

**Project Title:** Cantonese English accent reduction and native-like accent enhancement characterization and training for primary school students and English teachers

**Grantee:** The University of Hong Kong

**Principal** NG Manwa, Lawrence

**Investigator:** Division of Speech and Hearing Sciences  
The University of Hong Kong

# Final Report

by

Principal Investigator

## **1. Title**

Cantonese English accent reduction and native-like accent enhancement characterization and training for primary school English teachers

## **2. Abstract**

Scientific characterization (perceptual and acoustic) of 25 local primary school English teachers' accent (mispronunciation and deviations in pronunciation and prosody) of Hong Kong Cantonese English (henceforth HKCE) based on real-time recording of their lessons was conducted to analyse their errors and deviations in terms of rigorous phonetics and speech physics, which was found to be predominantly cantonized. New frameworks and mechanism of production of speech sound distortion were introduced, and extensive contrastive studies of English and Cantonese phonology and phonetics were carried out, to account for potential word merging and unintelligibility to native ears. Their needs of training were identified and prioritized. An innovative scheme of clinical training categories were developed with a new focus on quantitative parameters of speech physics instead of the qualitative segmental parameters of traditional descriptive phonetics.

Based on the new emphasis and order of the speech categories, pilot tailor-made one-to-one accent reduction therapy sessions were conducted for the participants by a native-like trainer with reference to the categorized errors of their lesson speech. Post-training lesson was recorded and analysed to evaluate their progress. In general, it is feasible to train teachers to reduce their mispronunciations and accent distortions. Feedback was very positive. Teachers unanimously expressed their great need of being trained systematically in a greater number of hours. Thus, we are striving to develop a full-fledged

foreign accent reduction therapy programme tailor-made for teachers and students' HKCE, and to be the first laboratory in the world to extend first language therapy to second-language accent therapy.

### **3. Keywords**

- Mispronunciation, accent deviations, speech distortion
- Hong Kong Cantonese English (HKCE) accent, cantonization, tonalization
- Accent characterization, accent reduction, native-like accent, accent enhancement
- Physics, phonetics, phonics, English pronunciation
- Quantitative and qualitative parameters
- Partial distortion, two-way distortion, twofold distortion,

### **4. Introduction**

#### *Objective*

It has been an anomalous phenomenon in Hong Kong school English education that a lot of students having learnt English for more than 10 years can only read and write but can still hardly speak it or give a simple expression free of errors of pronunciation and grammar (Ho, 2005). The typical Hong Kong Cantonese English (HKCE) accent of an average high school graduate is infested with so many mispronunciations and accent deviations from the internationally dominant native norms that it restricts intelligibility, confidence, prestige and competitiveness. As the typical accent is nurtured through local English education, and primary education is the formative period, remedial measures need to be taken starting from primary schools. We conducted a survey on the English accent and pronunciation of primary school children in an earlier project and confirmed serious problems. Only could we enhance

the pronunciation correctness and accent quality of teachers could we expect to upgrade the next generation and the whole society. In this project we try to characterize teachers' English accent problems, develop a pilot scheme of enhancement training and conduct experimental training with them to test its feasibility.

### *Problems of Hong Kong English pronunciation*

The invention of low-cost paper and printing has revolutionized knowledge transmission and enabled mass education in modern times. However, paper is not a good medium for description of sound. Traditionally, foreign language education has been restricted to learning and teaching of grammar, reading and writing. Until recently, speaking and listening has been a neglected area in school curricula and examination.

British English has been the one out of all modern languages with the accent and pronunciation which is best described by her natives-speaking scholars. However, the tradition has not been inherited and developed by the English education sector in Hong Kong. Teacher training on English phonetics and pronunciation has remained inadequate. Research on this core area has been a high vacuum compared with other aspects of English education.

### *Teachers' English accent*

With teachers and students sharing the same vernacular in local schools, and no immediate need to speak the language outside their classrooms and schools, typical HKCE accent is inherited from teachers of different subjects and levels. The majority of citizens who have been raised in local schools must have experienced, to different extent, teachers' mispronunciation and strange accent, which has always been a topic of joke and casual discussion about contemporary and past school days. Teachers' accent has never been formally investigated and documented nor has their authentic lesson speech ever been

informally probed and analysed. There is no objective source to know how serious teachers' accent is affected by cantonization. Teachers' need to pronunciation enhancement has never been questioned. Extensive literature review for identifying the pitfalls related to has been reported in the first phase of our project, which is given in Appendix IV-A.

## **5. Theoretical framework**

### *Native-like accent enhancement possible*

It is a natural desire for learners of a foreign language to speak like its native speakers do. While linguists and foreign language educators entertain themselves with non-learnability of a native-like accent of a foreign tongue by an adult given the impossibility of long-term immersion starting from childhood again, scientists are interested in examining the possibility of acquiring a near-native accent and the feasibility of training a learner to do so, because obviously, learners' apparent failure is by no means a proof of impossibility if they have never been given chance to learn and to be trained properly. However, we are convinced to the contrary due to the hard evidence that from time to time, there are successful adults, though very rare, who can attain high degrees of native-like accent without meeting the popular linguistic criterion, and ironically, without achieving through mainstream foreign language education at school. We do not advocate a perfect native accent of teachers. But the current accent states of teachers and students are obviously too far away from perfectionists' ideal to talk about absence of a need to improve. The only issue is how to enhance their accent to become more native-like.

