Effectiveness of a Romanised Mandarin Web-based Instruction in Teaching Writing and Reading Skills at Word Level for Non-native Learners

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Abstract: The time allocated to teach the sound system of Hanyu Pinyin in Universiti Teknologi MARA (UiTM) is insufficient for learners. Hence, it is suggested a web-based instruction incorporate into the curriculum as a self-learning material for learners to enable them to manage their learning process in the absence of instructor.The objective of this paper is to assess the effectiveness of utilizing Guru Hanyu Pinyin web based instruction as a teaching tool for non-native speakers in improving the writing and reading skills at disyllabic word level in Hanyu Pinyin. The study compares the academic achievements for Hanyu Pinyin of two different groups of students whereby the experimental group adopts the web-based instruction and the control group adopts the traditional approach as the mode of learning. This research is targeted on first year elementary level Mandarin students at UiTM Penang campus. The research sample has been selected through stratified random sampling. The findings for writing of disyllabic words showed that the mean score of the experimental group is better than the control group but there is no significant statistical difference between them. At the same time, the findings also indicate that the experimental group, which was using this Guru Hanyu Pinyin web-based instruction, is performing better than control group in term of reading skill. As the result, the students from experimental group can read the pronunciation of initials and finals better. This paper also discusses some limitations that were discovered during the research and proposes some recommendations for future research.

Keywords: *non-native Mandarin learners; web-based instruction, listening and writing skills,*

1. Introduction

Hanyu Pinyin (Romanised Mandarin) is used in the teaching and learning of Mandarin as a third language in UiTM. Generally, the first 2 to 4 hours of lecture are allocated to the teaching of the sound system of Hanyu Pinyin. The time allocated is definitely insufficient for learners, many of whom are exposed to Mandarin for the first time, to satisfactorily comprehend the intricacies of its sound system. Therefore, there is a strong need for extra hours of additional practice and consultations. Hence, it is necessary to devise some self-learning materials for learners to enable them to control and monitor their learning process in the absence of facilitator. In order to create an environment conducive for self-learning Hanyu Pinyin, a web-based instruction is suggested to be incorporated into the curriculum. Web-based instruction, which is also called as Web-based training, is defined as an "individualized instruction that is delivered over public or private computer networks and displayed by a Web browser". WBT is not a downloaded Computer Based Training but an on-demand training stored in a server and accessed across a network. Web-based training can be updated very rapidly and its accessibility as training tool that is fully controlled by the training provider (Clark, 1996). It generally applies to any kind of instructional materials delivered over the Internet accessed by browser-equipped computer users. However, before such a measure can be taken, it is important to investigate its effectiveness in enhancing the learning of Hanyu Pinyin.

The Guru Hanyu Pinyin web-based instruction (www.guruhanyupinyin.com) is an internet enabled web-based instruction specially designed by UiTM lecturers to overcome the weaknesses in learning Mandarin pronunciation based on the specific needs of Bumiputra learners. It is designed on the basis of instructional system design (ISD) methodology. This approach involves four phases: (1) analysis and design, (2) development, (3) implementation, and (4) evaluation of the instruction. Lee, et al. (2004) have done an analysis on the pronunciation error of initials and tone in speaking Mandarin of UiTM learners, it shows those learners' common mistakes in pronouncing the plosive initials (33.7 %), followed by the affricate initials (25.0%) and fricative initials (21.4%). In terms of plosive initials, most of the learners make mistake in pronouncing *p* initial (83%), *t* initial (85.8%) and *k* initial (54.5%). For affricate initials, a good number of mistakes are found in pronouncing *q* initials (44.9%), *ch* initial (82.7) and *c* initial

(44.0%). In fricative initials, majority of the learners make mistakes in pronouncing the *sh* initial (48.3%). From the statistic, it shows that most learners are facing difficulties in pronouncing the initials with aspirated sounds.

The objective of this research is to assess the effectiveness of utilizing Guru Hanyu Pinyin web based instruction as a teaching tool for non-native speakers in improving the listening and writing skills at disyllabic word level in Hanyu Pinyin. The study compares the academic achievements for Hanyu Pinyin of two different groups of students whereby the experimental group adopts the web-based instruction and the control group adopts the traditional approach as the mode of learning

Research Questions:
a) Research question 1: Is the difference between the means in the writing of disyllabic words between experimental group and control group statistically significant?
b) Research question 2: Is the difference between the means in the reading of disyllabic words between experimental group and control group statistically significant?

