with a real friend." Students 1 and 2 said that using emojis made them happy, but as the intervention went on, that

happiness stopped. This happened because using symbols became boring over time.

Open Communication

Seven More participants agreed that touching someone without concealing it is a way to connect with them. The medical student said reading lettersmedical student made them feel better.m others who wrote about studying difficulties. To help with this hearing job, bots were used. The bots maintained confidential learning logs through the use of Readinotes. They were agitated about the work and what went wrong, as shown by these records. Student 5 adds, "Reading others' difficulties helped reduce their pressure by letting them know they were not alone as a frustrating learner." The people who worked on the study project found this.

The medical student liked how the robot helped them do their work in steps. Five stated, "I liked talking and interacting with other people more than the usual way of learning." The robot was fun to use and learn from. Like most people, I didn't get any feedback at the end of the lesson. It did everything at the right time. instead. Also, it was cool when the robot said helpful things like "thank you" and "good job."What did the third kid always say?" I felt good about myself. when the chatbot liked my work." It was already tough for me to work out. every day. It looked like this pill could work.

Cohesive Communication

Two of the students said it was simple to talk to the robot because it called them by name. Students in grades 5 and 10 reported that addressing the bot by name enhanced the conversation. vivid and interesting."

Students' Suggestions to Improve the Chatbot

What do you think the robot that helps medical student learn should be there? We asked the study participants this question, but there was no clear answer. We chose what the medical student should have said based on facts. They brainstormed potential improvements for the robot and generated four main groups of ideas. Table 6 shows these. Among others, people are smarter, things move faster, and events happen less often. Nine People said it should be easy to talk to the robot friend. This is what the medical student talked about the most. What did the 28th grader say? Because "the chatbot would sometimes be slow," it was harder for him to learn. The movies took a while to load because the internet was slow. They may have been together for a long time. Many participants suggested tightening the packing to enhance the

experience. When the students talked to the robot, five of them

Table 6. *Student recommendations for EFL listening chatbot development*

Theme	What it means	Size of the class
Better flow	Expect smoother chatbot interactions.	9
More articles	Want more chatbot responses?	5
Not as many times	The chatbot's instructions were repetitious and wordy, so they may be simplified.	5
With more knowledge	Hope the chatbot becomes smarter at comprehending replies and providing tailored comments.	3

said they "expected more varied responses from the virtual assistant." By the middle and end of the practice, the students "could already guess what the chatbot would say." For two weeks, they were working every day. At first, they liked it, but after a while, it got old. They also said that the chatbot's comments and directions went on too long and said the same things over and over again. While they liked these short talks at first, they liked longer ones more after a while. Three students thought the learning friend robot would be smarter if it could understand and further explain their words.

5. Discussion

They converse with each other during their work (Study 2) and create plans (Study 1). We tried a new way to use robots to help them do both. People who set goals know what it means to get things done. Medical student need to learn this so they can take care of their actions. People who feel alone online might feel better if they make friends online. We looked at some effective ways to teach and learn with robots in this section. It also looked at the most important facts from Studies 1 and 2. We invited them to participate in the study.

5.1 Students' Behavioural Engagement with The Chatbots

Most of what they said to the robots was typed. All of them looked like they ran for four to seven minutes. The discussion will determine the schedule for the next meeting. However, the robot should maintain interest as the lesson progresses. This is because many talks end when they last too long. We're still not sure when a normal lesson would be best. The teacher knows the Medical

student liked using the robot because the lesson was long. The robot's job was to make plans, which it did. The robot fulfilled 92% of its intended role in aiding human learning. Both robots did their jobs; that much is clear.

The goal-setting chatbot changes the word 17.06 times more often than the learning friend chatbot. After nine rounds, Study 2 students could still do the daily listening activities for English as a Foreign Language. It showed that they kept learning with the learning buddy robot by doing things outside of school when they were done with the required learning tasks. When students are shown by the learning buddy robot how to use different social presence signs, like showing that they agree or thank someone with an emotional face, they are more likely to connect with others. Still, it looks like a robot could become well-known on YouTube. A robot can let other people in the chat know that it's online by using different social presence signs. It's because of the social reaction theory that people treat computers like real people. This is even more true when the robots act like real people, like when they join chats or use emojis to show how they feel.

5.2 Students' Learning Experience With The Chatbots

People They appreciated the tools that helped them learn new things and set goals. Robot users said they were helpful and simple to use, so everything went well. People are more likely to use an easy-to-understand but helpful tool or method. When people think the tool will help them learn and not interfere with their work, they'll use it.

How did the teachers decide what the robots would say? They did it because they believed it would teach the medical student. They may think the tech is very helpful because of this. The teacher in Study 1 gave careful consideration to the questions regarding goal-making. Medical student should be able to say why they want to go to school online. This would help them become interested in different things based on their own goals. Keep this crucial point in mind when designing robots for teaching purposes. People who work with medical student will teach them how useful robots are for work.

