The First Impression of Non-native Romanised Mandarin Learners towards a Newly Designed Web-based Instruction with Customized Architecture Framework

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Abstract: The Web-based instruction (WBI) is the instructional materials that are used in the learning system that involves the network operation center (NOC), the WWW resources, the learners, instructors and the regularly conducted lectures of fulltime teaching staff. The main objective of this paper is to describe the system architecture of web-based Hanyu Pinyin (Romanised Mandarin) instruction and its main features. The Hanyu Pinyin WBI is tailored to tackle the weaknesses and to meet the specific needs of Malay learners. This paper also discusses the first impression of UiTM students who study through Guru Hanyu Pinyin web-based instruction (Romanised Mandarin Web-based instruction). To conduct the study, descriptive statistical tool was used. A group of 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. An questionnaire on user friendliness of the instruction is given to them to find out their first impression about the instruction. The finding shows that the majority of the students feel that Guru Hanyu Pinyin WBI is user friendly

Keywords: *Romanised Mandarin; web-based instruction; system architecture; system's main features, non-native Mandarin learners*

1. Introduction

The Internet and the World Wide Web (WWW) continue to exert tremendous influence on our everyday lives. The use of the WWW as an instructional tool is gaining momentum as more teachers, instructors, and trainers incorporate it into their repertoire. This trend will certainly bring a change in teaching. Hence, the facilitators of Mandarin as foreign language must take this opportunity to think of ways to incorporate this technology for more effective teaching. The web-based instruction (WBI) is the instructional materials that are used in the learning system that involves the network operation center (NOC), the WWW resources, the learners, instructors and the regularly conducted lectures of fulltime teaching staff. This paper provides an overview of the system architecture of web-based Hanyu Pinyin instruction (Romanised Mandarin Web-based instruction) and its main features. 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". WBI 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 a training tool is fully controlled by the training provider (Clark, 1996). The Guru Hanyu Pinyin web-based instruction (WBI) is specially designed by the writers to overcome the weaknesses in learning Mandarin pronunciation based on the specific needs of Malay learners. Hopefully, it will generate new teaching and learning methodology in facilitating learning of Mandarin.

Objective of the Study: The main objective of this paper is to describe the system architecture of web-based Hanyu Pinyin (Romanised Mandarin) instruction and its main features. This paper also investigates the first impression of UiTM students who has used the Guru Hanyu Pinyin web based instruction (Romanised Mandarin Web-based).

Research Questions: How to design a system of web-based Hanyu Pinyin instruction?
Is the web based Hanyu Pinyin instruction user friendly for first time user?

2. Literature Review

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 tone 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 tea cup 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, they can be accessed by not only students from the two universities but the public 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).

Hanyu Pinyin WBI of the Chinese University of Hong Kong In a survey, Xu Zhijuan (Xu, 2005) selected twelve popular Hanyu Pinyin WBIs and graded them according to ten criteria. The result shows that the Hanyu Pinyin WBI of the Chinese University of Hong Kong is far more superior to others. The Hanyu Pinyin WBI of the Chinese University of Hong Kong is exceptionally interesting and challenging for learning Hanyu Pinyin as its content has included storytelling and RPG (Role-Play Game). Learners are required to choose one of the two options from the main page to start their lesson. They can start with the Hanyu Pinyin Pronunciation rules or the syllable tables (a lesson for learners to practise the consonants, vowels and syllable construction by manipulating the various consonants, vowels and tones). The materials are presented in such a way that learners are required to assume an active role in accomplishing the task given. However, the instruction language is in Mandarin, and therefore not suitable for those who are not proficient in the language.

Is WBI Helpful in Teaching Hanyu Pinyin? What is the Limitation of WBI? 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. The best that can be accomplished is to provide learners with three types of structured activities: a) presentations, b) drill and practice, and c) simulations or game situations (Ariew, 1984). 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.

The Advantages of Using WBI to Facilitate Teaching and Learning: A web-based instruction can be delivered on demand to any computer connected to the Internet anywhere in the world. This advantage cannot be matched by any other method known today. 'A picture tells a thousand words', thus it is assumed that the web based instruction that includes multimedia elements will increase flexibility for learners, thus benefiting them. In short, the players in education will gain the benefits of web based instruction as listed below.

