

Title II Grant, Strengthening Institutional Program
Innovations in Learning Project Proposal – A module for computer-Aided Interactive
Chinese Diacritics Learning (CAIDCL)

Progress Report

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The purpose of this project is to use computer software to help students improve their spoken Mandarin Chinese.

Project Activities

One of the difficulties in teaching a foreign language is ensuring that students' pronunciations are correct. Since there is only one teacher but many students, the amount of time that a teacher can spend correcting any one student's specific pronunciation deficiencies are limited. The *Tell Me More* software gives students more time to correct their direct pronunciation problems and provides them with both visual and aural feedback on their pronunciation.

Due to the limited number of copies of the software available, we started our project by identifying a small group of students who most needed to improve their pronunciation. We then explained to students how to use the *Tell Me More* software. First, students listened to the sentence the computer pronounced. Then, he or she repeated what they heard, trying to imitate as best as they could the rhythm and intonation of the model. With the help of the speech recognition technology, students saw their recording represented by a waveform and a pitch curve. By comparing their waveform and pitch curves with the ideal waveform and pitch curve, the students could see which specific areas they could improve on. If the student made a pronunciation error in a sentence exercise, it was detected by the software and highlighted. To improve one's pronunciation, the student repeated the exercise several times and compared the graphical display of his or her pronunciation with that of the models until they were as close as possible. We hoped that, by allowing students to see as well as hear their errors, students were able to improve their pronunciation rapidly.

Assessment

We assessed the students by record their percentage of correct pronunciation before and after they had one practice session with the software at the same difficulty level. Each session was roughly three quarters of an hour. Below is the progress report shown the students' improvement.

Table of Assessment Results

	Lesson	Difficulty Level	% of Correct Before Practice	% of Correct After Practice	Improvement (%)
Student 1	L2	4	14/30=46.7%	20/30=66.7%	42.8
	L3	4	18/32=56.3%	25/32=78.1%	38.7
	L4	4	18/34=52.9%	20/34=58.8%	11.1
Student 2	L2	4	26/30=86.7%	26/30=86.7%	0.0
	L3	4	28/32=87.5%	30/32=93.8%	7.2
	L4	5	18/34=52.9%	26/34=76.5%	44.6
Student 3	L2	4	26/30=86.7%	27/30=90.0%	3.8
	L3	4	30/32=93.8%	30/32=93.8%	0.0
	L4	5	20/34=58.8%	30/34=88.2%	50.0
Student 4	L2	4	26/30=86.7%	26/30=86.7%	0.0
	L3	5	21/31=67.7%	28/32=87.5%	29.1
	L4	5	19/34=55.9%	25/34=73.5%	31.6
Student 5	L2	4	19/30=63.3%	24/30=80.0%	26.4
	L3	4	21/31=67.7%	27/32=84.3%	24.6
	L4	5	16/34=47.1%	23/34=67.6%	43.7
Student 6	L2	4	26/30=86.7%	27/31=87.1%	0.5
	L3	5	20/31=64.5%	26/32=81.3%	25.9
	L4	5	21/34=61.8%	27/34=79.4%	28.6
Student 7	L2	4	27/31=87.1%	27/30=90.0%	3.3
	L3	5	19/30=63.3%	25/31=87.5%	27.3
	L4	5	19/34=55.9%	26/34=76.5%	36.8

Note: The percentage of improvement in the last column is calculated as $100 \times (\text{after} - \text{before}) / \text{before}$. For example, $100 \times (66.7 - 46.7) / 46.7 = 42.8\%$. The comparison highlights the improvement over the skill before taking the practice.

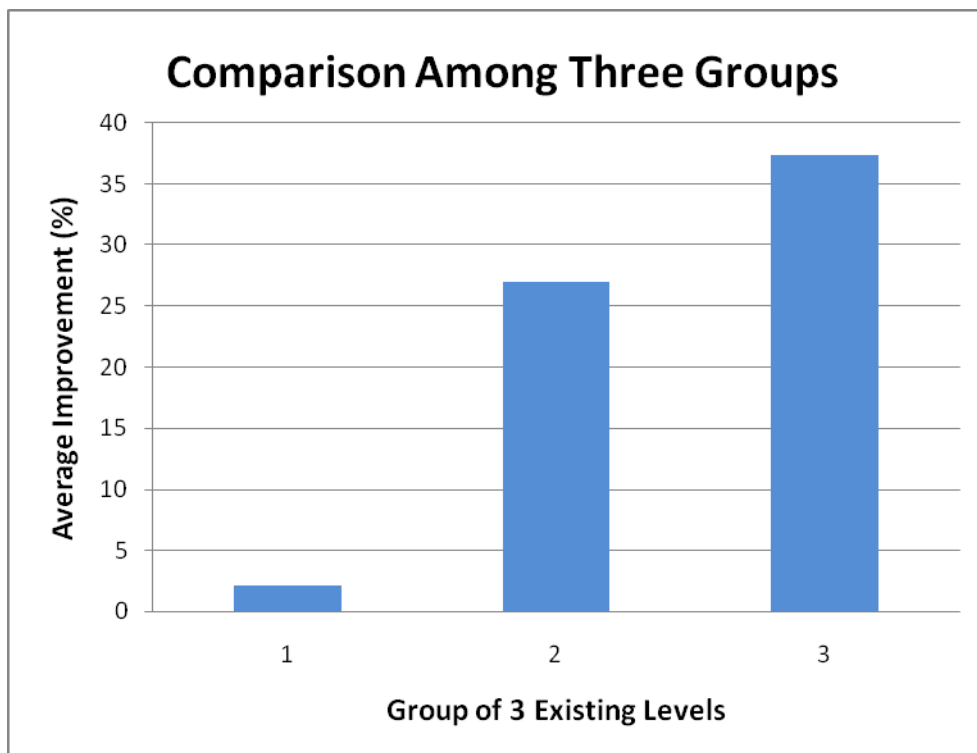
The assessment shows marked improvement for all students. As expected, the amount of improvement depends on the existing skill level of the student. To demonstrate the correlation between the existing level of students and their improvement after pronunciation practice, we divide the data into three groups based on the percentage of correct answers before practice as:

- Group 1: higher than 80% of correct before taking the pronunciation practice;
- Group 2: between 60% and 80% of correct before taking the pronunciation practice;
- Group 3: lower than 60% of correct before taking the pronunciation practice;

The average improvement of each group is calculated and listed below.

Group Level	Average Improvement (%)	Variation (%)
Level 1 (higher than 80%)	2.1	0 – 7.2
Level 2 (between 50% and 80%)	27.0	24.6 – 29.1
Level 3 (lower than 50%)	37.4	11.1 – 50.0

The result is also plotted in the graph below.



The project has also shown success in the classroom. Several students demonstrated significant improvement in their spoken Mandarin when they participated in class discussion.

Areas for Improvement

The main difficulties we encountered with this project stem from the fact that this is our first time using the software. At first we didn't set the difficulty level properly. For example, if the difficulty level is too low, it will not help students to improve because the software will let the student pass at a low standard. Likewise, if the difficulty level is too high, the student will never be able to pass the standard and this will discourage them from practicing. However, with some more experience using this software, these small obstacles can easily be overcome.

We hope next semester we will be able to provide more students with the benefits of this project.