Explicit Phonetic Instruction in Pronunciation Teaching and Learning in Higher Education Settings: The Case of Voiceless Dental Fricatives /Ɵ/ and Rhotics /r/ For Chinese Learners of English

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Abstract: *In the development of effective pedagogy in English language classrooms, little attention is given to pronunciation teaching and learning, especially in higher education settings in Malaysia. This paper attempts to explore this issue by investigating the pronunciation of Chinese learners of English after receiving an explicit instruction in English phonetics. The subjects were undergraduate Chinese students of Universiti Utara Malaysia (UUM) who were grouped according to their countries of origin, i.e., Malaysia and China. 20 participants were recruited for this study and these participants had two distinct learning backgrounds: [1] English as a second language (ESL) for the Chinese participants from Malaysia; and [2] English as a foreign language (EFL) for the Chinese participants from China. The target phones were voiceless dental fricatives /θ/ and rhotics /r/ that are known to be problematic for both groups of Chinese speakers learning English. The participants' production of the target phones was measured in a pre-test and post test design using a word-list reading task and technology-enhanced materials, i.e., computer-assisted language learning (CALL). The findings revealed that explicit phonetic instruction facilitated effectively in speech learning improvement. This empirical data will be seen as a contribution to SOTL research in pronunciation teaching and learning.*

Keywords: *Explicit phonetic instruction, Chinese learners, CALL*

1.   Introduction

Miscommunication often occurs among second languages (L2) learners who have inadequate phonological awareness in communication (Plakans, 1997; Gravois, 2005). An L2 learner should be able to identify and use the linguistically significant phonemes of the language appropriately in order to avoid miscommunication and unintelligibility resulting from inadequacy of phonological awareness. For instance, there are common problems among Chinese learners of English who cannot differentiate certain sounds in minimal pairs in English. For example, the word *think* versus *sink (voiceless dental fricative* versus *voiceless alveolar fricatives)*, and *rice* versus *lice (rhotics* versus *laterals),* which can potentially hinder communication process. These problems may be prevented or remedied by explicit phonetic instruction on phonemic distinction in L2 sounds. Phonetic instruction emphasises the differences between learners' first language (L1) and L2 phonological systems with regard to phonemic inventories, articulation of analogous phones, grapheme-phoneme correspondences and phonological processes.

Explicit phonetic instruction is a central method used in ESL classroom, especially in pronunciation teaching and learning. Explicit instruction is an emphasis on the phonetic parameters relevant to the segmental sounds (i.e., isolated consonants and vowels) which are illustrated with drawings (e.g., Clark, 1967) or animated diagrams of the vocal tract and waveforms and spectrograms produced with acoustical analysis software (e.g., Lord, 2005). DeKeyser (2003) maintained that "an instructional treatment is explicit if rule explanation forms part of the instruction (deduction) or if learners are asked to attend to particular firms and try to find the rules themselves (induction)" (p.321).

Pronunciation practice varies considerably from word reading to jazz chants, and feedback varying from teacher-fronted pronunciation modelling to the visual and individualised feedback provided by acoustical analysis software packages. All these exercises, in addition to the core component of explicit lessons, have been thought to facilitate acquisition of target-like L2 pronunciation (Arteaga, 2000; Elliott, 2003).

The extent to which targeted instruction helps learners improve their L2 accent is still an empirical question. While the amount of general language instruction does not seem to affect global accent (Piske, MacKay, 8c Flege, 2001), pronunciation instruction has been shown to improve L2 production accuracy (Neufeld, 1977; Piske et al., 2001) in L2 as well as foreign language contexts, including English (Pennington & Richards, 1986), French (Clark, 1967; Walz, 1980), German (McCandless & Winitz, 1986; Moyer, 1999), and Spanish (Elliott, 1995, 2003; Lord, 2005), leading some researchers to suggest that most adult L2 learners do not achieve native-like pronunciation without the help of explicit instruction (Bon-gaerts et al., 1997; Fullana, 2006). Drawing learners' attention to particular acoustic features of the L2 system, even briefly, seems more expedient than merely exposing them to L2 sounds in the hope that they will discover those relevant acoustic features for themselves (Wipf, 1985).