The null hypotheses were written as below to answer research question (a) and (b):
Ho1: There is no significant difference between the means in the writing of disyllabic words between experimental group and control group.
Ho2: There is no significant difference between the means in the reading of disyllabic words between experimental group and control group.

2. Literature Review

Mandarin: Mandarin is one of the large groupings of dialects in China which is the national or official language in China. The term Mandarin may also be known as Guoyu or Putonghua.

Hanyu Pinyin: Hanyu Pinyin is a form of Romanized Mandarin. The government of the Peoples' Republic of China in 1958 to help non-native speakers to study Chinese devised it. It is the most widely used Mandarin transliteration method, which has been adopted, in many countries including Singapore. Most contemporary dictionaries use Pinyin to spell out Chinese characters, and the vast majority of Chinese textbooks published overseas use Pinyin (Zhang, 2006). By mastering Pinyin, learners can easily read Chinese books printed in characters, which are at the same time transliterated into Pinyin.

Non Native Mandarin Leaner: Non native refers to the people whose mother tongue is not Mandarin. Non native Mandarin leaner are Bumiputras that speak Malay language as mother tongue. Learner is someone who learns to speak Mandarin. Non native learner is the Bumiputra who learns to speak Mandarin.

Web Based Instruction (WBI): Khan (1997) defines Web-Based Instruction (WBI) as: "...a hypermedia-based instructional program which utilizes the attributes and resources of the World Wide Web to create a meaningful learning environment where learning is fostered and supported." According to Relan and Gillani (1997) WBI is "...the application of a repertoire of cognitively oriented instructional strategies within a constructivist and collaborative learning environment, utilizing the attributes and resources of the World Wide Web." Web-Based Instruction, also called Web-Based Training, is defined by Clark (1996) as an "Individualized instruction delivered over public or private computer networks and displayed by a Web browser. WBT is not downloaded CBT, but rather on-demand training stored in a server and accessed across a network. Web-based training can be updated very rapidly, and its accessibility as a training tool is controlled by the training provider. According to Mathew and Dohery-Poirier (Mathew and Dohery-Poirier, 2000) instruction that makes use of a computer is called Computer Based Training (CBT), and those strategies that employ the Web as the repository for instructional information are known as Web-Based Instruction (WBI). Clearly, as the name suggests, one common feature for all forms of WBI is that the instructional materials are delivered over the Internet.

Review on some Hanyu Pinyin WBI on the Internet: Among the well-designed and established Hanyu Pinyin WBI according to Shao (Shao, 2005), are the Chinese Pronunciation Guide of Harvard University and the Pinyin Pronunciation for Mandarin of Oxford University. Chinese Pronunciation Guide of Harvard University Harvard University's "Hanyu Pinyin Lianxi Zhinan" (A guide to Pinyin pronunciation practice): The website is structured in a way that progresses from lower to higher level skills incorporating

explanations on the consonants and vowels of Mandarin and their combinations. It also outlines some of the difficulties encountered by English speakers in learning Mandarin. Besides exercises in the pronunciation of individual sounds and the four tones in Mandarin, the website also includes practices in tonal combinations. The former is helpful to learners in learning individual words so that they can grasp the syllable structure and principles of Mandarin pronunciation from the very beginning whereas the later facilitates the learning of phrases. Since most of the words in Mandarin are disyllabic, this website has rightly incorporated pronunciation practices in two-syllable words. It is true that if one is familiar with the pronunciation of two-syllable words then the study of tonal combinations later would be much easier. Other than two-syllable words, learners must also pay extra attention to "tonal variation" especially two-syllable words with two consecutive third tones which is amply covered in this website. However, the site does not provide immediate feedback to learners based on their performance. Thus if learners are not discerning enough it would be difficult for them to distinguish the difference between certain sounds. For example the retroflex sounds zh, ch, sh and the sibilants z, c and s. One drawback of the site is that, although it has outlined all the syllable structures in Mandarin, it provides no mechanism for learners to listen to their pronunciations (Shao, 2005).

