

ChAT ONLINE – Chinese with Audio Technologies

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Abstract

The EU funded ChAT project is aimed at learners of Mandarin Chinese who want to improve their spoken ability efficiently. Based on high-frequency phrases, it is an innovative, engaging, web-based programme, focusing on tones and word formation. ChAT adopts a learner- and Western-focused approach to the learning of Chinese in which, according to the US Foreign Service Institute, it takes almost five times as long to reach a 'basic conversational and written ability' as it does in a European language. ChAT aims to supplement existing learning materials in a structured and enjoyable manner.

Tones: Where English has only vowels and consonants, Chinese also has 4 tones, and Westerners often have great difficulty distinguishing and producing them. ChAT's innovative Tonal Assessment System helps overcome that problem.

Word Formation: There are 8,000 syllables in English, but only about 400 in Chinese (1,277 including tones)! That means that one Chinese syllable can mean many things. The characters therefore help to keep the meanings of these similar sounds apart. But there are no handy spaces between Chinese characters to show where the words are. ChAT technology solves this problem at the touch of a button.

Benefits

- *Innovative, web-based language learning tool*
- *Immediate graphic and scoring feedback on tonal performance*
- *Audio and video controls implemented using HTML5*
- *Listen to situational dialogues and watch synchronised transcript in English, Pinyin or Chinese characters*
- *Break a phrase up into words*
- *Slow-down the audio (without tonal distortion) so as to follow the melody of the tones*
- *Role-play enabled*
- *High quality video recordings demonstrate Chinese sounds*
- *Insightful linguistic and cultural tips*
- *Save time – learn more efficiently*
- *A dictionary, grammar, phrase book and video player just a mouse-click away*
- *Insights into how Chinese works*

1. Framework of the ChAT project

A fifth of the world's population speaks Chinese, and China is now the second largest exporting bloc after the EU as a whole, according to WTO figures for 2009. It is therefore a matter of strategic urgency that Europeans learn Chinese and learn to appreciate Chinese culture.

ChAT (Chinese with Audio Technologies) is a two-year EU-funded lifelong learning project, which starts on 1st November 2010 and is due to finish on 31st October 2012, aims at learners of Mandarin Chinese who want to improve their spoken ability efficiently online.

ChAT adopts a learner- and Western-focused approach to the Chinese language in which, according to the US Foreign Service Institute in Washington DC, it takes almost five times as long to reach a 'basic conversational and written ability' as it does in a European language [1]. The ChAT project is proposed as a major step in improving EU citizens' skills in a language spoken by a fifth of humanity. A major goal of the project will be to develop a pedagogy and methodology more attuned to individual learner needs.

Based on high-frequency phrases, ChAT is an innovative, engaging, web-based programme, focusing on two of the major obstacles faced by learners of Chinese of tones and word formation, which are not adequately addressed by current courses, by the principled application of audio technologies developed in the Dublin Institute of Technology (DIT). The consortium will produce and test learning and exercise materials to supplemental popular course materials. Aided by state-of-the-art technologies, learners can practise spoken Chinese at their own pace and cut learning time.

The materials and exercises produced by ChAT will be informed by a thorough appraisal of the learning difficulties faced by Western learners of Chinese and based on the teaching experience of key Confucius Institute staff participating in the project from the UCD Confucius Institute for Ireland, University of Granada-Confucius Institute, Institut Confucius de La Rochelle, Confuzius-Institut Nürnberg-Erlangen, and the expertise in Chinese teaching at the Beijing Language and Culture University.

2. Linguistic aspects

2.1 Tonality and word formation

The two main goals addressed by ChAT are to help EU learners of Chinese overcome a major barrier to speakers of European languages, namely Mandarin's 4 tones, and word formation. Spoken English has over 8,000 syllables and is composed of vowels and consonants [2]. Mandarin Chinese has only about 400 syllables (1,277 including tones) [3], but is composed of vowels, consonants and tones [4]. Western learners of Chinese often simply cannot distinguish these tones, let alone be capable of reproducing them. Also due to the fact of simpler and fewer syllable structure, one Chinese syllable can mean many things. Chinese vocabulary, being highly context sensitive, requires a knowledge of the written characters in order to distinguish words which sound identical, but have radically different meanings, depending on the character used to write them. The characters therefore help to keep the meanings of these similar sounds apart. But there are no handy spaces between Chinese characters to show where the words are.

ChAT supplies a solution which supplements currently available learning materials. It is anticipated that its innovative approach will allow EU learners of Chinese to achieve a better facility in spoken ability – and particularly tonality - in a shorter time frame than is currently possible. This will be achievable due to the principled marriage of web-based audio technologies and a more learner-centred methodology.