### *Cantonese English accent reduction*

Therefore, we have extended our studies of laryngeal speech (Ng et al., 2008; Ng et al., 2010a, 2010b) to characterization of foreign language accent, with a goal of developing a training paradigm so that human beings can learn a foreign language with a more native-like accent effectively. Specifically for the goal of Cantonese reduction, we have commenced with contrasting speech production of Cantonese and English by bilingual speakers (Ng et al., 2001; Ng et al., 2009a, 2009b).

### *Bridging the gap between theory and practical solution*

However, there is a dire gap to bridge between academia and practical needs of learners. In current scientific research on foreign speech sounds, individual sounds are investigated under highly constrained laboratory conditions. Every individual publication only deals with one or two sounds of specific words in citation forms or embedded in a carrier sentence. It is highly artificial and it would require a century of experiments with all sounds before moving on to authentic speech conditions. Then one has to experiment with training methods and trainers, which takes another century before a practical solution can ever be found and launched. As we are engaged in an R & D project instead of a pure academic research, we are conducting characterization not merely for the sake of publication but for finding a practical solution. Characterization aims at looking for accent features which are worth correcting and correctable through training. Then we will experiment with it and examine how to conduct it effectively.

### *Foreign language speech accent therapy*

Theoretically, we know that speech sounds are made by placing and moving different articulators including the tongue, lip, jaw, soft and hard palates during speech. Foreign accent

(Munro, 1998) produced by second language learners is caused by errors or deviations in the placement, speed, range and timing of movement of these articulators. Native-like accent is achieved through accurate control of these articulators, which requires delicate motor skills. Like practicing sports and performing arts, mastering a foreign accent goes beyond textual description. Just as no instrument soloists will practice most of the time by not reading a score, a fluent and good foreign language speaker must wrestle with production of speech sound directly.

### *Implicit and explicit training*

According to theories of Motor Learning, provision of both implicit and explicit feedback information can facilitate more effective learning of a motor skill. Undoubtedly, we need implicit feedback of human trainers, as employed by mothers or toddlers in teaching their infants to speak their mother tongues. Explicit feedback need to be provided to render learning of an accent more efficient for adults. Knowledge of phonetics and phonics may have to be included. There is no theoretical framework as to how to combine these two aspects in providing training.

## **6. Concept development**

### *Accent model*

We are not arguing for or against a particular accent. But as long as a target accent is decided on by individuals or an education system, our duty is to study how to train learners to achieve a near-native accent of the model. Oxbridge British English accent, with pronunciation defined by the phonetic transcriptions of Oxford Dictionary and Cambridge Dictionary, and general non-segmental accent associated with educated people in southern Britain around London, covering the areas Cambridge and Oxford, is taken as the accent



model. It is practically the same, as it is developed out of, the traditional RP accent and not much different, allowing for one to two percentage of variation, from the accent of Queen's English and BBC English. There are many reasons for this choice (Appendix IV-D).

The full details of concept development contributed by the trainer is given in Appendix IV-C.

## **7. Implementation**

### **7.1 Pre-data collection preparation and development**

- Training methodology was developed to train Cantonese English speakers to get rid of their Cantonese accent, aiming at a native-like British English accent model.
- For the role of
  - trainers,
    - native speakers &
    - near-native speakersare considered. Their
  - native pronunciation ability
  - knowledge of English phonetics, &
  - knowledge of Cantonese phonology and phonetics
  - ability to explain the discrepancy between the native model and non-native features are elicited.

### **7.2 Recruitment for participants (Appendix I-A)**

- Primary school English teachers were recruited to participate in the project.
  - A few recruitment seminars were held.

- Invitation letters and emails were sent.

### 7.3 Pre-training seminars

- One 3-hour group training seminar for all participating teachers. (Appendix I-B)

### 7.4 Speech data collection and training (Appendix I-C)

- The English speech of primary school English teachers when conducting authentic lessons was
  - recorded (Appendix I-C),
  - transcribed verbatim (Appendix I-D), &
  - analysed (Appendix I-E) to
    - study their problems of mispronunciations and accent deviations; &
    - identify trainable accent features (Appendix I-F).
- 2 sessions of individual training (Appendix I-H & I-I) were provided to
  - observe whether teachers can learn to improve their accent.
  - experiment with different training parameters and confirm their effectiveness of being trained on.
- Their authentic lesson speech was recorded (Appendix I-J), transcribed and analysed again to
  - examine whether they showed improvement.
  - study the effectiveness of training.
- One-to-one individual evaluation session (Appendix I-K) with teachers was provided to
  - evaluate their problems, and
  - conclude their improvement.

