

Vocalism, Phonetics and CALL for Accent Reduction

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Reference Data:

Ryobe, I. (2012). Vocalism, phonetics and CALL for accent reduction In A. Stewart & N. Sonda (Eds.), *JALT2011 Conference Proceedings*. Tokyo: JALT.

To moderate strong Japanese English accents, which hinder communication with people overseas, the author used a blended learning/teaching approach that combines teachers' face-to-face instruction on vocalism and traditional segmental and suprasegmental phonemes, with web-based pronunciation practice using two free websites. One such website contains speech-recognition software and various kinds of authentic videos; the other uses illustrated animation of oral and nasal cavities, as well as audio and video, to aid in the instruction of how to correctly pronounce phonemes. The participants were 95 non-English majors, in total. The experimental group consisted of 75 students who registered for four pronunciation classes at two universities. The control group had 25 students who used the two websites under the exact same conditions as the experimental group, but did not receive any vocalism instruction. As a result, in the experimental group that was given advice on vocalism, both segmental and suprasegmental issues, voice quality, prosody (pitch, loudness, tempo, and rhythm), and overall impression improved considerably compared to that of the control group. However, both groups' motivation and confidence relating to English pronunciation and learning improved.

海外の人とのコミュニケーションを図る妨げになるほどの強い日本語アクセントの英語を矯正するために、英語発声法の訓練と伝統的な音声学的の研究成果に基づく文節音楽と超文節音楽の指導を組み合わせたブレンディッドラーニングを行った。両音楽やプロソディーの指導には無料の文節音楽学習ウェブサイト及び、様々な種類のオーセンティックビデオと音声認識エンジンを搭載した総合英語学習ウェブサイトを利用した。また、発声法の指導効果を測るために、実験郡は3クラス75人、統制郡は1クラス25人とし、統制郡には発声法の指導は行わなかった。しかしそれ以外は週1回同じウェブサイトを利用して同環境化で発音の練習を1学期間行った。学生は、ほぼ毎週音声ファイルの提出を行い、学期の初週と最終週の録音音声と比較した。その結果、実験郡のアクセントは文節音楽、プロソディック長文節音楽、声質、全体的印象などすべての点で統制群よりも顕著な発音の改善が見られた。しかし両群ともに、程度の差はあるがアクセントの改善が認められ、学生は発音のみならず英語学習への動機づけと自信が高められた。

TEACHING ENGLISH pronunciation can be an arduous aspect of instruction in Japanese EFL classrooms and, although accent is one of the most important factors for the enhancement of oral communication skills, is one that is often overlooked, even by the Japanese school system itself.

It is important to note that the term *accent* will be used several times throughout this study, but as the terms *accent* and *stress* are often used interchangeably among researchers in this field, the author will here establish the definition of *accent* for the purposes of this paper as:



The features of dialect regarding pronunciation (Rogers, 2000), including prosodic suprasegmental features.

In the Japanese school system, English language instructors are typically non-native English speakers, so they cannot demonstrate correct English pronunciation for their students. In an attempt to remedy this problem, many schools throughout Japan have hired JETs and other ALTs to act as pronunciation models; however, according to *Yomiuri Shimbun's* Gakuryoku-ko series, hiring these individuals is quite costly, forcing an increasing number of schools to hire ALTs via third-party companies, which can, "...lead to less-than-desirable situations in class" (Daily Yomiuri Online, 2010).

The problem runs deeper still, for even if the issue of pronunciation models were corrected, there still remains the problem of timing: the Japanese school system waits far too long before introducing its students to the English language (Wang, Higgins & Shima, 2005), thereby missing the small window of opportunity during which young students can acquire a new language without accent.

All things considered, it is of little surprise that some believe that the importance of correct English pronunciation has been overlooked in the Japanese school system. Further compounding this problem are the characteristics of the Japanese pronunciation system itself. The idea of World Englishes has recently gained prevalence. Almost everyone's accent is affected by their mother tongue, to some extent. Most non-native English speakers, the author included, cannot realistically expect to reach native level, and nor do we need to do so. However, in Skype-related activities, the author has witnessed many students who are hindered in communication with partners from overseas who have had little or no exposure to Japanese-spoken English (Ryobe, 2008, 2009). Indeed, many students' accents in the author's classes were unintelligible to foreigners unfamiliar with the Japanese accent, and this seems to be the norm in many

schools. In these cases, the students' thick Japanese accents should be moderated as much as possible, but without causing undue stress or discouraging the students from speaking altogether. Though care must be given not to discourage students, correction is both needed and appreciated, by Japanese students in particular (Katayama, 2007).