2.2 ChAT Supplementary Learning Materials

Most Chinese teaching in the EU is undertaken by native speakers of Chinese who tend to be less attuned to difficulties caused by the different mother tongues of the learners. Popular courses, even when localised for particular markets, tend to adopt a one-size-fits-all approach. ChAT will investigate the effect of 4 major EU languages – English, French, German and Spanish – on the acquisition of spoken Chinese, with an emphasis on tonality.

In the process, ChAT will develop new, motivating exercises, called Supplementary Learning Materials (SLMs), which will bring a new dimension to language learning and promote competences of direct

relevance to Europe's economic future, using the advantages of ICT and a more learner-friendly methodology.

Given the structure of Chinese, emphasis will be placed on helping the learner to maximise the effectiveness of the linguistic assets and skills acquired. ChAT SLMs will consist of a Phonetic Module and a Conversation Module. In the Phonetic Module, basic Chinese sounds, syllable structures and pronunciation are dealt with. Also by analysing the main difficulties for learners from 4 EU language communities, specific exercises will be designed so as to overcome the influence of the mother-tongue and to improve learners' spoken ability. In the Conversation Module, there will be 15 units, contextualised in the most popular situations, such as greetings, eating, directions, and shopping etc. High-frequency phrases will be used as a basis for linguistic exploitation and development, and to build up an appreciation of the creative potential of even a limited, focused vocabulary.

The SLMs produced by ChAT will be localised to meet the needs of learners in each European language community represented in the consortium. In addition, materials suitable for each target group in the project: third level college students, secondary school learners and business travellers, will be developed.

3. Technology

Pronunciation teaching has been comparatively neglected for decades, because the required technologies were not available. The Chinese tonal challenge is addressed head-on in an engaging and principled fashion and the technologies used will be used to shift the emphasis from teacher to learner.

Spectrograms of spoken English and Chinese reveal the very different uses to which intonation is put in these very different language families. In Chinese tonality is used mainly for lexical discrimination, while in English (and other EU languages) it is used mainly to mark speaker attitude and to mark grammatical hierarchies [5]. Fig.1. shows the effect of doubling speaking speed in English – it leads to blur and tonal changes. Fig.2. and Fig.3. show the effect of doubling speaking speed in Chinese – the tone stays the same [6].

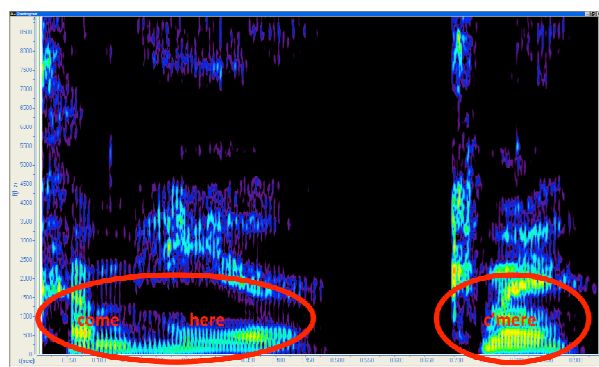


Fig.1. Double speed in English leads to blur

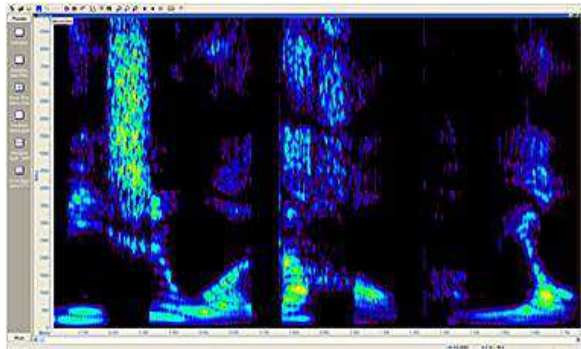


Fig.2. Slow delivery with clear tones

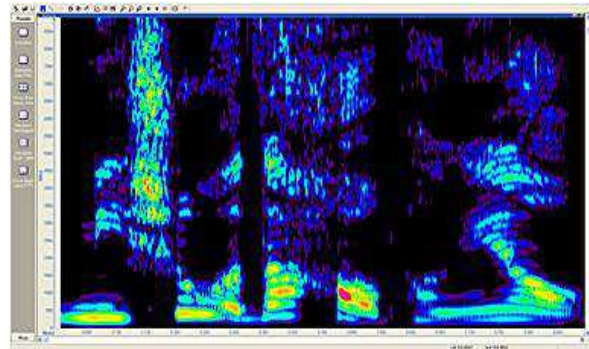


Fig.3. Double speed maintains tones

Mainly because of technical difficulties in the past and because of inadequate appreciation of the depth of the East-West divide in the role of intonation in Western and tonal languages (even by language teachers) there is a dearth of materials available for self-learning. ChAT proposes to develop a new pedagogy, taking advantage of the potential of multi-modal, web-based technology.

