

# Efficient English Learning for Chinese Pupils: Integrate Children's Songs Into English Teaching Based on Cognitive Neuroscience\*

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The study shows that Chinese school oral English teaching is inefficient. Chinese have the tradition of reciting with rhythms, movements, and meditation, which has been proved efficient for language learning and memory. The values of children's songs for English learning are analyzed based on neuroscience. The positive emotion and confidence for pupils' English learning are highlighted. A project-based teacher education ecosystem is practised aided by new media. We try to integrate songs into English teaching to improve the learning efficacy and to use children's familiar melodies to create their own songs.

*Keywords:* effective English teaching, children's songs, oral English, positive emotion, cognitive neuroscience

## Introduction

It is very important to cultivate students' positive emotion, inner aesthetic literacy, and attentive and elaborate learning habits for them to become positive, moderate, creative, and productive citizen after graduation. The study found that Chinese students' oral English is very poor and they have more negative experience in English learning. There are several factors: (a) the lack of supportive English learning environment or adaptive resources from family to school and community; (b) the neglect of real situation creating for communicating in teaching; and (c) English teachers' poor oral English level. They have strong accent and they spend much time on grammar and vocabulary teaching for the test and scores. Teachers' incorrect pronunciation and intonation influence the students' confidence and role identify when speaking. What is more, they usually use formal instructional English without authentic English. The proposal of integrating children's songs into English teaching is put forwards and proved an efficient way for the improvement of Chinese elementary school English teaching.

Chinese have the educational tradition of reciting with rhythm, movements, and meditation and pupils' inner growth with aesthetic experience, meditation, and elaborate processing of rhymes are enhanced in the

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course. Children's songs are short, interesting with simple and clear rhythm, which are popular among pupils, especially in the countryside of China. The rich local songs and chants resources make children more sensitive to the rhythm of language with total physical response (TPR). They do not only enjoy the lyrics and rhythms, but also learn to meditate and gain much inner experience by listening and singing. Music becomes an organic part of life in China, from the ancient time to the revolutionary and modern re-constructing time. When children begin to learn English as a second language, they usually feel curious but a bit difficult with the pronunciation and intonation. If teachers can make a good use of English songs and chants in teaching, they can activate the pupils' interest and improve their pronunciation, as well as to cultivate their sense of language and the elaborate processing of discrimination among sounds and be sensitive to the rhythms. Through this way, we can make pupils optimistic and positive learners with second language.

Usually, we call the strong rhythm chant, the poem with rhythm and harmony, and the rhyme with simple music. The rhythm is beautiful and clear, and the language is catchy. It is convenient for children to learn and memorize. Children can unconsciously immerse themselves in the learning process. Children's song and chants have concrete and perceptible images, which can give life to the forms and actions of human being and things, and make abstract things concrete. When singing and chanting, children can feel immersive, which can deepen their understanding of the content. The bright rhythm is also convenient for students to sing. The textbooks integrated with music and chants, dance, drama, art, and other art forms can enhance the legibility of the content and make it meaningful.

Various types of children's songs and chants are arranged in elementary school English textbooks (Take the textbooks published by People Education Press as a case, which are used nationally). Unfortunately, as we investigated, most English teachers neglect the various functions of children's songs and chants in teaching, and the teaching is inefficient, especially the oral English teaching. It is necessary to further clarify the function of children's songs for pupils' English learning as second language based on brain science and musicology and improve the teaching efficiency.

A socio-cultural approach to teacher education supports an apprenticeship model, in which social relationships mediate learning through collaborative meaningful activity. This model can be found in the collaborative relationship between paraeducators and teachers (Rueda & Lilia, 2002). Here, we use the undergraduates' practising project to create an authentic teaching context for the teacher candidates to manage the project under the guidance of their supervisors. Pupils, parents, and school English teachers are involved in the activity. An apprenticeship model is practised based on the project of how to integrate children's songs into elementary school English teaching.

### **Methodology and Methods**

Teaching experiments and interview, as well as video analysis are used in the study. We have applied for two undergraduates' practice projects related to children's songs learning and performance in the context of new media. Two teachers (One is English pedagogy teacher and the other is music teacher) supervised the teacher candidates to study, practice, and teach pupils English songs and chants on line. We asked them to collect all the songs and chants in PEP Elementary School English textbooks and put them into categories based on their function. Then, we asked them to read papers on this topic and write the literature review. Thirdly, we asked them to sing and chant by themselves and record the video. Fourthly, we selected and appraised some excellent recordings and shared with pupils and parents through Wechat and Dingding groups. Fifthly, the teacher candidates teach the pupils English

songs and chants on line and collect some learning analysis data for study.

