# PINYIN TO SPEECH SYSTEM: FOSTERING CHINESE SPEAKING SKILL AMONG NON-NATIVE SPEAKERS OF CHINESE AS A FOREIGN LANGUAGE

Goh Ying Soon
Academy of Language Studies
Universiti Teknologi MARA (UiTM) Terengganu
23000 Dungun, Terengganu, Malaysia
Tel: 609-8403769 E-mail: gohyi141@tganu.uitm.edu.my

Saiful Nizam Warris
Faculty of Computer and Mathematical Science
Universiti Teknologi MARA (UiTM) Terengganu
23000 Dungun, Terengganu, Malaysia
Tel: 609-8403797 E-mail: saifulwar@tganu.uitm.edu.my

Aileen Farida Mohd Adam
Academy of Language Studies
Universiti Teknologi MARA (UiTM) Terengganu
23000 Dungun, Terengganu, Malaysia
Tel: 609-8403898 E-mail: aileen@tganu.uitm.edu.my

Mohd Suhaimi Sulaiman
Faculty of Electrical Engineering
Universiti Teknologi MARA (UiTM) Terengganu
23000 Dungun, Terengganu, Malaysia
Tel: 609-8403898 E-mail: shemi@tganu.uitm.edu.my

**Abstract**
Non-native learners of Mandarin face problems of mastering the correct pronunciation of Mandarin which consequently affects their speaking skill. Chinese is a tonal language and there are approximately 2000 syllables in Chinese. The finite syllables can be used into forming infinite phrases and sentences for speaking to achieve communication purposes. Therefore, a pinyin to speech system can be actualized to assist students in strengthening their speaking skills. A web-based system that enunciates a typed pinyin text was developed. This is especially useful as students of UiTM are using pinyin to learn Chinese. Text to speech (TTS) can be used to improve the teaching of Chinese as a foreign language. This system can be very helpful as the Chinese courses UiTM are moving towards a blended learning mode. This system will not only help UiTM students in particular but also can be useful for all Chinese learners in general.

**Keywords:** web-based learning, web-based instruction, text-to-speech, blended learning, Mandarin language learning

## 1. Introduction

Teaching speaking to non-native learners of Chinese is a difficult task. This is typically arduous when the contact hours of the instructors with the learners are very limited. Non-native learners normally find it difficult to speak in Chinese. Even though they would like to use Chinese for language communication but they frequently come across the situation whereby the native speakers can't really understand what they intended to say.

At the same time, instructors cannot actually attend to individual student's need. Instructors cannot accomplish each student's wants in expressing themselves. On top of that, non-native learners cannot listen enough as to help them speak correctly. In the classroom setting, they are restricted to listening to structured sentences and not to what they want to utter.

There are numerous problems faced in teaching speaking to the non-native learners. These include:

1. limited speaking training time;
2. limited listening time of native speakers;
3. limited opportunities to speak in the classroom;
4. limited occasions for students to speak things they want to say.

For this reason, the system in this study helps to improve speaking instruction in several aspects. These include:

1. provide all Mandarin sounds that students need to listen;
2. provide standardized Mandarin sounds for students to listen;
3. provide opportunities for students to key in single word, phrases, sentences or paragraphs that they want to listen as to assist them to speak later;
4. in line with task-based language instruction whereby it enables students to accomplish tasks for communication in Chinese according to convey what they want.

Non-native learners of Mandarin face problems of mastering the correct pronunciation of Mandarin. It affects their speaking skill. Chinese is a tonal language. There are approximately 2000 syllables in Chinese. The finite syllables can be used into forming infinite phrases and sentences for speaking to achieve communication purpose. Therefore, a pinyin to speech system can be actualized to assist students in strengthening their speaking skill. This text to speech system may assist in strengthening their speaking skill. Since students' main purpose of learning Chinese is speaking for communication, a pinyin to speech system that we intended to create in this research is of great help.

## 2. Literature Reviews

Text to speech (TTS) can be used to improve the teaching of Chinese as a foreign language (Tian, Wang, & Nurminen, 2005). TTS is typically useful in the teaching of Chinese as Chinese is a tonal language that need to be mastered by non-native learners who are not used to tones.

Web-based learning materials should be utilized in assisting students to learn Chinese better (Goh, & Irfan, 2012; He & Zhang, 2008). Participation and active learning of students in web-based instructional learning environment is vital (Jin & Lu, 2009). Students will be able to search for voice threads they are interested to listen to. A web-

based pinyin to speech system in this research can be very helpful as the Chinese courses UiTM are moving to blended learning mode.

Another great advantage in the use of modern technology is to reduce the dependence of students upon instructors (Xu, 2010). As blended learning is implemented for Chinese teaching, a pinyin to speech system can allow students to listen to authentic Chinese speaker's speech without depending on their instructor. They can use this system anytime and at any place they like to learn. This is advantageous in instilling independent learning attitude.