The Education Institution: Reduces and/ or eliminates overhead expenses such as instructional rooms, training computer and equipment. Flexible in updating and adding course content. Instruction is installed on a few file server instead of producing hundreds or thousands of CD-ROMs. The Facilitator. Reduces time to guide the learners. Thus the facilitator can utilize the time to enhance the course contents. Updating or introducing new syllabus is easier and quicker. Can be used as teaching aids in class. Each learner can get certain amount of individual feedback from the instruction rather than depending fully on the facilitator, hence it lightens the teaching burden of facilitators especially when the class is big.

The Learners: WBI provides quick and convenient navigation of learning aids for learners.

Self assessment learning tools. Learners can get individualized practice and feedback at own pace. It can also be used to reinforce learning after class. Flexibility (any time, place or level). The learning materials are available 24 hours a day, 7 days a week. Information can be accessed when needed. It also allows learners to start at their appropriate level.

Operational Definitions: The key elements used in this research are UiTM, Hanyu Pinyin, WBI (Web-based instruction), Mandarin facilitator, non native Mandarin learners, Chinese language learning on the Internet, the Hanyu Pinyin WBI on the Internet and user friendly WBI. UiTM: UiTM is University of Technology of MARA. The university is selected for this research in view of its large population of Bumiputra students from various disciplines. In order to equip their students with language skills, UiTM also offer several of foreign language courses including Mandarin to the students.

Hanyu Pinyin: Hanyu Pinyin is a form of Romanized Mandarin. It was devised by the government of the Peoples' Republic of China in 1958 to help non-native speakers to study Chinese. 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.

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 Gillami (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." Clearly, as the name suggests, one common feature for all forms of WBI is that the instructional materials are delivered over the Internet.

Non Native Mandarin Learner: Non native refers to the people whose mother tongue is not Mandarin. Non-native Mandarin learners 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. UiTM Mandarin Lecturer / Facilitator: Lecturer / Facilitator is someone who helps a group of people discuss things with each other or do something effectively (Longman Dictionary of Contemporary, 1995). In UiTM, the Mandarin lecturer plays the role as a facilitator who helps the non native learners to study Mandarin effectively. Chinese Language Learning on the Internet: According to Bourgerie (2003), the Internet sources for learning Chinese can be as simple as supplements for established texts or

comprehensive courses such as Beijing Language and Culture University's on-line degree program for Chinese. Other on-line sources consist of independent modules to address a particular aspect of learning such as pronunciation and Romanization Hanyu Pinyin WBI on the Internet. Among the well-designed and established Hanyu Pinyin WBI according to Shao (2005), are the Chinese Pronunciation Guide of Harvard University and the Pinyin Pronunciation for Mandarin of Oxford. The contents of these two websites are not designed and arranged in accordance with any existing teaching materials and as a result they can be modified easily. Similarly, they can be accessed by not only students from the two universities but the public 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.

User Friendly WBI: According to Longman Dictionary of Contemporary, user is someone or something that use a product, service etc (Longman Dictionary of Contemporary, 1995). The user refers to the UiTM students that use the Hanyu Pinyin WBI in learning Mandarin pronunciations. The product refers to the Hanyu Pinyin WBI constructed by the facilitator that entitled Hanyu Pinyin Guru. Friendly means not difficult for particular people to use. Therefore, user friendly WBI refers to a WBI that is easier to use and accepted by the UiTM students.

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 simple random sampling. 28 students have been selected from two Mandarin classes (14 students from each class). These students have similar education and culture background. They are Malay students without Mandarin language background. 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. An questionnaire on user friendliness of the instruction is given to them to find out their first impression about the instruction. The word 'user friendly' been used just to test the first impression of the users. As for feedback, respondents are given the following scale to indicate the level of agreement for the question

- 5 -Strongly Agree
- 4- Agree,
- 3- Neither Agree Nor Disagree
- 2- Disagree
- 1- Strongly Disagree.

Techniques for Analysis: To conduct the study, descriptive statistical tool was used. Results are tabulated and coded in the data file for the use of SPSS statistical analysis.

The System Architecture of Web-Based Hanyu Pinyin (Romanised Mandarin) Instruction: Web-based instruction is Internet enabled instruction. It generally applies to any kind of instructional materials delivered over the Internet accessed by browser-equipped computer users. The Guru Hanyu Pinyin instruction is the instructional materials that are used in the learning system that involves the network operation center (NOC), the WWW resources, the learners, instructors and the regularly conducted lectures of fulltime teaching staff. The WWW resources provide further references and suggestions such as library links and guides to learners. Learners are a community of users who are interested in a particular course of study such as Hanyu Pinyin. Whereas, instructors play important role as subject matter experts in providing quality course syllabuses, editing and revising the web-based materials, and acting as moderator and checker.