The dynamic results show that all the pupils participating in the project become more interested in English songs and can sing/chant all the songs/chants in the textbooks independently and correctly. What is more, they are all active in learning and become more confident in reading and speaking. Their pronunciation and intonation as well as vocabulary have improved greatly in the course. They can recall the whole texts in the books aided by the clue of songs/chants. The teacher candidates who have participated in the project also gained a lot by doing and teaching.

The basic idea originated from the “reciting with rhythm, movements, and meditation” educational tradition in old China. No matter children or adults like to recite poems, chants, and sutras (Text from the Confucian classics or religious scriptures) with rhythms and body movements correspondingly. They believe that they can communicate with universe by singing-like reading. Through this way, they can concentrate their spirit on the text and gain a complete understanding of the text. What is more, they can gain energy and self-efficacy by reading aloud with rhythms. We use the cognitive neuroscience as theoretical basis to support the singing/chanting methods in language learning for rural pupils, and find evidences from our experiments and project performance in return.

The cognitive apprenticeship model was practised for teacher candidates’ professional training. We guided the teacher candidates to apply for the projects based on practice and problems, and to analyze the reasons, and then to put forwards some feasible approaches to improve practice and to teach the pupils English songs both online and offline. At the end, they reflected on the process and complete the project report. The teacher candidates interacted with pupils as well as their teachers and parents. In the course, the teacher candidates gain some teaching and communicating experience and the supervisors participate in the project and gave some help. We used the unstructured interview and narrative methods to describe: Why to do so, what is our advantages to do so, what we are doing and how well we have performed, what we will do continuously and systematically. We put our study in the context of new media and the learning society and under the new concept of quantum psychology and cognitive neuroscience theories, to activate pupils’ attention and enhance their learning energy (potential and efficacy). We built the virtual learning communities and created a free harmonious atmosphere with songs, chants, rhymes as well as cognitive background. This made pupils’ language learning happier and effective and promoted their inner growth with aesthetic experience and potential development. We constructed a project based teacher education ecological paradigm aided by new media and quantum theory (see Figure 1).

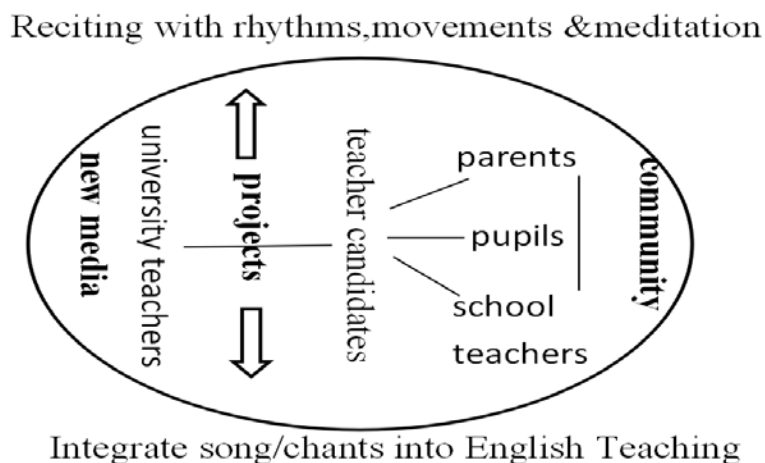


Figure 1. Project based teacher education ecological paradigm aided by new media.

## **The Function of Children's Songs**

### **It is Conducive to the Development of Pupils' Language Sense**

Lieberman, Shankweiler, Fischer, and Carter (1974) pointed out that “meaningless units, syllables, and phonemes are essential for the cultivation of children's English phonetic awareness. The cultivation of syllable awareness is easier than rhythm and phonemic awareness”.

Chinese scholar, Tao, Huang, and Li (2005) pointed out that “phonological awareness refers to the ability of individuals to analyze and manipulate speech sounds (including syllables, first sounds, and phonemes, etc)”. Children's songs/chants have a natural, real, and richly-sounding phonetic scenery with a bright rhythm. Students can sing and chant loudly and repeat some sounds, consciously pay attention to the letters or letter combinations, master pronunciation skills, and enhance the sense of language. For example, *It was Twelve O'clock*: Dickety tackety tack, I just saw a cat. Dickety tackety toe. It's twelve o'clock, you know. Dickety tackety tack. I just heard a snap. Dickety tackety toe. He caught a mouse, you know! Pupils can easily find that the last word in each sentence has a common phoneme, such as [æ] in tack, cat, and snap, and [əu] in toe and know. They are rhyming, interesting, humorous, rap, and catchy. Teacher strengthens the pronunciation of the letters and letter combinations related to rhythm feet. Students feel their characteristics by repeatedly singing in minds. Harmony phonemes have a clear perception and distinction, initially cultivating pupils' phonetic awareness and sound recognition ability, and gradually transfer to the learning of new words. Children's songs/chants are catchy, concise, and clear, the stress and weak pronunciation as well as link of words and coherence of sentences are easy to imitate, and the meaning group and syllables, phonemes are also easy to be perceived by pupils, which is beneficial to the cultivation of language sense.