Many studies on pronunciation have already been conducted on both segmental and suprasegmental issues. That is why most current pronunciation education has focused on segmental and suprasegmental aspects, such as prosody, phonemes, linking, elision, assimilation, stress, syllables, intonation, phrasing, and so forth. However, the differences between the systems of phonation (vocalization) in Japanese and English, as well as the relationship between breathing and sound production in English, have not been adequately researched, discussed, or taught in class.

Furthermore, there are problems in teaching pronunciation in Japan. The number of capable teachers is limited, because Japanese English teachers who have a high level of ability and confidence in teaching pronunciation are few and far between. Fraser (2001) has stated that one of the problems is a lack of confidence among teachers as to methods of teaching pronunciation, and that these problems stem from the inadequate training they received in this area. Shizuka (2008) conducted research focused on teaching segmental phonemes, and the method was impressive; however, once again, the implementation seems to require special talent and training on the part of the teachers.

For Japanese people, English pronunciation seems to be especially difficult. Native English-speaking teachers have acquired their pronunciation system naturally, so they tend to be unaware of the specific reasons Japanese students find it so difficult to eliminate their accents. Unlike their fellow ESL or EFL students from other countries, Japanese students' mother tongue is limited to some five vowel sounds and fifteen conso-

nant sounds, making it difficult for Japanese students to even perceive many of the sounds unique to English, much less actually acquire the ability to correctly pronounce them (Shoebottom, 2012). Native English teachers who are unaware of this inherent problem can at times become frustrated and at a loss as to why Japanese students are so poor at English pronunciation. Increased class sizes exacerbate the situation, as English teachers cannot devote as much attention to each individual student—another contributing factor to the neglect of pronunciation education in schools across Japan.

Pronunciation classes at private commercial English schools that teach segmental and suprasegmental features are very expensive and basically ineffective, as can be evidenced by the fact that many students of such schools, the author included, continue to struggle with pronunciation. In fact, the author's own personal experience with a number of such schools was the primary motivation for this research, and has led the author to consider the possibility that the most crucial factors in improving Japanese English accents are being overlooked in nearly every corner of Japan's educational system.

Hypothesis

The hypothesis of this research was to investigate whether teaching vocalism (see the following section) to students, in addition to applying traditional pronunciation teaching methods—such as instruction in segmental and suprasegmental phonetics, would effect a marked improvement in the accents of English learners who are L1 Japanese speakers, as compared to using traditional methods alone.

Vocalism

The definition of *vocalism* used in this study relates to how to breathe and alter breathing to produce sounds.

In his video, Balazer (2010) pointed out that Japanese speakers use the *pharyngeal airstream mechanism*. Usually, we pronounce the Japanese language from the pharyngeal area (the pharynx). In contrast, speakers of English and other Indo-European languages use the *pulmonic airstream mechanism*, meaning that the airstream comes from the lungs, with the support of the diaphragm, when they speak or sing.

From the traditional phonetic point of view, Japanese is also classified as *pulmonic egressive*. Nevertheless, when we Japanese sing songs, we use the pulmonic airstream; however, when we speak, our breathing is very shallow, because we tend to “hold our breath.” This is because the Japanese vowels /a/ /i/ /u/ /e/ /o/ are pronounced in a short, clipped fashion. We pronounce consonants and vowels at the same time, in many cases, and do not vary rhythm widely. Therefore, we tend to phonate from the mouth, narrowing the pharyngeal area to shorten our vowels. This pharyngeal airstream mechanism is similar to the more widely known glottal egressive mechanism; however, Japanese is not classified as glottal egressive. Uekawa (2007) also claims that English sounds are produced from the bottom of the throat, whereas Japanese sounds are only produced from mouth. Some of his claims are intriguing, but the author takes issue with his assertion that language learners should focus on only speaking from the throat and ignore all other articulators (see Figure 1). Furthermore, Uekawa's instruction tends to be vague and difficult to understand.