The present study evaluated the effectiveness of explicit teaching of English phonetics. Other researchers have examined various elements and methodologies of pronunciation instruction. Chung (2008) compared explicit, implicit, and noticing instruction for improving Chinese learners' production of English word stress and found that all groups improved equally on the post test, but the explicit group was significantly better in the delayed post test. It seems particularly relevant to question the effectiveness of explicit instruction in phonetics because it is precisely this element of pronunciation instruction that is least appealing to those who view it as overly form-focused and in opposition to their communicative, meaning-focused methodology (see discussions in Arteaga, 2000, and Morin, 2007) and argue that pronunciation instruction needs to be better integrated into communicative activities (Isaacs, 2009). Alternatives for bringing learners' attention to the L2 sound system, perhaps through targeted exposure, focused listening, dictation, transcription, or other means, should be explored and weighed against the potential benefits of explicit phonetics instruction.

2. Research Methodology

It's Fry Not Fly: English Pronunciation Tutorial (IFNFEPT) is newly developed software that helps learners pronounce target sounds correctly. The idea of developing this software is to integrate the use of technology in English classroom, such as videos, games and practices, or in other words, using multimedia elements in language teaching in order to make the teaching and learning more interesting. The researchers used the ADDIE design model (Molenda, 2003) in order to build and develop the software. The reason of using the ADDIE instructional design model was because it was simple and clearly depicted the phases involved in the development of IFNFEPT. There were five main phases in ADDIE Model which were the analysis phase, design phase, development phase and evaluation phase. The IFNFEPT software development process based on the ADDIE model is summarised in Fig. 1.

2.1. Phase 1: Analysis

In this phase, researchers built an understanding on the needs of the software users, developing and building the software content, the goals of the software, the strengths and the weakness of the software. The problems of pronouncing target sounds were identified so that the software could help solve the pronunciation of the sounds. The target group of the software was Chinese learners of English from Malaysia and China who have problems in pronouncing the /θ/ and /r/ sounds. Therefore, the topic or content chosen

for this software was the introduction to English phonetics and the target sounds, which included the native speaker's way of pronouncing the /θ/ and /r/ sounds.

2.2. Phase 2: Software design

The design phase was implemented after the analysis of needs and contents were completed. At this phase, the learning and teaching materials related to phonetics and the target sounds were put into sequence and arranged accordingly. The researchers used International Phonetic Alphabet (IPA) charts, video tutorials and also hands-on practices as the teaching aids included in IFNFEPT. There were three modules included in IFNFEPT, which was built using Microsoft Words as a basic illustrator or a storyboard for the software.
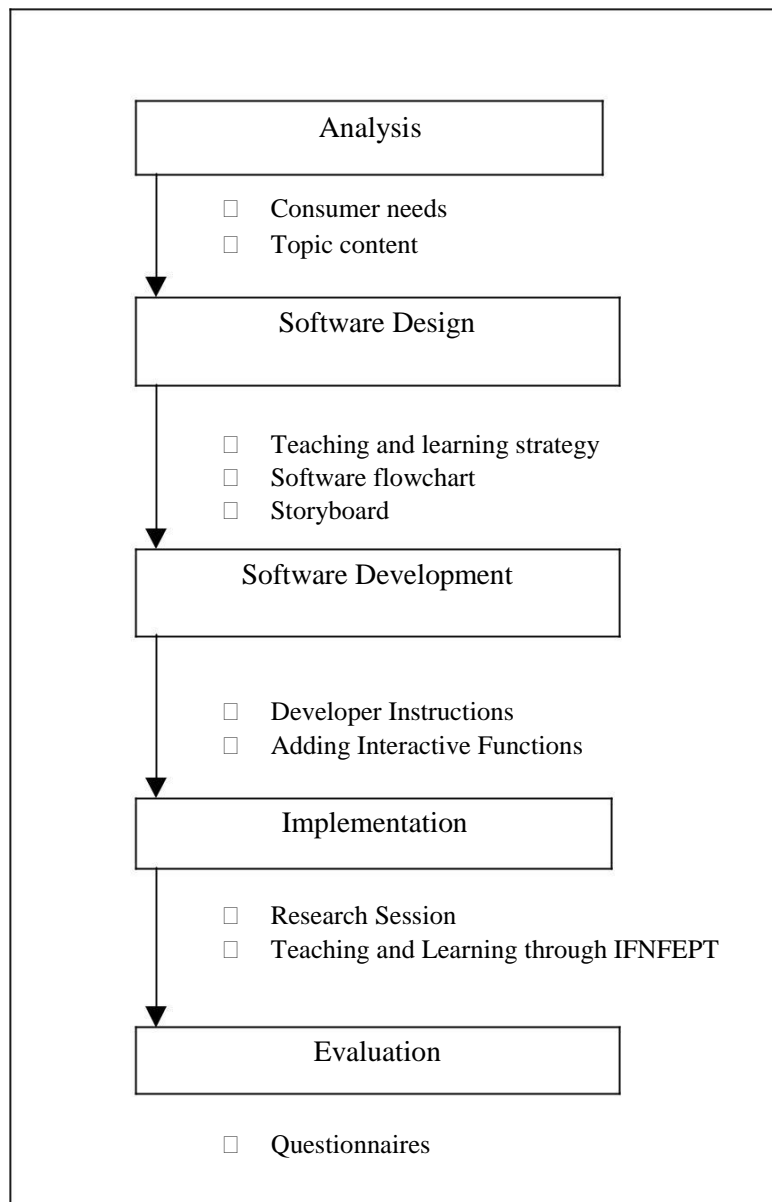
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│    ┌──────────────────────┐         │
│    │       Analysis       │         │
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│       □  Consumer needs             │
│       □  Topic content              │
│    ┌──────────────────────┐         │
│    │   Software Design    │         │
│    └──────────────────────┘         │
│       □  Teaching and learning      │
│          strategy                   │
│       □  Software flowchart         │
│       □  Storyboard                 │
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│       □  Developer Instructions     │
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│    │    Implementation    │         │
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│       □  Research Session           │
│       □  Teaching and Learning      │
│          through IFNFEPT            │
│    ┌──────────────────────┐         │
│    │      Evaluation      │         │
│    └──────────────────────┘         │
│       □  Questionnaires             │
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Fig. 1: Research Methodology