### **It is Conducive to the Activation of Brain and the Learning Efficacy**

The lateralization of the left and right hemispheres of pupil's brains has not been completed, and they have huge plasticity. The rhythm of children's songs is conducive to activating the level of brain excitement of pupils. Neurons transmit information through ions or electrochemical substances in sodium, potassium, and calcium. The rhythm of children's songs can change the brain potential, slightly above the threshold (about 55 micro-volts). Information can flow rapidly and orderly in the neural channels and establish connections. The existing connections will be strengthened by repeated reading and rap. The extraction of memory from the hippocampus requires the participation of nor epinephrine, and the neurotransmitter acetylcholine is very important for memory consolidation. Harmonious phonology can provide a proper background for cognitive activities and help improve the efficiency of cognitive activities. When nerve cells in the brain are activated, blood flow increases, oxygen level in the blood increases, and information flows faster, and temporary neural connections are easily established. Children's songs are between consciousness and unconsciousness. Once pupils are familiar with certain children's songs and melody, they often recall and extract them unintentionally, which is conducive to the recovery of memory and the application of language. The pleasant rhythm can also provide energy and nutrition for the nervous system of pupils and promote the development.

### **It is Conducive to the Understanding, Memory, and Application of Knowledge**

Music training can promote the reorganization of the cerebral temporal cortex. Rich music training stimulates specific areas of the brain, and its function will be enhanced. The study found that in the United States, children who have studied music for one school year have increased intelligence quotient (IQ) scores, learning index scores, and academic performance compared with children who participated in other activities.

The studies in China have shown that students who have received six years of music training have significantly better word memory than untrained students. The longer the training, the stronger their speech memory. The stronger the language memory, the easier it is to learn other subjects. The auditory imagination has amazing accuracy, and the mentally replayed song has the same tempo and tones as the original song. Auditory imagination is very useful for teaching, including foreign language teaching, songs retain a variety of auditory cues. Children tend to memorize based on pronunciation rather than meaning (Abadzi, 2006). The short and exquisite children's songs and chants are conducive to pupils' understanding, memory, and consolidation, and enhance pupils' self-confidence and competency. The pronunciation of the chants is clear, and the rhythm and movements of the song can leave a variety of auditory cues, which is beneficial to extraction and application. Pupils can make movements while chanting and singing according to the rhythm, and the memory effect will be enhanced. They can also use the familiar rhythm to compose and sing by themselves.

### **It is Conducive to Developing Pupils' Positive Learning Experience and Potential**

As Chinese scholar, Liu Pei (2005) said, "Music is an aesthetic art, and music education is an art education that spreads happiness. It uses sounds and rhythms to convey morals and law of universe without teaching by words, so that children can understand the law, follow morals and be kind by singing and dancing" (pp. 100-109). Children's songs perfectly combine language with bright rhythm and beautiful melody, which can regulate people's emotions and stimulate creative thinking and aesthetic experience. In the process of learning to sing, students understand the abstract language symbols by perceiving the specific image expressed by the lyrics and activate emotional memory. The bright phonology can produce more dopamine substances, which can delight the body and mind and eliminate tension and anxiety. Children's chants with appropriate body language are conducive to the coordination and potential activation of the two hemispheres of brain.

## **Problems in Chinese Primary School English Teaching**

### **The Elementary School English Teachers' Oral English is Very Poor**

We had a questionnaire and interviews among the teacher candidates about their elementary school English teachers' oral English levels and the influence on their oral English as well as other aspects. The result shows that the elementary school English teachers' oral English is very poor (The rate of "Good" is less than 10% ) and some participants explained that their elementary school English teachers' oral English had a great influence on their oral English and confidence. Their English teachers often pronounced the words wrongly, especially with the vowels, and the stress of syllables. The intonation is not on the tone and the link, plosive, etc. are often neglected, let alone the rhythms or coherent. Their English teachers often hesitated in speaking. They could not set good examples for the pupils to follow. The pupils had no belief in their teachers' teaching and they had no confidence when speaking English even after more than 12 years' English learning.