Humans have five *resonators* in their bodies that are responsible for the resonances found in the speaking and singing voices. They are the (1) oral cavity, (2) nasal cavity, (3) pharynx, (4) larynx, and (5) chest. When Japanese speakers speak English, the normal resonance of English is not present, because Japanese speakers rarely use the nasal cavity, pharynx, and larynx as resonators.

According to Matsunaga (2005),

Singing is a process of converting one's breath into voice. In emitting breath, a western language speaker has to make full use of his/her diaphragm, which serves as an air pump, while a Japanese speaker does not necessarily have to do this. Without skills of using diaphragm, which a Western language speaker would naturally acquire, a Japanese student tends to have a voice with little or no resonance and, consequently, his/her ability to hear the resonance remains undeveloped.

The author believes that we have to consider these factors and appeal for instruction on how to reduce the Japanese accent, as well as how to produce segmental and suprasegmental phonemes.

Vocalism Instruction to Reduce Japanese Accents

As previously stated, Japanese English speakers' pharynxes narrow in speech, which means that we have to open them wider in order to better pronounce the English language. When the pharynx is constricted or narrow, the specific resonance characteristic of English is not possible. Therefore, pharyngeal widening seems to be the key to imitating native speakers' sounds. Accordingly, language educators must ensure that Japanese students be made aware of this.

Here are some easy ways to begin:

1. Open the mouth wide.
2. Move the lower jaw much more than is typical for Japanese speaking.
3. Lift upper lips to expose teeth.
4. Sit up and relax the neck, throat, and facial muscles.
5. Breathe deeply before starting articulation; use the dia-

phragm.

6. Produce vocalization as though it were coming from the bottom of the larynx (Uekawa, 2007).
7. Produce air flow from the lungs using the diaphragm, and do not hold breath while speaking.
8. Articulate at least one sentence without taking a breath.
9. Articulate, connecting all words in a sentence.
10. Speak as though singing a song.
11. Extend the stressed vowels longer than the unstressed vowels (Fromkin & Rodman, 1998; Gilbert, 2004), unlike with Japanese vowels.
12. Pronounce unstressed vowels as /ə/ (Gilbert, 2004).
13. Mainly increase pitch, but not volume, to make intonation (Cook, 2000).

If the above steps are put into practice, the pharynx will open naturally. Furthermore, high-pitch intonations should basically come on content words, such as (1) noun, (2) verb, (3) adjective, and (4) adverb (Cook, 2000). To produce high-pitch and low-pitch intonations smoothly, the author had students expand and contract their bodies. To practice longer and shorter vowels, students were asked to open and close their arms, the reason being that pitch and length of speech sounds are affected by body movements.

The author taught students the differences between Japanese and English syllables. The basic Japanese syllable consists of the "consonant + vowel" (CV) combination, which is called a *mora*. In contrast, the basic English syllable consists of the "consonant + vowel + consonant" (CVC) combination (i.e., they contain more than one *mora*). Of course, there are many exceptions among English syllables, but knowing this basic form was helpful to the author's students as they tried to understand the

differences between the English and Japanese pronunciation systems. None of the author's students had been previously aware of these differing systems.

To teach rhythm, the author used a rap video from the English Central website (2012) (see below) called "Rapping Flight Attendant." It was initially quite difficult to get students to engage in the activity, with some of them complaining that they could not rap and that this was not a music class. At first they claimed that overcoming the difference between *mora-timed* and *stress-timed* was difficult; however, after only one or two classes, they acquired the ability to speak in a loud, resonant voice, and in rhythm with the rap video.