2.3. Phase 3: Software development

Development refers to process of developing IFNFEPT software. This software was developed and produced by integrating existing applications such as authoring, graphics, audio recordings, video tutorials and other interactive functions. This software was developed with the help from a multimedia company, Hiblox Sdn. Bhd. situated in Sibu, Sarawak. During this phase, a lot of instructions were given to the module

developer in order to get the best product ready for testing. Many fixing and tuning processes were done at this stage. The combination of the provided materials and the soft skills possessed by the experts complemented each other in developing the software.

2.4. Phase 4: Implementation

The IFNFEPT software was presented in its actual form to 20 users to test its effectiveness and smoothness. Through this implementation, the researchers were able to detect any problems in the software and were able to improve the software for future users. The researchers were able to identify any problems that might be overlooked during its development. This would allow the researchers to identify the weakness of the software and its quality before it was officially released or being set in websites.

2.5. Phase 5: Evaluation

The evaluation process involved getting feedbacks, opinions and reviews from users. This process was completed by 20 participants who were from China and Malaysia. The participants were Chinese learners of English. The evaluation process was useful to ensure that the software was effective and enabled the researchers to evaluate the sustainability of the software's design, content, text, colour and audio. This process also helped the researchers to measure the practicality of the practices and tutorial in this software, whether they were too redundant or not.

3. Research Findings

Discussed below are the parts developed in the IFNFEPT software.

A. Software Title Display

Title display (see Fig. 2) was the main display that users first saw when they opened the software. The welcome homepage displayed the IFNFEPT title, the welcome messages, the outline of the tutorial, and acknowledgement. From the homepage, participants were able to know the subject matter and the focus of each module.

B. Module 1: Introduction Display

After the participants were briefed on the reasoning of the title display, they were directed to Module 1: Introduction page (see Fig. 3). Here, the participants were explained on the objectives of Module 1 and its focus. There were five parts in this module which focused on the introduction of phonetic symbols such as the vowels and consonants sounds, the articulators, the different target sounds and their substitutions, and the practices of listening and voice recording. There were three modules in the IFNFEPT and each module presented the same introduction page with different focus and objectives.

C. Module 1: Introduction of Phonetic Symbols

International Phonetic Alphabet (IPA) Chart was introduced to the participants who mostly saw the symbols for the first time (see Fig. 4). This chart was very interactive in which the participants were able to listen to each sound of the symbols when they clicked on the symbols. This chart was adopted from British Council website and was fully used to let the participants try and listen to the sounds and clicked on the examples.

