[PORTAL]

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Balancing the Input/Output Equation on the Web

by Rong-Chang Li

ESL/EFL teachers try to maintain a balance between offering students language input (reading, listening, and studying) and giving them opportunities for output (structured and communicative activities in which students speak and write in English) (Brown 2000). For most teachers, giving access to input is relatively simple: just provide appropriate reading and listening material. Opportunities for output, however, may not be so simple to create, and many teachers spend a great deal of time designing speaking and writing activities for students.

If you and the students you teach have access to computers and an Internet connection, you can help balance the input/output equation through Web resources that take advantage of new computer technologies, such as artificial intelligence, text-to-speech, and speech recognition. Students can carry out ready-made structured and communicative output activities. Once you are comfortable with the technology, you can create your own.

Two online activities that have helped improve the communication skills of the students I teach are participating in an online ESL community and chatting with an online language robot.

ESL Chat Communities

Learners in countries where the main language is not English often have trouble finding someone with whom to practice speaking English. Online communities can address this problem by connecting learners over the Internet.

In 2002, I discovered numerous online chat groups but few that catered to ESL learners. Dave Sperling's *Chat Central* (http://www.eslcafe.com/chat/chatpro.cgi), the first chat room dedicated to English learning, attracts ESL learners and teachers worldwide. Another popular ESL chat room is EnglishClub.com's *ESL Chat Room* (http://www.englishclub.com/esl-chat/). Both sites require you to register, which makes the chat room safer but causes some inconvenience to users who have trouble remembering passwords. One site that does not require user registration is 1-language.com's *ESL Realtime Chat* (http://www.1-language.com/chat/), where you need only give yourself a nickname to enter.

From Text to Voice Chat

The chat sites I've mentioned are limited by the software they use, and you can chat only by typing text. Unfortunately, many ESL learners type slowly, and a chat room is not a good place for them to practice. And most users I've encountered in ESL chat rooms are not ESL/EFL learners but teachers discussing teaching or other visitors who simply enjoy chatting. In the hope of attracting more ESL learners to online chat, I created an ESL community (the *ESL Online Talk Community*, http://www.rong-chang.com/guest/talksign.htm) where users can talk through computer microphones as well as write to each other.

Chatting Basics

To participate in the *ESL Online Talk Community*, students need access to a computer with a microphone and an Internet connection. A computer-mounted video camera (a Webcam) is useful but not necessary. For software, I chose MSN Messenger. To join, students do the following:

- download and install MSN Messenger (http://messenger.msn.com/)
- open a free, Web-based e-mail account at *MSN Hotmail* (http://www.hotmail.com/)
- sign up at http://www.rong-chang.com/guest/addguest.html by entering their name, their e-mail address, and a brief self-introduction

Using a guestbook program, I post all the members' self-introductions online. To find a chat partner, students browse the guestbook and add the *Hotmail* addresses of the members they are interested in chatting with to MSN Messenger's Contact List.

The program signals the student when a person on the Contact List is online. The student then invites the person to talk, and, if the person accepts, the two can speak to each other through their microphones. If both students have Webcams, they can have face-to-face conversations by clicking on a button within MSN Messenger.

Orientation to Online Chat

As an introduction to online chat, I bring the students into a computer lab and show them how to add potential partners to MSN Messenger's Contact List. Nowadays, software installation from the Web is fairly straightforward. If students need to install MSN Messenger on their own machines, I direct them to the Web site, and they are usually able to download and install it without help.

Another important part of this orientation is an introduction to the use of microphones. If a microphone does not work, often it is either muted or plugged into the wrong socket. In the computer lab, I show the students how to troubleshoot these problems. Some students initially have difficulty using microphones and end up chatting by typing instead of speaking. With time, students become more comfortable using microphones and videoconferencing. And with the increased availability of broadband Internet connections, audio quality has improved.

Chatting by Assignment

Every semester, I have students find a chat partner through the *ESL Online Talk Community*. Because students choose their own partners, I cannot monitor their communication directly, but I ask them to send me at least one e-mail in which they tell me about their e-mail exchanges. I reply to their message with encouragement and with some online chat safety tips (e.g., do not use your real name; do not give out your telephone numbers and addresses; end the conversation if you do not feel comfortable chatting with someone; do not arrange to meet anyone from a chat room). Having an online chat partner has improved the English language skills of the students I teach and has helped them make friends around the world. ▶

Human: Hi, Alice.

ALICE: Hello there.

Human: What are you doing?

ALICE: I am just killing time.

Human: What kind of books do you like to read?

ALICE: International bestsellers are usually the best.

You say:

ONLINE ROBOTS LEARN WITH EXPERIENCE. THEY RECORD ALL THE QUESTIONS BEING ASKED, AND THE CREATOR CAN STUDY THE CONVERSATIONS TO DEVELOP BETTER RESPONSES.

A.L.I.C.E., the Chat Robot

Computers cannot yet think like humans, but thanks to the Artificial Intelligence Foundation's Artificial Linguistic Internet Computer Entity (A.L.I.C.E.; http://www.alicebot.org/), computers can now chat well enough to hold simple conversations with humans online.

Like humans, online robots learn with experience. They record all the questions being asked, and the creator can study the conversations to develop better responses. When students repeatedly practice conversations on a specific topic, the robot develops a huge database. It can respond to one question or remark with various appropriate responses, which is what happens in real life.