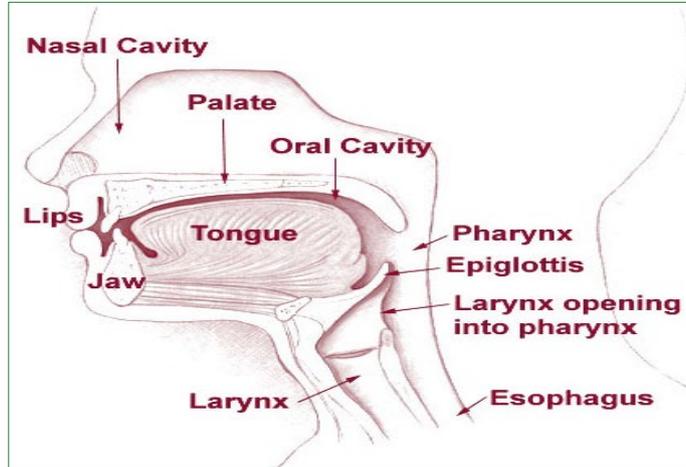


Figure 1. Articulator Anatomy

http://upload.wikimedia.org/wikipedia/commons/d/d4/lllu01_head_neck.jpg

Method

Participants

This study was conducted in 2010. The participants were 95 non-English majors at two universities, one in Kyoto and the other in Osaka. The students' English levels were generally quite low. For the experimental group, an elective pronunciation class at a Kyoto university was selected. It had five students for the spring semester and ten for the fall. The students had various majors and were at different grade levels. Two pronunciation classes in an Osaka university were also selected. They had 55 second-year students, in total (35 in one class; 20 in the other), majoring in business administration. Almost all of the students took the pronunciation course for two semesters. Only the performance in the spring semester was used as data for this research.

As a control group, 25 first-year law students (making the total number of participants 95) who had enrolled in a reading class for the spring semester were selected; they met twice a week. The author employed the English Central (EC) and University of Iowa phonetics (PH) websites (see Figure 3) once a week under the exact same conditions as with the experimental group. The only difference was that vocalism was not taught at all to the control group; the author instead asked the control group to practice accent reduction-related tasks on their own, using EC's website, ensuring that equal time for practice was given to both groups.

Data Collection and Analysis

To collect samples of students' speaking voices, the author asked all students to submit

recordings of their speech for assigned videos in every class, as well as at the beginning and the end of the term. The author

measured the students' level of improvement by comparing their final recordings with their first, and scoring them out of a total possible 100 points. The author also collaborated with a native English speaker from the United States to rate students' final recordings. The criteria by which students were assessed included: accuracy of each sound (e.g., *Rs* and *Ls*, *Vs* and *Fs*, *Ms* and *Ns*, *TH* sounds, and vowel sounds), intonation, voice quality, clarity, prosody, how much of their Japanese accent was reduced, and to what extent they could complete a sentence without stopping. Students wrote open (unstructured) comments about the activity at the end of the class.

Lesson Procedure

The Phonetics Website (PH)

First, the phonetics website hosted by Iowa University was employed to teach segmental phonemes at the beginning of class (for both groups). This was one of the only free websites that utilized illustrated animation to teach segmental aspects, such as the arrangement of articulators for each sound.

Figure 2. Phonetics: The Sounds of English and Spanish

The English Central Website (EC)

This free website contains plenty of up-to-date videos of real speech from YouTube and other online resources whose content will appeal to various levels, and categorizes them by genre. It also provides speech recognition software. The major advantages of this website are that it demonstrates the correct sound of each phoneme for all words, and that it facilitates student reflection by giving immediate feedback on their recorded pronunciation, along with scores showing which sounds were problematic. There are many different software programs that provide visual representations of speech, such as spectrograms or waveforms, but almost all of the author's students said that these representations were too cumbersome and difficult to analyze, virtually nullifying any intended advantages of immediate feedback.

On this website, students can watch, learn, and practice along with their favorite videos and listen to themselves speaking in English. They can compare themselves with the speech model and receive feedback. In fact, although the reliability of the evaluation is not 100%, many students found it encouraging and were motivated to speak and listen to their own spoken English.

The English Central website also features a teacher-management system, which provides goal-oriented elements, such as weekly homework assignments, as well as a tracking system to monitor students' progress. These functions seem useful for helping teachers monitor and motivate students. The author's students were able to chart their progress via EC's bar graph feature. This feature contributed immensely to their motivation to practice and fostered healthy competition among them.