Figure 1: The Guru Hanyu Pinyin learning system

The Guru Hanyu Pinyin instruction design: The Guru Hanyu Pinyin instruction's design is based on the modular concept where information is chunked into several modules for instructional purposes. By chunking information, it is easier for instruction designer to develop the course content. For learners, it is easier for them to absorb and remember the information. The Hanyu Pinyin instruction is made up of small, functional and independent unit. It contains 10 main modules that are structured in a way that progresses from lower to higher level skills incorporating initials (Fonem Awal), finals (Fonem Akhir), tones (Nada), Pinyin spelling rules (Peraturan Ejaan Pinyin), syllable that ended with Retroflex phoneme (Fonem Gelungan pada akhir suku kata), modification of tones (modifikasi nada), neutral tones (Nada neutral), Chinese phonetics table (Jadual fonetik bahasa Cina), Exercises (Latihan) and additional exercises (latihan tambahan). These modules are further divided into smaller units.

The main features of the Guru Hanyu Pinyin instruction: The diagram below depicts the main features of Hanyu Pinyin instruction

Figure 2: Main features of Guru Hanyu Pinyin instruction

Homepage and main menu: The homepage of Guru Hanyu Pinyin instruction provides links to two relevant WWW (World Wide Web) Hanyu Pinyin learning/ teaching resources. These two resources are the Pinyin pronunciation guide of Harvard University and the Pinyin pronunciation for Mandarin of Oxford University. Besides, it tells users the suitable web browser and the best screen setting to be used. This instruction is best viewed with Internet Explorer 6+ and 1024X768 screen setting. The course objectives are stated as well as described to learners in a short, succinct fashion, of what the course will teach and what the learners will be able to perform upon completion of the course. It also gives a brief introduction about Guru Hanyu Pinyin to learners before they study more about Hanyu Pinyin. The main menu is a button menu created by a Flash movie clip and an external XML file. Learners can use it as an index to search a particular topic desired from the course. To be able to run Flash movie on their computer, learners have to install the latest version of Flash Player.

Initials: An initial is a consonant that begins the syllable. There are 21 initials in Hanyu Pinyin. The Hanyu Pinyin symbols are as follow:

B	p	m	f
D	t	n	l
G	k	h	
Zh	ch	Sh	r
Z	c	S	

All the initials are pronounced in first tone. The initials are included in a Flash movie called 'Fonem Awal' (initials). This Flash movie is embedded in a page constructed in HTML format. Learners can hear the pronunciation of each initial by clicking the symbol that represented the particular final to learn how the various initials are pronounced. If learners want to repeat the pronunciation read, learners can click the symbol as many times as they want to hear the pronunciation of each initial until they can catch the pronunciation of the sound.

Finals: A finals (vowel) is always at the end of a syllable, it may be a simple vowel, a compound vowel. There are 38 finals in Hanyu Pinyin. The pinyin symbols are as follow:

a	an	ang	ai	ao					
o	ou	ong							
e	en	eng	ei						
i	ia	iao	ie	iou	lan	in	iang	ing	iong
u	ua	uo	uai	uei	Uan	uen	uang	ueng	
ü	üe	üan	ün						
er	-i	ê							

All the finals are pronounced as first tone. The finals are included in a Flash movie called 'Fonem akhir' (finals). This Flash movie is embedded in a page constructed in HTML format. Learners can hear the sound of each final by clicking the symbol to listen and learn how the finals are pronounced. If learners wish to repeat the pronunciation read, learners can click the symbol represent the finals as many time as they want to hear the sound of each initials until they can catch the pronunciation.

Tones: Mandarin is a tonal language in which the tones convey differences in meaning. There are 4 tones in Mandarin which is represented by the following marks.

—	First tone
/	Second tone
√	Third tone
\	Fourth tone

This section provides practices of the four tones in Mandarin. The tone diagrams are provided to assist learners to grasp the correct tones. The four tones of initials a, o, e, i, u, ü are provided as exercises for learners to gain more understanding of the pronunciation of the four tones from the very beginning.