Multimedia is of great help to students of learning Chinese as a foreign language (Yu, 2010). Students need to listen more often to Chinese pronunciation. This is often limited in face-to-face classroom to cater individual need. Hence, a pinyin to speech system as such certainly may cater for this need.

The contribution of international Chinese educators is vital to develop the field of the teaching of Chinese as a foreign language (Zhou, 2010). Students of UiTM are using pinyin for learning Chinese and cannot use Chinese characters for text to speech system. In conclusion, our pinyin to speech system is helpful in this manner. The contribution is not just for UiTM in particular but to international Chinese teaching as well in general. The effectiveness in strengthening students' speaking skill in the use of this system is deemed to be positive.

## 3. System Development

This system is very suitable for non-native speakers with very limited Chinese characters knowledge. It allows users to key in pinyin texts and then speech files are generated. The purpose of this pinyin text to speech system is to bridge the need of communication through listening to generate speaking. In this manner, it helps to build up students' communicative competence. The process is shown in Figure 1.

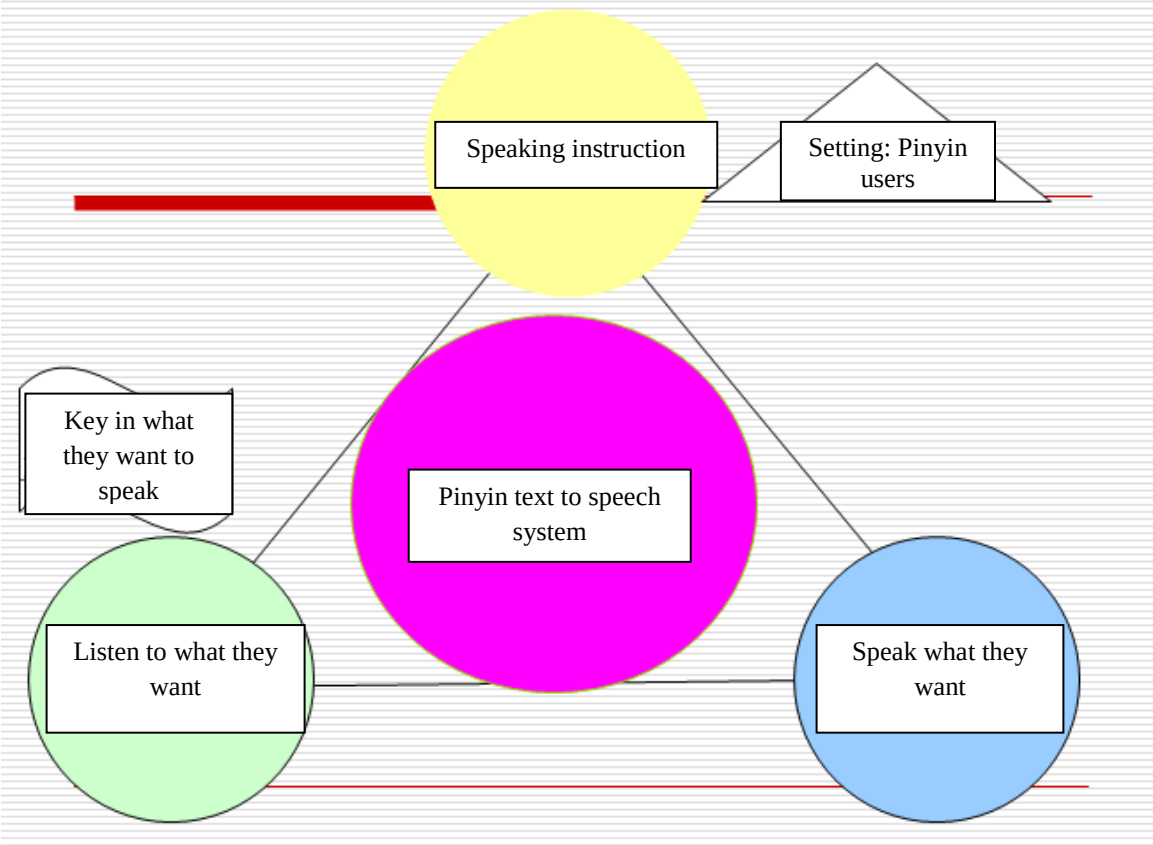


**Figure 1:** Purpose of pinyin text to speech system

There are two aspects of this pinyin text to speech system to improve students' speaking skill. These include:

1. accurate pronunciation.
2. oral fluency.

This system uses WampServer technology. It is a web-based system. It can be accessed at http://terengganu1.uitm.edu.my/mandarin/index2.php. Figure 2 shows the interface for the user.


**Figure 2:** User interface

## 4. Teaching Use

There are several aspects of pronunciation that improves speaking skills in which this pinyin text to speech system can help. This is summarized in Table 1.