How Does A.L.I.C.E. Talk to Students?

Programmed with Artificial Intelligence Markup Language (AIML), A.L.I.C.E. can form responses to questions and other input based on a database with thousands of grammar and logical inference rules (Wallace, Tomabechi, and Aimless 2003). As the leading open-source conversational system on the Web, A.L.I.C.E. has won the Loebner Prize three times for producing responses that are indistinguishable from a human's (see Loebner 2003).

A.L.I.C.E. speaks to users through a technology called *text-to-speech*, a form of speech synthesis that converts text into spoken voice output. The voice is computer synthesized, but, in my opinion, it is good enough for language learning practice. The three-dimensional character, smooth animation, and lip synchronization make students feel as if they are actually talking to a human. Although A.L.I.C.E. is not intended for learning English and the robot's remarks aren't always appropriate, talking to A.L.I.C.E. gives English learners an enjoyable way to practice speaking.

By configuring their computers to use speech recognition software, students can chat with A.L.I.C.E. by speaking into their microphones. If you use Windows XP, you already have a speech recognition engine installed on your computer. To configure it, go to the Control Panel and click on the Speech icon; you should see Microsoft English ASR Version 5 Engine. Close the Speech window and click on the Regional and Languages Options icon. Select the Languages tab, and then click on Details. Choose to add Speech Recognition and show the Language Bar on the desktop. After you restart the computer, you will see a microphone icon on the desktop. When you speak into the microphone, the software will convey your speech.

Speech recognition technology has made amazing progress over the past few years, but it is still not perfect. An ordinary microphone works, but not very well; a better choice is a high-quality, unidirectional, noise-cancellation microphone. And students can improve the accuracy of the software by training it to recognize their voice and adapt to their pronunciation—for example, by reading paragraphs into the microphone in a normal voice.

Ready-Made Chat Robots

From the A.L.I.C.E. Artificial Intelligence Foundation's Web site (http://www.alicebot.org/), students can access the free chat robot, or they can subscribe to three other bots for US$9.99 a month or US$99 a year. The free and paid bots use the same database and respond to typed or spoken input. In the free version, the robot responds via written text; in the paid versions, the robots respond with a computer-synthesized voice.

Build Your Own Language Bot

Part of the reason for the popularity of A.L.I.C.E. is that its programming language, AIML, is as easy as HTML. Once you have mastered AIML (a primer is available at http://www.alicebot.org/), you can create your own robot. If you don't want to take the trouble to learn AIML, you can use online authoring tools, but learning AIML will give you more power to customize your robots.

Pandorabots (http://www.pandorabots.com/) is a robot-hosting service that allows you to create, design, and publish software robots. All you need is a computer with an Internet connection and a Web browser. To create a robot, sign up for a free account at *Pandorabots*. Log in with your user name and password, and click on *Create a Pandorabot*. You can

choose whether or not to include a ready-made set of AIML content in your new Pandorabot. Give your robot a name. Then add content to your robot with the authoring tool or through AIML programming.

A Robotic ESL Tutor

To help my students practice English, I created a robot called *ESL Tutor* (see http://www.rong-chang.com/esltutor.htm) that uses A.L.I.C.E.'s huge database. When visitors chat with the robot, the conversations are recorded in a log, which, as the creator of the robot, I can check. If I'm unhappy with one of the robot's responses, I click on the Modify button and type in the response I prefer. Then I save and reload the program. The next time the question is asked, the robot will give the new response.

As optional homework, I ask my students to chat with A.L.I.C.E. fifteen minutes a day. If speech recognition doesn't work well for them, they can chat by typing. I check the chat log to see what kind of questions my students are asking and what the robot's responses are. From the chat log, I can see what kind of errors my students are making, which helps me adjust my teaching.

My experiment with this robot demonstrates that ESL teachers can use artificial intelligence technology to create online ESL tutors and other teaching assistants. For example, you might create a robot to answer students' grammar questions or a conversation robot to teach students what to say in different situations. You might even create a family of online ESL robots, each an expert on one topic, such as shopping, traveling, or seeing a doctor.

Let the Technology Serve You

New computer technologies can help English learners develop communication skills in new and exciting ways. If you learn to use these technologies, or even to use tools others have created with them, you give your students more opportunities for output.

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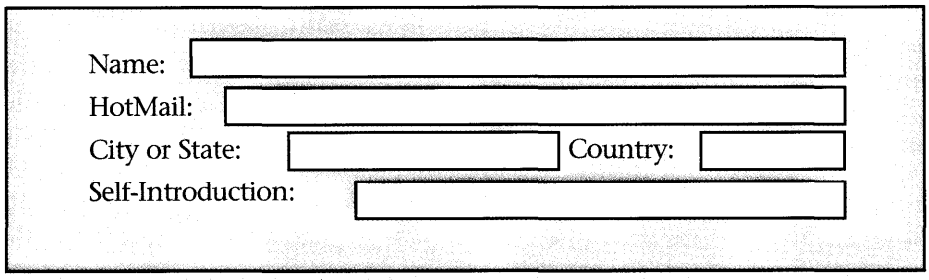

I CREATED AN ESL COMMUNITY WHERE USERS CAN TALK THROUGH COMPUTER MICROPHONES AS WELL AS WRITE TO EACH OTHER.