Pinyin spelling rules: This section provides discussion about the conventions used in representing syllables without initials, with initials and syllable separation symbol. For example;

1.Finals beginning with [i] without initials are written as :

Yi	ya	yao	ye	you	Yan	yin	yang	ying	yong
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2. When a syllable beginning with a, o, or e follows another syllable in such an ambiguous way that division of the two syllables could be confused, it is necessary to put a dividing mark ['] in between.

4.2.6 Syllable that ended with Retroflex phoneme

This section tells learners how to pronounce syllables that are ended with retroflex phoneme.

The syllables consisting of “er” do not have an initials. “er” can be attached to another final to form a retroflex final which is represented by the letter “r” added to the finals. For example “huar”.

4.2.7 Modification of tones

The tones of a word sometimes have to be modified, depending on the tone of the syllable that proceeds or comes after it. This section tells learners how to pronounce and modify words that are constructed by 2 syllables where both are articulated in the third tone, and words that contain the syllables “yi” and “bu”.

Neutral tones: In mandarin, there are a number of syllables which are unstressed and are pronounced in a soft and short tone. It is indicated by the absence of a tone mark.

This section tells learners how to pronounce words constructed with syllable that contains no tone marks.

Chinese phonetics tables: The phonetic tables list all the speech sounds of Mandarin. Each speech sound is provided with audio mechanism for learners to listen to its pronunciation.

Exercises: The exercises include monosyllabic words, the four tones in Mandarin, disyllabic words, disyllabic words ended with neutral tones, syllables ended with Retroflex final and words that involve tone modification. The exercises are specially designed for non native learners (Bumiputra learners) to identify the main differences of aspirated and unaspirated initials.

Additional exercises: Learners are provided with additional exercises at the end of the learning session. All exercises are constructed in Flash movie and Hotpotato that embedded in the Additional Kuiz HTML page. The exercises are divided in 3 categories whereby the learners will be lead from the lower level to higher level. The exercises involve spelling, neutral tones and dialogues.

4. Results and Discussion

After the Guru Hanyu Pinyin WBI developed, the user friendliness of the instruction has been evaluated. Regarding learners’ first impression towards the user friendliness of icon of the instruction, as shown in table 1, 14.3 % of respondents strongly agree that the WBI is user friendly. 64.3 % of the learners agree that the WBI is user friendly. 17.9% of the respondents are neither agree nor disagree with the statement. However, none of the respondents feel that the WBI is not user friendly. There is one respondent did not submit the questionnaire.

Table 1: Learners’ acceptance toward the user friendliness of icon of the instruction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3.00	5	17.9	18.5	18.5
	4.00	18	64.3	66.7	85.2
	5.00	4	14.3	14.8	100.0
	Total	27	96.4	100.0	
Missing	System	1	3.6		
Total		28	100.0		

5. Conclusion

Most of the Web-based Instruction (WBI) for Chinese focuses on grammar and vocabulary. Comparatively, the numbers of WBI on Pinyin pronunciation and Romanization are relatively small. Some WBI are resourceful, however, they address to the particular needs of their targeted learning entities thus it is impossible to adopt the entire set of these WBI to facilitate the Malay Hanyu Pinyin learners. Lecturer should take the opportunity to create their own Hanyu Pinyin WBI tailored to the specific needs of their learners. As a supplementary learning and teaching aids, the main purpose of the instruction is to reinforce and drill the learners with what they have learnt in the class. If the self-created WBI is interesting and innovative, learners will get the most benefits from it, which will result in more effective learning of Hanyu Pinyin.

From the research we had done for evaluating the user friendliness of the instruction; we can conclude that the majority of the students' first impression towards Guru Hanyu Pinyin WBI is user friendly. This shows that the labels on the icons are clear and understandable. Learners have no difficulty in interpreting the functions of the various icons. It also shows that the Hanyu Pinyin WBI can provide as an alternative to conventional teaching method as: Using multimedia presentation has increased the amount of information conveyed from sound to pictures. It has also raised the interest of learners, hence learners are able to learn and remember the information faster and longer. This has lightened the teaching burden of instructors.

It provides an essential guidance for learners in the absence of Mother-tongue speakers; and The flexibility of navigational elements helps learners to get rid of the desired syllabus content faster as learners now are no longer bound to analog constraints of audiotapes and books. Students have less pressure in the learning process through WBI. It is recommended that in future investigate of Guru Hanyu Pinyin WBI effectiveness in enhancing the learning of Hanyu Pinyin could be carried out.

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