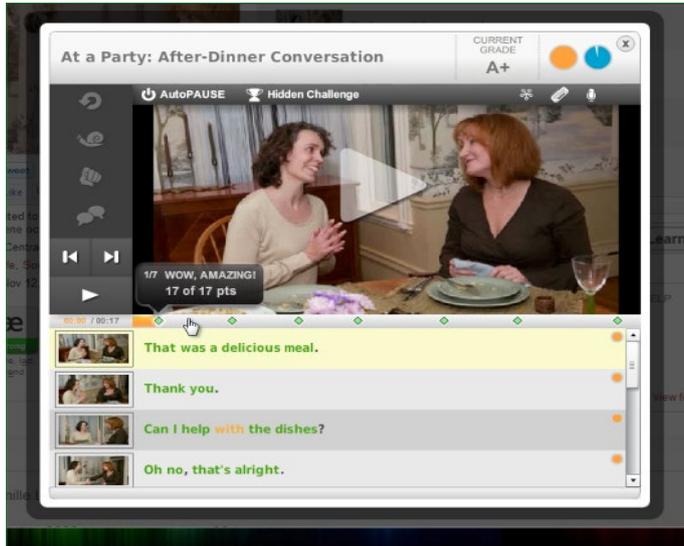


Figure 3. The English Central Website

In-Class Procedure

1. Students practiced segmental phonemes using the PH website in class (20 min). This was a form of teacher-led practice.
2. The author gave instructions for practicing vocalism (15 min).
3. The author then circulated around the room and offered individual advice to students in both groups, checking and correcting their pronunciation (10 min),
4. Students logged into the EC website and practiced English segmental and suprasegmental phonemes.
5. The author showed a video selected from EC (5 min), and

we practiced some segmental and suprasegmental aspects of the speech in the video (10 min).

6. Next, students practiced individually, recording their speech on EC, which gave them feedback. During this stage, the author also gave individual feedback and advice while circulating through the class (20–30 min).
7. Subsequently, students used Audacity, a free online audio recording software program, to record themselves reading a script and then submitted the files to Moodle (Kyoto students) and the CALL system (Osaka students).
8. Finally, the author provided students with evaluations and feedback of their performance on the afore-mentioned submitted audio files.

Evaluation

To receive credit, students were required to earn more than 11,600 points on EC. The author listened to all of the submitted recordings and evaluated them with scores out of a possible 100. Students were then required to choose one favorite video each from EC, practice on their own, and then submit their recorded files as a final project at the end of the semester. In addition, students also had to perform their scripts live in front of their classmates. Although attendance was also considered part of the students' final grade, the author evaluated their improvement based mostly on comparisons made between the first and final recordings, as well as on their individual efforts.

Results

Improvements

The improvements to English pronunciation instruction made by this study:

1. The author distributed open-comment questionnaires and listened to student comments. Based on this feedback, the author concluded that the students found this method to be fun and effective. Thus, even low-level students were motivated to practice speaking. This greatly accelerated their learning.
2. With the assistance of software from the two websites, even non-native teachers who are not confident about their own pronunciation, including the author herself, can teach pronunciation with confidence.

Given that vocalism training is quite difficult and still in its experimental stages, students' progress is contingent upon direct involvement by the instructor (Shudong, Higgins, & Yukika, 2005). This student-centered vocalism training worked well as a way of improving students' accents and voice quality. After three months' training, many students in the experimental group who were taught vocalism sounded like completely different people, demonstrating good voice quality, clear pronunciation, and diminished accents.

Figure 4 below shows that the experimental group (total number = 70, average score, 84.48), which was given vocalism instruction using PH and EC, improved much more than the control group (total number = 25, average score, 78.68), which was only given access to PH and EC. The average scores of the experimental and control groups' first recordings were 73.63 and 73.60, respectively. The average final recording score was 89.27.

In the large experimental pronunciation classes, about eight out of 55 students showed remarkable improvement; 20 students showed considerable improvement; and the remainder showed improvement over their prior performance. The average final score was 83.53. Class size does have some effect on results, with the class of five students showing much better performance than the class of 35, but the control class of 25

students, who received the same individual attention as the other classes but did not receive vocalism training, were greatly outperformed by the class of 35 students, who did receive vocalism training. The combination of PH and EC was also somewhat effective in improving pronunciation, but no significant change of accent was seen among the students in the control group. Therefore, it can be surmised that the instruction of vocalism worked effectively to eliminate the students' Japanese accents.

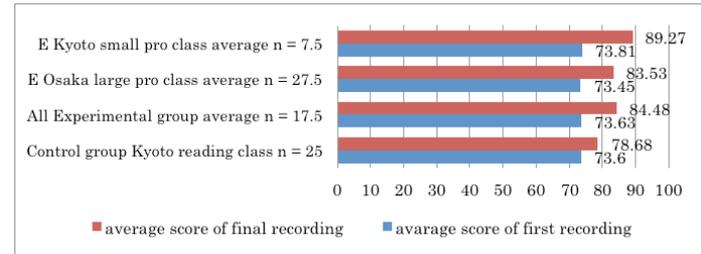


Figure 4. The Comparison of Improvements of Pronunciation ($n = 95$)