The robots facilitated their learning process by allowing them to study alongside them. They were able to seek assistance whenever they needed it. For students who need help right away, robots' availability "24/7" makes it easy to get it. On the other hand, you could only get in touch with people's coaches during set work hours, not right away. Hearing something also helps people

remember it better. This is another reason why movies help people learn. When the medical student talked to the robots, it looked like they were calling their friends. They were going to learn and work on their ears at the same time. If medical student can talk to robots, they might be interested in what they learn on the web. That's why we think teachers should think about letting robots talk to medical student when they're not around.

5.3 Chatbots Assist Student Goal-Setting And Social Presence.

We looked into how a robot could help medical student plan in the first study. Seven of the students said at first that this work helped them better understand their learning goals because it helped them picture and see how the goals, which they had only loosely thought about before, would fit together. They had the most trouble with SRL when they didn't have enough help, which was found again. This could serve as a compelling argument for children to use computers responsibly. They also said that making goals helped them figure out what they wanted and how important it was to get it. You should emphasize this because telling students that setting goals is a key part of learning can help them stay on track.

In the second study, we looked at how a robot could help students with their English hearing homework by giving them immediate feedback and talking in a way that makes people think they are talking to a real person. According to our study, talking to a robot online can make people feel like they are part of a group. They will have more time to hang out with other people if they use Garrison's direct, open, and unified communication methods when they write computer texts. You can teach a machine to talk about how it feels with signs and pictures. Once someone agrees, asks a question, or expresses gratitude, they can initiate a conversation. It could also talk or ask questions on its own to keep the conversation going. The robot should also be able to call people by name and demonstrate that it can hear them. The robot should also use group names to connect the people who are a part of it.

5.4 Implications For Future Educational Chatbot Design

This work will teach us things that will help us make better robots in the future. "What modifications should we implement?" Many ideas immediately come to mind. There were two main types of solutions: those that used technology and those that didn't. Studies revealed that the primary weakness of the robots was their lack of advanced

artificial intelligence. The medical student thought the robots might be smarter than the people in the games who used them. This could help them understand and give better replies. A recent review of studies found that people had the most trouble with robots because they didn't know how to use them. In the past, a lack of skill was also the primary issue. The same way it was found. People perceived bots as flawed due to their limited ability to correctly answer a certain number of questions. They thought Study 1 would give them more than just three ideas. For a long time, people in the second study talked to the computer. This helped them figure out what was going on. To be exact, they believed the robot would help them move around more. It was easy to predict the robot's second statement, making the drill less fun.

You can't be sure what all the Medical student will ask, but the two robots know how to answer a lot of common ones. It will add what the student writes to what it already knows. This will help you. build a better robot. Include an extra letter with the robot. This is easy to fix. The robot may also say, "I'm sorry, I don't understand," when it answers. This answer lets them know you're not sure and gives them something else to think about. Please let me know [link] if you'd like to talk to a teaching helper. A test demonstrated that having robots express doubt and provide potential answers does not worsen the conversation. It's still correct. It's possible that people won't want to talk to the machine at first because it records texts.

In study 2, the participants didn't enjoy the discussion because it repeatedly reiterated the same points. However, their initial thoughts were comprehensive, which they found pleasing. People will want to learn more if they can do it with robots. Most of the time, we use lines. You can change them or get rid of words that don't make sense. To help the medical student adjust, you might need to use simple words or demonstrate how to do things.

5.5 Limitations

Be cautious when attempting to interpret the numbers, as this study encourages critical thinking. There weren't many people in Studies 1 and 2. Both studies took place in the United States. Also, most of the people who took part in these studies were Asian women. Remember that not all medical student are like this, and it's okay for them to feel this way about robots. We want to learn by building two robots with bigger groups of people from different places. Increasing the number of participants and holding more classes could potentially enhance our understanding of robot

operation. We will also track robot test performance and failure rates. How many times does the robot not answer? How often does a robot answer a question incorrectly and lack the knowledge to correct it? Some people believe that the number of satisfied employees increases as the failure rate rises. But if a lot of robots don't work, then the company needs to teach them more. We want to make a computer system that can do more than just help medical student make plans. Their sense of duty will grow as they learn on their own. It's the chatbot's job to let people address it and question it. It can also give each student specific ways to boost their self-control.

6. Conclusion

Over the past two years, educational institutions worldwide, including schools and colleges, have significantly enhanced the accessibility of online learning for students. While many individuals advocate for children to utilize the internet for educational purposes, some students remain reluctant to engage in online learning. Key reasons for this reluctance include feelings of isolation and challenges in managing independent study.

To address these concerns, robots have been employed to assist students engaged in fully online learning by helping them set personal learning objectives using the SMART (Specific, Measurable, Achievable, Relevant, Time-bound) method. The robots guided students by asking five targeted questions. Their communication style was designed to be engaging, providing immediate feedback to improve the students' understanding and listening skills. Several questions emerged from this approach: How engaged were students with their robotic companions? How did they perceive the ease of use and utility of these robots? What were their opinions on the educational value provided by the robots? Furthermore, how did they respond to the proposed chatbot-driven teaching methodology? The results indicated that both the companion bots and the goal-setting bots performed effectively in testing environments. This innovative process translates theoretical concepts into practical teaching and learning tools. Educators and professionals can leverage these findings to develop improved online learning initiatives for children, integrating robotic support to enhance educational outcomes.

Author Statements:

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