D. Module 1: Consonant and Articulators Display

On the next page, page 2, participants were directed to the introduction of consonants and articulators (see Fig. 5-6). The articulators were labeled for each part to let the participants be informed. Here, the participants were also directed to watch a video on organs of speech and their functions.
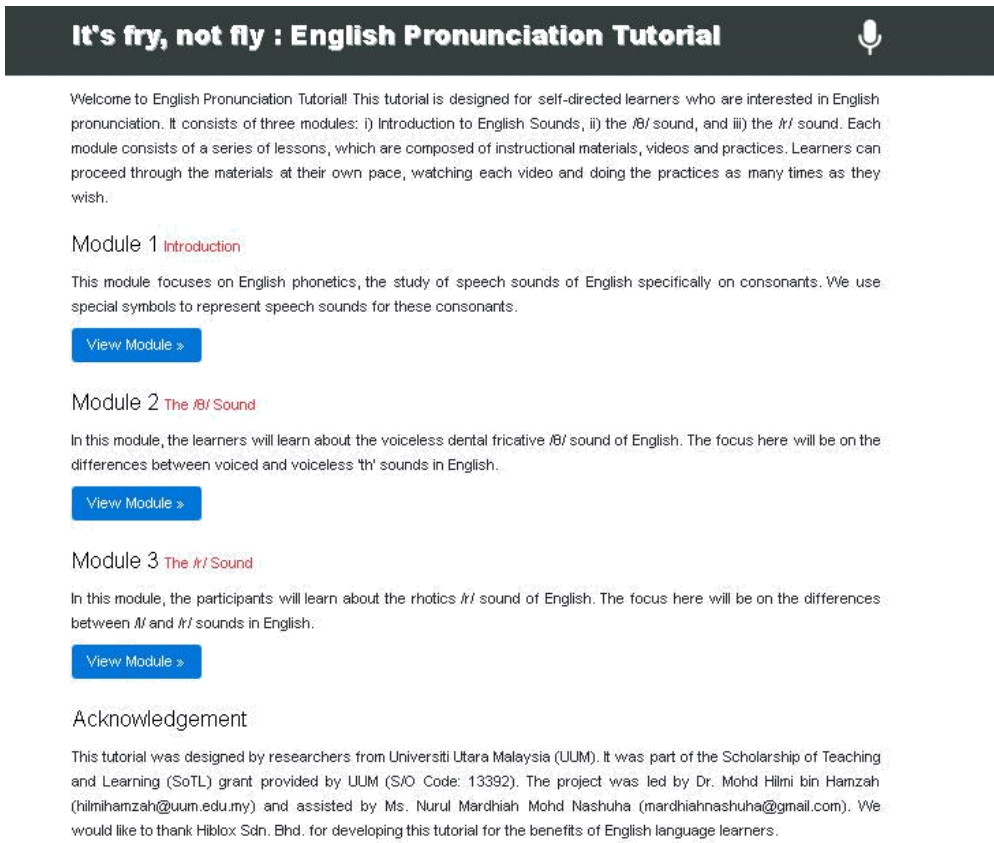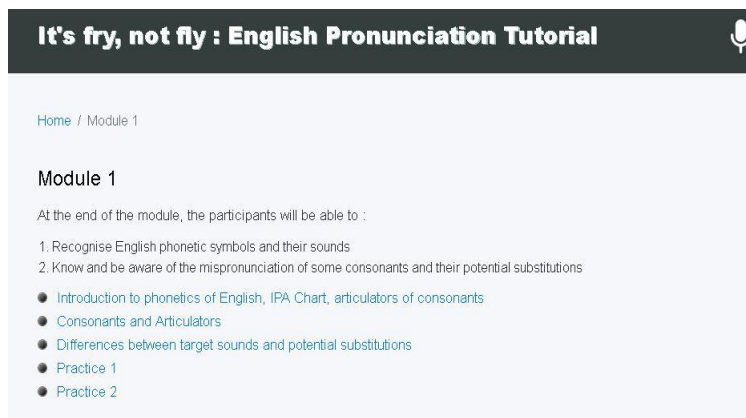
Fig. 2: Software Title Display/Homepage
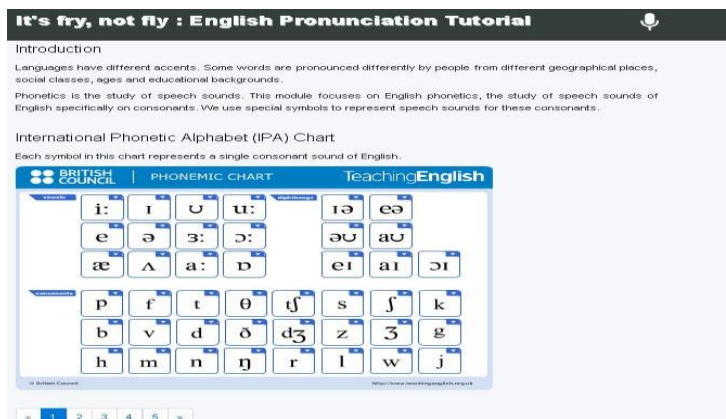