Pinyin Pronunciation for Mandarin of Oxford University. Basically the Oxford University's Pinyin Pronunciation for Mandarin resembles the Harvard's *zhinan*. However, the site differs from Harvard's in that it also makes use of pictures to facilitate the learning process. It is an accepted fact that one learns from the concrete to the abstract and the inclusion of pictures in this site makes the task of memorizing the sounds of Mandarin less daunting. One interesting feature of the pictures used is that they are selected based on the cultural background of learners. Take for example the consonant *t*, it is described that it sounds like the English word "tea"; the picture used is a coffee cup containing peach-red liquid. One can see the difference in the definition of "tea" from the Chinese and Western perspectives. For the Chinese, the teacup does not contain any handle and the colour of tea is usually light brownish, never peach-red. However, what is shown in the picture is quite normal for learners in England. Certainly, it is natural to base the teaching of Mandarin on the foundation of the learners' culture. Elements of Chinese culture can be incorporated gradually at a later stage. Another useful feature of the site is that learners can listen to the articulation of every syllable outlined.

The contents of the two websites mentioned above are not designed and arranged in accordance with any existing teaching materials and as a result they can be modified easily. Similarly, not only students from the two universities but the public can access them as well. Since the two sites are not based on existing teaching materials, they focus mostly on vowels, consonants, word-level and phrase-level tones. For learners, they benefit from these two sites more on the learning of word-level rather than sentence-level tones. In terms of feedback for learners, there is no such provision on both sites (Shao, 2005). From the review of the existing Hanyu Pinyin WBI, it can be seen that to date there isn't any Hanyu Pinyin WBI that incorporates a mechanism capable of informing learners the accuracy of their pronunciations. To give feedback to learners, an ideal WBI has to be attached with speech recognition function. Unfortunately, the technology of speech recognition in Mandarin has not yet been sufficiently developed to be used for instructional purpose. Although WBI has limitations, yet those learning Hanyu Pinyin assisted by WBI still gain more as these time-consuming tasks turn out to be what the computer is best suited for. Not only can these tasks take advantage of the consistency and patience of the computer, they can also capitalize on its data-handling and multimedia capabilities.

3. Methodology

Sample and Sampling Techniques: This research focuses on first year elementary level Mandarin students at UiTM Penang campus. The research sample has been selected through stratified random sampling. They represent the Bumiputra Mandarin learners and the majority of Bumiputra learners have similar education background, culture, and language ability. Furthermore, the focus on UiTM Penang students is to make ease for research accessing and monitoring.

Data Collection: Total 28 students in UiTM Penang campus were selected to attend a 4-hour self-learning session using Hanyu Pinyin instruction at the language computer laboratory, another 28 student's act as the control group who were taught using the conventional teaching approach with no exposure to Hanyu Pinyin web-based instruction. However, for the control group, only 26 students turned up for the test. To compare the academic achievements of learners who learn through the web-based instruction and those who learn through the traditional approach, two sections of test are employed, e.g. Section A: Listen to the word pronounced and write down the pinyin they hear. The purpose of this test is to examine students'

listening and writing skills at word level. Section B: Read the word given with the correct pronunciation. The purpose of this test is to examine students' reading kills at word level.

Techniques for Analysis: The result of achievement test of the experimental group (the group that adopted the web-based instruction in learning Hanyu Pinyin) and the control group (the group that adopted the traditional approach) are tabulated and coded in the data file for the use of SPSS statistical analysis. The achievement test is analyzed using the means, standard deviations and Independent Samples t-test of the SPSS package to compare the means of the two groups.

4. Results

For section A, Table 1 shows that the means score of the experimental group and the control group were 6.39 and 5.36 respectively. The sig = 0.4. The sig-2tailed of Equal variances assumed = 0.062 (>0.05) indicated that the mean score of the section A of the experimental group is better than the control group but there is no significant statistical difference between the section A score of the control group and the experimental group in the writing of disyllabic words. So, the Ho1 is accepted. The insignificant results demonstrated here could be attributed by few possible causes, such as insufficient writing skill training being provided by the web-based instruction and the seriousness of students that participated in this research.