Due to the arbitrary nature of pronunciation assessment, standardization is quite difficult, as no two instructors would score the same students the same way. Even though there are official scoring standards by which instructors can rate students' progress, scores are given based on instructors' ability to understand the students' spoken English. This ability will obviously differ from one instructor to another, so trying to assign a score that all instructors everywhere would agree upon is simply not possible. Therefore, scores in this study were based on the author's own standards, which were developed over the course of 16 years of teaching English to Japanese students whose ages ranged from small children to senior citizens. The author's standards were based on students' Japanese accents, intonation,

voice clarity and loudness, and how well they could complete a sentence without taking breath.

The author felt that it would be appropriate to give the participants an average of 50 for the first recording, due to their tendency towards “Katakana pronunciation” (Sherard, 1986), meaning that they tended to “...pronounce the sound /r/ as /l/, /v/ as /b/, /s/ as /sh/, /f/ as /h/, /th/ as /s/, ... [and also tended to] ... insert extra vowel sounds after final consonants so that /p/ becomes /pu/, /t/ becomes /to/, and /d/ becomes /do/, and so forth” (Shima, 1986). The author rated the students at an average of 75 so as not to discourage them. However, some students from the experimental group showed startling improvement, ranging from 80 to 95, and in fact one student was rated a perfect score of 100.

Open-Comment Questionnaire

Ninety-five percent of the students responded positively in the open-comment questionnaire conducted at the end of the class, whereas only 5% wrote negative comments. The statements below are excerpts from their comments. Some students commented on multiple aspects.

Positive comments included:

1. The lesson was fun and interesting because I could practice English using my favorite movie trailers (21%).
2. This class is fun, and I enjoy recording my voice on the computer (15%).
3. I understood how to pronounce English for the first time (15%).
4. I will do my best to improve my pronunciation to sound like native speakers, so that I can communicate with people around the world (10%).
5. The point system was fun because it was like a computer

game, encouraging me to get a higher score (8%).

6. I noticed my English pronunciation was terrible (8%).
7. I feel my pronunciation improved (7%).
8. I didn't like reading English out loud at first, but I grew to like it (3%).
9. Iowa university Phonetics website is good (3%).
10. Now I have confidence in my English and can answer with confidence when foreigners speak to me (2%).
11. I felt envious when the teacher was correcting other students individually (2%).
12. Thanks to this class, I have started to use English outside of the classroom with friends (1%).
13. I can learn vocabulary in real life in videos (1%).

Negative comments included:

1. English Central has some glitches (3%).
2. I don't like the points system, because every time I tried speaking, my number of points dropped, so that I was discouraged from speaking (2%).

It can be said that many students found speaking to speech recognition software with their favorite movie trailers on EC to be fun and interesting, and they realized how to phonate English sounds by utilizing vocalism instruction, PH, and EC.

Conclusion

This study showed that hands-on instruction in vocalism, in addition to web-based practice of segmental and suprasegmental phonemes, is quite effective in improving English pronunciation and reducing the Japanese accent. The experimental group's

accent—voice quality, prosody, and segmental and suprasegmental phonemes—and overall impression improved considerably compared to that of the control group, which was not given vocalism instruction. Even in the control group, students were satisfied using only PH and EC; however, improvement of their accent was not so apparent. Therefore, the hypothesis is proved: teaching vocalism, along with the application of traditional pronunciation teaching methods, did indeed effect a marked improvement in the accents of the author's experimental group as compared to the control group, who received training using only traditional methods.

As a researcher the author was pleased to see her hypothesis proved, but as a teacher she was even more delighted to see that the students in both groups gained confidence in their pronunciation and became more motivated to continue studying English. This accent-reduction class, blended with web-based CALL and vocalism instruction, gave these students a whole new perspective and changed their concept of learning the English language.

Bio Data

Ikuyo (Mayuko) Ryobe has been a part-time instructor at Kyoto Sangyo University and Setsunan University since 2006 and 2007, respectively. She has been the owner of Myskypenglish-ICT English Education Research Center (an online language school) since 2009. She received her MA in the field of Applied Language Studies (now TESOL) from the University of Westminster in the UK. Her main interests are computer-assisted language learning, oral communication, lexical approach, and material development and motivation. <mayukor2006@yahoo.co.jp>

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