**Table 1:** Several aspects of pronunciation that improves speaking skills in which this pinyin text to speech system can help

| No | Aspect | Example |
|---|---|---|
| 1 | Initials | Using this system to listen to the differences between initials which are quite similar<br>e.g. (retroflex vs non-retroflex)<br>zhi1 vs zi1<br>chi1 vs ci1<br>shi1 vs si1<br>li4 vs ri4<br><br>or<br>initials that contrasts<br>e.g. (non-aspirated vs aspirated )<br>ba1 vs pa1<br>dui4 vs tui4 |
| 2 | Finals | Using this system to listen to the differences between finals which are quite similar |

<table>
<tr><td></td><td></td><td>e.g.<br>li4 vs ri4<br>an1 vs ang1<br>eni1 vs eng1<br>in1 vs ing1<br>ji1 vs ju1<br>jin4 vs jun4<br>li3 vs lv3<br>xi1 vs xu1<br>xin1 vs xun1<br>qu4 vs qi4<br>yu3 vs yi3<br>luo2 vs lou2<br><br>or<br>finals that students that are not familiar<br>e.g.<br>v1, v2, v3, v4<br>lv3 vs li3<br>ye3 (also)<br><br>or finals that students typically can’t master well<br>e.g.<br>jie2 hun1 (marry)<br>tui4 xiu1 (retire)<br>xiu1 xi0 (rest)<br>-ian:<br>Xian1, mian4</td></tr>
<tr><td>3</td><td>Tones</td><td>Using this system to listen to the differences of tones<br>e.g.
<table>
<tr><th>Word with tone</th><th>Description of tone</th><th>Description of tone</th><th>Name of tone</th></tr>
<tr><td>mā</td><td>Mother</td><td>The straight line over the word indicates that the word should be said with a flat and unchanging high tone.</td><td>1st tone</td></tr>
<tr><td>má</td><td>To bother</td><td>The mark going up above the word indicates the word should be said in a</td><td>2nd tone</td></tr>
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<tr><td></td><td></td><td>
<table>
<tr><td></td><td></td><td>rising tone.</td><td></td></tr>
<tr><td>mă</td><td>Horse</td><td>The down and then up mark above the word indicates that the word should be said with a falling and then rising tone.</td><td>3rd tone</td></tr>
<tr><td>mà</td><td>To scold</td><td>The down mark above the word indicates that the word should be said with a falling tone.</td><td>4th tone</td></tr>
<tr><td>ma</td><td>Grammatical marker used in a question.</td><td>When a word has no tone or mark above the word it is said to be neutral and is pronounced in an abbreviated manner with no emphasis.</td><td>Neutral</td></tr>
</table>
</td></tr>
<tr><td>4</td><td>Changes of tones</td><td>Using this system to listen to the changes of tones e.g.<br>If a 3rd tone is followed by a 3rd tone, the first 3rd tone becomes second tone<br>Ni3 hao3 – ni2 hao3;<br>xiao3 jie3 – xiao2 jie<br><br>The word "bu" is 4th tone, but when it is followed by another 4th tone, it becomes 2nd tone.<br>e.g.,<br>bu2 shi4, bu2 yao4,<br>bu4 hao3, bu4 neng2<br>The word "bu" is neutral tone when it is between two similar tones.<br>Hao3 bu0 hao3<br><br>changes of tones for number “yi”<br>The word "yi" is 1st tone when used as part of a number (yi1, shi2 yi1).<br>The word "yi" is 4th tone when preceding 1st, 2nd, or 3rd tones.<br>(yi4 zhang1, yi4 ren2, yi4 huo3)<br>The word "yi" is 2nd tone when preceding a 4th tone.<br>(yi2 fu4 hua4)<br>The word "yi" is neutral tone when it is between</td></tr>
</table>

| | | |
|---|---|---|
| | | two similar tones.<br>(shi4 yi0 shi4) |
| 5 | Neutral tones | Using this system to listen to neutral tones<br>e.g.<br>ma1 ma0<br>xiao3 jie0<br>xian1 sheng0<br><br>using this system to listen to the differences in meanings of words with or without neutral tones<br>e.g.<br>dong1 xi1 (east and west)<br>dong1 xi0 (thing) |
| 6 | "er" tone | Using this system to listen to "er" tones<br>e.g.<br>huar1 – hua1 er2 |

## 5. Conclusion

The purpose of language education and the teaching of Chinese as a foreign language is to inculcate communicative competence among the learners (Lv, 2005). However, teaching speaking for conversation and dialogues in action is not simple (Sarah, 2001). Hence, educational technology has to be used in a manner that it actually assists in improving learning.

Listening and speaking instruction are mutually related (Yang, 2002). Listening in another way supports speaking. This pinyin test to speech system make available listening as to espouse speaking skill. It is corresponding to the task-based instruction approach in which students can learn by doing. This system may give a hand in supporting their doing of communication task and hence they are free to speak what they want. Self learning is vital to accomplish successful communication tasks (Zimmerman, 2000). The decency of this system is that it instills the spirit of self learning among the students. This eventually leads to achieve the language learning purpose that is for actual communication through speaking.

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