Table 1: Independent Sample t-test of section A

Group	N	Mean	SD	F	Sig.	t-value (2-tailed)	Sig (2- tailed)
Experimental group	28	6.3929	2.22925				
				.720	.400	1.907	.062
Control group	26	5.3558	1.71052				

As shown in Table 2, the means score of the experimental group and the control groups are 6.79 and 5.84 respectively. The sig = 0.279, Sig. (2-tailed) of Equal variances not assumed = 0.001 (<0.05) indicated there is significant statistical difference between the means in the reading of disyllabic words between experimental group and control group. So the Ho2 is rejected. The mean score of section B of the experimental group is superior to the control group; this indicates that the experimental group is performing better than control group. By using this web-based instruction, students can read the pronunciation of initials and finals much better. It shows the importance of using web-based instruction to teach initials and finals in Mandarin. On the other hand, it has an undoubted advantage of helping to reinforce the individual student's knowledge in Chinese Romanization system and reduces the tediousness in teaching process of Hanyu Pinyin.

Table 2: Independent Sample t-test of section B

Group	N	Mean	SD	F	Sig.	t-value (2-tailed)	Sig (2- tailed)
Experimental group	28	6.7857	.79266				
Control group	26	5.8365	1.15530	1.196	.279	3.495	.001

5. Conclusion

For research question 1, the findings indicated that the mean score of the section A of the experimental group is better than the control group but there is no significant statistical difference between the section a score of the control group and the experimental group in the writing of disyllabic words. So, the Ho1 is accepted. The reason why there is no significant statistical difference between the two is insufficient training in writing skill being provided by the Guru Hanyu Pinyin web based instruction. The researchers purposely test this hypothesis to evaluate whether lack of intensive training in writing of this web-based instruction will have significant effect in writing dual syllable words. The result shows that sole teaching method coupled with segregation mode in teaching initials, finals and tones are insufficient to train

student's writing skill. Therefore, it is suggested that the training of writing skill must be included in the web-based instruction. I hope that in the future research will explore more regarding training in this area and develop a more comprehensive web based instruction. For research question 2, the Ho2 is rejected. The mean score of section B of the experimental group is more superior compared to the control group indicates that the experimental group is performing better than control group. It is a very interesting phenomenon when comparing the results of section A and B. It shows that web-based instruction is effective in teaching initials and finals whereby it helps to comprehend the students' listening as well as further enhance their pronunciation, and finally improve their ability to recognize the differences.

Limitations: In terms of pedagogy, web based learning does not have the advantage of more spontaneous interaction as in face to face communication. At the same time, WBI does not tailored to individual student's specific needs. Thus, WBI is more suitable to be used as a reinforcement tool in the study of Hanyu Pinyin. Learners should first gain the basics from classroom teaching before using it as a supplementary tool. Learners have to exert more mental effort and spend more self-learning time if they solely depend on WBI without any guidance from lecturer. Solely depends on WBI, students tend to be less self discipline. It shows that lecturer's monitoring and guidance play an important role in teaching and learning process.

Though it not the focus of this study, the researchers discovered that bandwidth limitation is always a challenge in presenting multimedia elements on the web. The instruction is able to run perfectly with no technical problem. However, the limited bandwidth of the computer network could cause significant difficulties in downloading the instructions. When too many computers are accessing the instruction simultaneously, it always decreases downloading speed or gets disconnected from the site of the instruction. Having to attach Flash movie to WBI, network bandwidth is the main factor to consider. To have an ideal surfing environment for 30 computers to browse an instruction simultaneously, a network needs to have at least 6 Mbps of bandwidth. However, we still wait for the present service providers to fulfill this requirement.

Recommendations: It is recommended that the users (learners) are being provided with some technical training before using WBI. This is mainly because without adequate technical skills, the learners might not be able to use the instruction effectively. Learners should be provided with technical skill such as installing plug-in software, volume control and etc. The WBI used is lack of databases for accommodating test item and multimedia elements. Therefore, it is recommended that the database should be attached to the instruction so that adding, deleting and modifications of exercises and quiz items can be carried out more flexibly.

A well-structured course syllabus and content and interesting interface design are important for learners to accept the web technology. The contents of the syllabus should be revised as currently most syllabi are designed for conventional classroom learning environment. Therefore, the syllabi should be revised to suit web- based presentation. Thus, more research should be conducted in the area of web based course module development. In tackling the bandwidth limitation problem, the researchers hope that the internet service provider will upgrade the speed of bandwidth to high-speed solution as soon as possible. Ideally, WBI providers should have their own server from the web-hosting agency. This is challenge could be further eased off if the campus itself could provide free server to the lecturer who likes to develop WBI.

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