Fig. 3: Module 1 Introduction Display

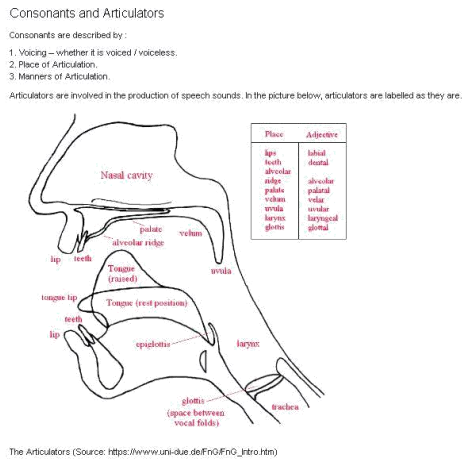Fig. 4: International Phonetic Alphabet (IPA) Chart
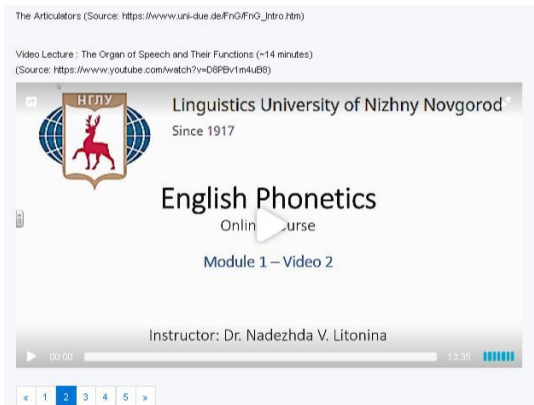
Fig. 5: Articulators

Fig. 6: The Organ of Speech and Their Functions

E. Practice Display

In each module, there was a section where the participants were able to listen to the native speaker's pronunciation of minimal pairs, and then they were able to record and playback the recording in order to listen and compare their pronunciation with the native speaker's pronunciation (see Fig. 7). This type of practice was presented in each module, according to the focus on each module.
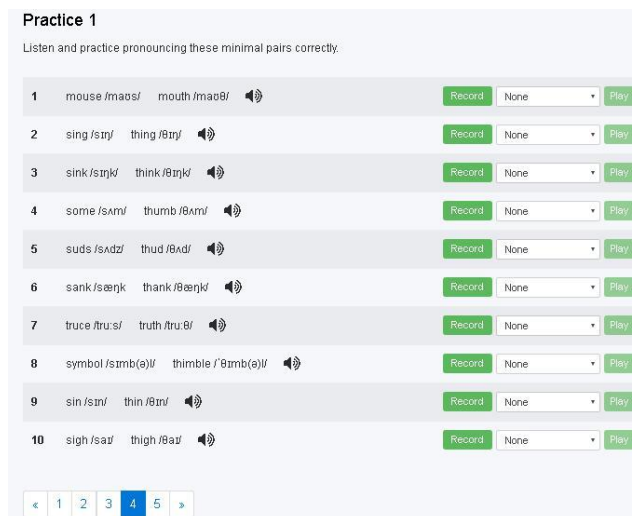

Fig. 7: The Minimal Pairs Practices

F: Modules 2 and 3 – the /θ/ and /r/ tutorial display

For Modules 2 and 3, participants were directed to watch tutorial videos on the /θ/ and /r/ sounds (see Fig. 8). In these videos, a native English speaker demonstrated the accurate way to pronounce the sounds and provide examples and explanation on the target sounds. Here, the participants had the opportunity to watch, listen and practice verbally to pronounce the words.