Through three large-scaled national new curriculum reforms from 2001 to 2011 and 2017, English education in the city has improved greatly, but the rural school English faculty is still too weak in speciality, especially the oral English teaching is a big problem in China.

### **The Teaching Aim Still Focuses on English Knowledge**

Through classroom observation, interview, and videos analysis, it is found that the primary school English teachers pay more attention to the pupils' vocabulary memory and grammar pattern drills. The emotional and critical thinking and confidence augmented aim are usually neglected. The situation creating is monotonous and

mechanism without rich meaning or real life experience context. A few sentences are used for dialogue without integrating what pupils have learned with what they are learning. The pupils cannot express themselves freely or correctly using several structures. Every unit in PEP Primary School English textbooks includes a Let's Chant (Sing) part. The purpose is to stimulate children's interest, create a moderate and friendly atmosphere and cultivate the sense of language, correct the pronunciation, review and consolidate knowledge. But teachers usually let the children listen to it once or twice without further attention to other functions. The students dare not open their mouths to speak English publicly, for they often feel embarrassed and nervous when speaking without positive assessment or encouragement. What they have learned is classroom teaching monotonous English, not authentic, life, or meaningful English.

### **The English Teachers are Lack of the Awareness of Guiding Pupils to Create**

There are plenty of children's songs and chants resources. Pupils like the lyrics and rhythms and would like to use the melody to re-create or replace some keywords to produce new ones with proper guidance. In reality, most elementary school English teachers have no awareness or ability to guide the pupils to re-create. There are little opportunities for the pupils to practise or use language to express themselves, let alone to produce their own poems, chants, or songs. The pupils are either too disciplined or too loose without right guidance.

## **How to Use Songs to Improve Elementary School English Teaching Efficiency**

### **Teachers Can Make a Good Use of Songs to Improve Their Own Oral English**

Teachers can make a good use of various learning resources for professional development. They can also use songs and chants to improve their pronunciation and intonation and set good examples for pupils to imitate. Teacher education and training institutes should highlight the core competency of primary school teachers and use the practice-oriented workplace learning and cognitive apprentice system, offering them with more opportunities to participate in teaching service and do some research work on how to improve English teaching efficiency based on evidences. The teacher candidates should be versatile and their language competency, art and humanity literacy and social emotion, such as resilience, optimism, sympathy, and empathy should be enhanced.

### **To Integrate Songs With the Contents for the Teaching Goal**

Teachers should not only pay attention to the fun of songs or chants, but also fully explore their value in phonetics, grammar, language sense, and aesthetic experience for language learning and positive emotional development. For example, when learning English numbers, the teacher can introduce the song "Ten little Indian boys". During singing, students can use digital cards and coordinate actions, which can not only increase the fun, but also review and consolidate knowledge as well as cultivate their language sense and pride in themselves. Children's songs/chants can be used to repeat the key words and sentence patterns which can be replaced by other words. It is easy for students to memorize through rhythmically repeated practice, and combine with specific contexts to form representations and application scenarios in their minds, which is conducive to the application of language rules. Children's songs/chants are short with obvious rhythm. If they are too long or have many difficult words, pupils would be lack of interest or motivation to learn to sing.

### **To Choose the Right Time for Using Songs**

Brain waves are generated by electrical energy activities in nerve cells and pulse activities among synapses. There are four types of brain waves. With different wavelengths, they have different effects on learning. When a person is completely awake, the brain receives and transmits information at a rate of 13 to 25 cycles per second, which is called beta wave. Although it runs fast, it is not the best state to form long-term memory. When the brain wave is eight to 13 cycles per second, it is called the alpha wave. The brain is in a relaxed alert state on this wave band. It is characterized by relaxation and meditation, which can speed up the collection of data and enhance imagination and memory to promote inspiration. Students can achieve efficient learning only when they are relaxed and alert. In classroom teaching, teachers must use effective methods to create a relaxed and pleasant learning atmosphere for pupils to get relaxed alertness and achieve efficient learning. Secondly, the teaching process should be divided into several sections. In the interval of each section, teacher can intersperse a rhyme to relax the brain and enhance the memory effect.

The famous Italian linguist Danesi M. (2003) put forward the theory of double brain model and proposed the language teaching process: The first stage of the classroom teaching is the right brain mode stage, the students input through the right brain-based activities, such as looking at pictures, watching videos, perceiving the text as a whole and oral practice; and the second stage is the left-brain mode, teachers use induction and deduction to teach concepts, structure, and other knowledge. The final stage is the two-brain interaction mode, in which students apply what they have learned to practice. The teaching of rhymes can be properly inserted before, while, and after instruction, and it plays the roles in metaphors as “catalyst”, “lubricating oil”, and “repair fluid”.