The SLMs produced will be playable in a web-based Virtual Learning Environment. The technologies adopted will allow for the development of a new, learner-oriented pedagogy with flexible delivery and new types of exercises not available using current materials. This web-based learning tool will be designed for delivery on both desktop and mobile platforms.

The ChAT project proposes to use an innovative application of time-scaling technology, developed at DIT, to the learning of spoken Chinese. This slow-down technology allows recorded speech to be played back at a slower rate (without tonal distortion), thus giving the learner more time to study the production of Chinese tonal patterns and thus facilitate their imitation. Learners may gradually increase the speed of replay/imitation until they reach full citation speed. In the same way that slow-motion video allows fast events to be studied, DIT's time-scaling technology allows the melody of Chinese tones to be foregrounded and appreciated.

In order to facilitate Westerners in imitating the 4 main Chinese tones and therefore to succeed in reproducing them, an innovative Tonal Assessment System (TAS – see Fig.4.) will be developed and implemented in ChAT, in which learner attempts at tonal reproduction will be automatically assessed. Immediate graphical and score feedback on students' tonal performance are provided.

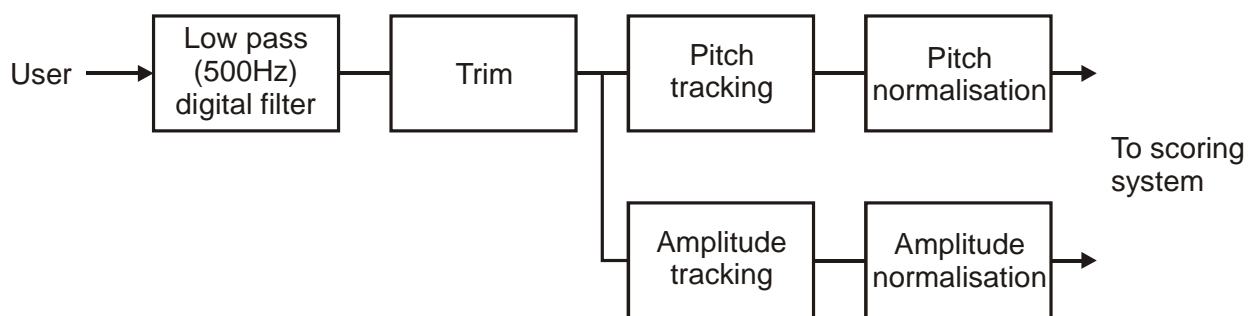


Fig.4. TAS System (source: internal DIT report)

DIT's audio recording techniques will also facilitate role-play by allowing learners to adopt the role of either of the speakers in a dialogue. Cues may be provided in the form of the display of Chinese characters, their Pinyin equivalents or tonal icons, or all of these - as the learner chooses. The scrolling of the transcript of the dialogues will remain synchronised, no matter what replay speed is

chosen, thus allowing the learner to gain confidence in the production of spoken Chinese – quite literally, at his/her own pace.

The use of HTML5 will allow the development of customized audio and video players without the need for Flash or other plugins and will also make the transition to mobile platforms, both web-based and native, a lot easier to implement. High quality video recordings will be implemented to demonstrate the production of Chinese sounds. A link to a currently existing online dictionary will also be investigated to allow learners to engage in personal exploration. Insightful linguistic and cultural tips are available when needed.

In order to solve the problem tackled by Western learners of Chinese – which does not put gaps between words – ChAT will use a Character-string Segmentation Facility, based on an investigation of Chinese character parsing and the development of a suitable metadata parsing framework, to facilitate the learner in acquiring multi-syllable/character words. ChAT technology can help overcome this problem by breaking a phrase up into words at the touch of a button. Insights into how Chinese works are available as well.

In addition, learning 'frames' with interchangeable variables can be varied using technologies so as to re-use learned constructions in new contexts – with the possibility of combining some game strategies. This helps to reinforce useful phrases as well as allowing learners to personalise their communications.

4. Conclusion

By using innovative audio and video technologies and combining the input from the Consortium, ChAT aspires to produce a comprehensive language learning tool, which enables a dictionary, grammar and phrase book, and video player to be just a mouse-click away. A survey carried out by the project will assess the influence of 4 major languages spoken in the EU and evolve strategies to minimise their effects on learner spoken production. It is hoped that ChAT will make the learning experience enjoyable, effective and more efficient.

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