Fig. 8: The /θ/ and /r/ video tutorials

G: Modules 2 and 3 – Listen and Click Practices

For Modules 2 and 3, there was a session where the participants were required to do the listening practice (see Fig. 9). This practice required the participants to click and listen to the words being pronounced, and then, they had to choose the right words which were represented by the voice. After they had chosen the answers, they clicked on the 'check your answer' button to see the right answers.
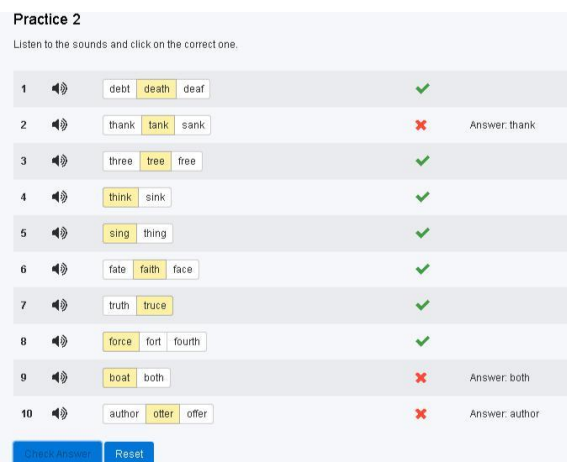

Fig. 9: Click, Listen and Choose Practice

H: Tongue Twisters and Poem Recital Games

In Modules 2 and 3, there were tongue twisters and poem recital games based on each focus (on the target sounds) in the modules (see Fig. 10 & 11). The participants were required to say the tongue twisters out loud after listening to the native speaker's demonstration. While reading the tongue twisters and poem aloud, they were required to record their voice by clicking on the record button before they started.
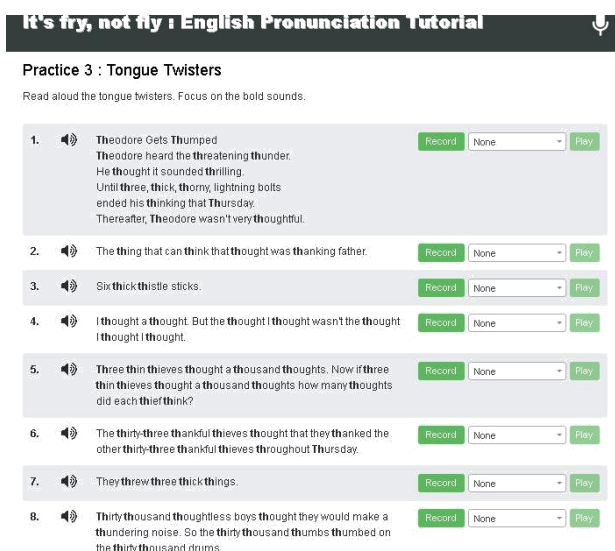
Fig. 10: Tongue Twisters

The implementation phase was done when 20 participants explored and tested the IFNFEPT. These participants were given enough time to explore the IFNFEPT and were given a set of questionnaire after they had finished exploring. Evaluation phase was done on the content prepared, the practicality of the practices and the modules itself, whether the software was easy to use and understand, and whether the software helps to enhance their pronunciation of the target sounds or not. The items in the questionnaire used the five-level Likert Scale: 1 = Strongly Disagree, 2= Somewhat Disagree, 3= Neither Agree nor Disagree, 4= Somewhat Agree, and 5= Strongly Agree. Research findings are shown in Table 1.
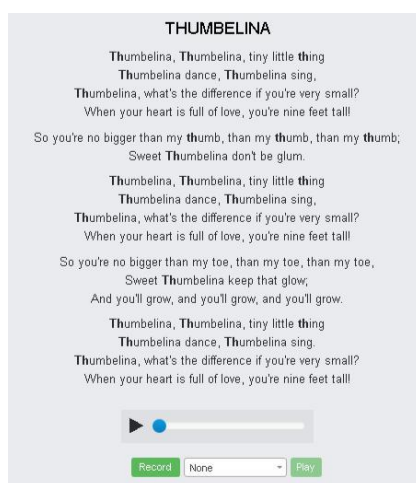

Fig. 11: Poem

TABLE 1: User Opinions on the IFNFEPT Software

Items	Statement	Mean
1	These modules are easy to understand and follow.	**4.55**
2	These modules are boring.	**1.4**
3	These modules help me a lot in improving my English pronunciation on the target sound /r/.	**4.5**