### **To Inspire Pupils’ Imagination and Train Their Concentration**

Debussy once said, “The treasure of music contains the eternal rhythm of the ocean, the changing charm of the forest, and the sounds of nature. We understand these sounds without words or theories. Their tradition is rooted in ancient songs and their accompanying dances, which has been accumulated for thousands of years” (Liu, 1997). Reasonable use of children’s songs can effectively integrate knowledge with emotion and image. Teachers can create a fully immersive learning environment that integrates “language and sound, context and mood” through children’s songs/chants. The cheerful rhythm of children’s songs provides effective stimulation to students’ auditory nerves. The virtual situations bring visual impact to students, develop students’ imagination and creative thinking; provide effective stimulation for students’ language centers and stimulate their learning enthusiasm.

English rhymes are efficient in the training of English pronunciation. Students repeatedly practice pronunciation in the process of learning to sing. They are familiar with and experience the pronunciation of single phonemes or letters. For example, when learning the 26 letters, we can teach students to sing the song *ABC*. In the process, students can learn the pronunciation of letters with the melody of the music, and the music images and rhythm are embedded in mind. Pupils will sing repeatedly and unconsciously to strengthen the memory. Another example is in Unit 4 *At the Farm* (PEP English Grade 4). Teachers can use the song *Old Macdonald Had a Farm* to create a light-hearted and spacious scenery, inspire children’s love for nature and longing for green pastoral life, and then develop their environmental awareness and healthy eating habits. By repeatedly singing the song, it can enhance their sense of language and beauty, and be familiar with the English pronunciation of various animals.

### **To Integrate Songs With Activities to Coordinate Two Hemispheres of Brain**

Aesthetic sensitivity of human could be directed not just outwards, at outer objects (flowers), but also inwards, at the inner concepts and intuitions. This is the nature of aesthetic emotion in philosophy and science. Harmony is a correspondence of general abstract concept-models (scientific theories) to particular, concrete concept-models, which meaning is clarified in this correspondence (Perlovsky, 2010). Teachers can use the rhythms for TPR and combine language learning with body movements to make the two hemispheres coordinate. Pupils can effectively master knowledge and cultivate language literacy with aesthetic experience. For example, when learning *This is the Way We Wash Our Face*, allow students to sing and act, such as washing their face, combing their hair, and brushing their teeth. In teaching the words of body, teacher can use the song *Head, Shoulder, Knee and Toe* and ask pupils to sing and make corresponding movements. At the same time, teacher can use the group competition to train students' concentration and reaction speed. This is very important for pupil's cognitive development.

### **To Use Children's Familiar Melodies to Create Their Own Songs**

Teachers can guide pupils to use the familiar melody to compose and reproduce songs/chants. For example, when learning the words eraser, crayon, ruler, and pencil, teachers can use the familiar rhythm as *Are You Sleeping?* to compose: "Where is my eraser? Where is my eraser? Eraser blue, Eraser blue. I cannot find my eraser, I cannot find my eraser, Woo, Woo Woo!" Other words can be replaced. Another example is to use *This is the Way I Wash My Face* to replace the key words: This is the way I ride my bike (read my book, etc.). The rhythmic repetition can bring words into memory through unconsciousness, which is conducive to memory retention and extraction.

### **To Incorporate Music Into Teaching Aided by New Media**

Teachers can set assignments for pupils to use Dingding Live Broadcast, Tencent Live Broadcast, and Fun Dubbing, etc. to make their own videos or to cooperate with group members to make a drama or crosstalk using songs/chants they have learned and then share with others. Pupils learn from each other, and teachers give comment in time. Parents can also participate in the group and share the pupils' performances and give appraises, so as to form a home-school education synergy. These products can be used as valuable course resources for continuous learning and improvement.

## **Summary**

In short, the proper use of children's songs in elementary school English teaching is an efficient way for pupils' language learning and development. Teachers should study carefully of the characteristics and functions of songs in the context of Chinese educational tradition and new media technology. Teachers can develop teaching resources of children's songs and recompile the text aided by audio and video, form their own English teaching features, make English learning more effective. In the future, we will do further experiments on the effect of integrating music with English learning as second language both in rural areas and in cities based on cognitive neuroscience, considering their family background, cultural capital, and thinking styles.

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