4	I can pronounce the target sound /θ/ correctly after learning from these modules.	**4.65**
5	These modules do not enhance my knowledge on English sounds.	**1.25**
6	I'm not interested in learning English phonetics.	**1.25**
7	The videos in the modules are interesting.	**4.2**
8	I don't like the practices in the modules	**1.25**
9	These modules are not suitable for Chinese learners of English.	**1.6**
10	I would recommend my English teachers to use these modules in their classrooms.	**4.35**

TABLE 2: User Opinions of IFNFEPT according to Questions

QUESTION/ PARTICIPANT	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
P.1	5	1	5	5	1	1	4	1	2	4
P.2	4	1	5	4	1	1	5	1	1	4
P.3	5	1	5	4	1	1	4	1	1	5
P.4	4	1	4	3	3	2	5	2	1	5
P.5	5	2	3	5	2	2	3	3	2	4
P.6	5	1	5	5	1	1	4	1	1	5
P.7	5	1	5	5	1	1	5	1	4	5
P.8	4	2	4	5	1	1	3	1	5	5
P.9	5	2	4	5	1	1	4	1	1	5
P.10	4	2	4	5	2	2	4	2	2	3
P.11	3	1	5	4	1	1	4	2	1	3
P.12	5	2	4	5	2	2	4	1	1	4
P.13	5	1	5	5	1	1	5	1	2	5
P.14	5	4	3	5	1	1	4	1	1	5
P.15	4	1	4	5	1	1	4	1	1	3
P.16	5	1	5	5	1	1	5	1	1	3
P.17	5	1	5	5	1	2	4	1	1	5
P.18	5	1	5	5	1	1	5	1	1	5
P.19	4	1	5	4	1	1	3	1	1	4
P.20	4	1	5	4	1	1	5	1	2	5
Mean	**4.55**	**1.4**	**4.5**	**4.65**	**1.25**	**1.25**	**4.2**	**1.25**	**1.6**	**4.35**

Based on Tables 1 and 2, for Question 1, 12 participants strongly agreed that these modules were easy to understand and follow; 7 participants somewhat agreed and only 1 participant was not sure about it. For Question 2, 14 participants strongly disagreed that the modules were boring; 5 participants chose to somewhat disagree and only 1 participant chose to somewhat agree with the statement. When it comes to Question 3, 12 participants strongly agreed that these modules help them a lot in improving their English pronunciation on the target sound /r/; 6 participants somewhat agreed and 2 participants chose to neither agree nor disagree with the statement.

Question 4 tested whether the participants could pronounce the target sound /θ/ correctly after learning from these modules; 14 of the participants strongly agreed, while 5 participants somewhat agreed and only 1 participant was not sure with the statement. For Question 5, 16 participants strongly disagreed with the statement that suggested these modules did not enhance their knowledge on English sounds; 3 participants somewhat disagreed and only 1 participant was not sure. When it comes to Question 6, 15 participants strongly disagreed they were not interested in learning English phonetics; 5, however, somewhat disagreed. Question 7 stated the videos in the modules were interesting and this statement was strongly agreed by 7 participants and somewhat agreed by 10 participants; 3 participants were not sure with the statement.

For Question 8, 16 participant strongly disagreed that they did not like the practice in the module; 3 participants somewhat disagreed and only 1 participant was not sure with the statement. Question 9 stated that these modules were not suitable for Chinese learners of English and this was strongly disagreed by 13 participants; 5 somewhat disagreed, and 1 participant strongly agreed, and only 1 somewhat agreed. The last Question 10 asked the participants to recommend their English teacher to use these modules in their classroom; 11 strongly agreed, 5 somewhat agreed, and 4 neither agreed nor disagreed.

4.   Conclusion

From the findings, IFNFEPT software helped enhance the pronunciation of English target sounds and the participants could easily explore and follow the tutorial in the software. Most of the participants found it interesting and some of them would recommend this software to be used in English classrooms. Its effectiveness of helping learners to enhance their pronunciation of the target sounds were evident from the questionnaire responses and also from their improvements in the word-lists reading session. However, there are many things that need to be improved and fixed in the software that may polish its potential in helping L2 learners in the future, before it is officially established and published.

5.   Acknowledgements

6.   References

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