- Teachers' comment on the trainer, the training programme and their own improvement (Appendix I-O)

#### 7.5 Other events

- Teachers and students seminars (Appendix I-L)
- Dissemination seminars (Appendix I-M)
- Presentation of research results in international conferences (Appendix I-N)

## 8. Methodology

### 8.1 Matters related to training

#### *Accent correction through learning phonetics*

Undoubtedly, learning English phonetics can enhance one's pronunciation. However, it was not our original plan to teach phonetics, assuming that teachers had received enough training for their profession. Also, we had not come across speakers who have achieved a convincingly native-like accent through learning of phonetics. Even those who claimed to teach phonetics or the IPA were reading IPA symbols in a Cantonese framework and their speech was still too much cantonized. As we had found that the participating English teachers had received inadequate training in English phonetics, an introductory seminar (Appendix I-B) was offered to refresh their knowledge or to motivate them to acquire some basics (Appendix IV-D) before coming to the training.

#### *Training of segmental features*

We tested a few volunteers on correcting the classical segmental errors we identified. It turned out that correction of most of these well-established cantonized errors required

correction sound by sound like conducting standard speech therapy turned out to be too time-consuming and beyond the constraint of our given timeframe if obvious effect was to be seen and felt by subjects. Changing just one or a few sounds would not make them satisfied.

### *The role of native speakers*

We thought of deploying a native speaker and asked him to offer training according to our ideas and materials. However, not all native speakers know about the phonetics of their mother tongue in order to convey the technical terms to learners in an objective manner. We experimented with a few native speakers. A native speaker could be a perfect toddler but may not a therapist for adults without having been trained to become one. Another major drawback was the lack of knowledge about and experience in the first language of the subjects to be trained, especially when subjects' accent still reflects a strong influence of their first language.

### *Skills of native-like speaker*

Although achievement of near-native foreign accent is possible, it remains largely unknown or remains a mystery to the academic world and the sector of mainstream language education. As successful learners, those rare souls of near-native speakers must have some insights on how to overcome the barriers set by his first language. The question is how to elicit and extract the internalized skills and experience objectively. We did so by asking specially designed questions, investigating their authentic and recorded speech, experimenting with their different varieties and styles of speech, text-dependent and independent recitation, free speech, in terms of accent of both the source and target languages, and so on.

## 8.2 Characterization of cantonization

### *Pre-analysis*

With the help of retrospection and inspection of previous data of students, an error analysis framework was developed before data collection to find out the common patterns of the classical segmental (vowels and consonants) errors of HKCE, which would serve as a reference frame to examine to what extent teachers' speech would conform to or vary from the classical patterns, in preparation of analysis of authentic errors in expected data. Under the tight research schedule, we could not afford to ask our subjects to wait for a long period after speech collection until a full analysis was available. A detailed analysis is available in Appendix V.

### *Search for a more effective training paradigm*

#### i. Qualitative features

Traditional teaching of pronunciation and spontaneous attempts of teachers correcting students focus on single consonants and vowels, within single words, in citation forms. However, most of the problems are not new but well established and obstinate to be got rid of without lengthy therapy hours. Changing single consonants and vowels might not have a clear effect on subjects' accent as a whole.

Among the many English phonemes, there is one which been neglected, namely the schwa, /ə/. It appears universally in unstressed syllables and as weak forms of most form words in connected speech. This skill is widely missing in HKCE speech in general. We have conducted experiments to show that HKCE speakers cannot make out native British

connected speech of even some simple content and phrases because of the reduced vowel. In an experiment that we repeated many times, where we asked HKCE speakers to dictate a starting sentence of one of Queen's slow connected speech - "Christmas is a time for celebration", only around 10% of the subjects can get the whole sentence correctly in one attempt of listening. "is", "a" and "for", which are pronounced in a totally different way from HKCE connected speech, which lacks vowel reduction, were always the very words that caused the problem instead of the nouns or vocabulary. Vowel reduction becomes more serious, deviations accumulate and increase in connected speech, when chunks of words are put together to build a longer phrase or sentence.

## ii. Quantitative features

Unlike the traditional qualitative approach, we focused on the quantitative features – duration, intensity and pitch, an important insight brought in by our trainer based on his personal experience and practice of accent correction.

Supra-segmental features are quantitative in the sense that they can hardly be described objectively by discrete symbols used in describing the segmental features. The variables duration, pitch and intensity are all one-dimensional. Their description, expressed in one physical parameter, does not require sophisticated technical terms but straightforward language that can be more easily comprehended and interpreted by laymen, unlike vowels and consonants, which involves abstract description. Their measurement is much simpler than phonemes, which involves complex mathematical variables.

In relative terms, supra-segmental features could be trained with less difficulty, and with an effect at a relatively shorter time. It is the earliest phonological features acquired by a native infant, before articulation of segmental features develops.

- Intonation

Theoretically, intonation deviation is more easily correctable as it is the least coupled with word meaning. It is perhaps the earliest phonological feature developed by a native infant, even before stress and duration contrast, which requires on two or more syllables. Intonation control gives speakers a native substrate to embed sounds. It lets speakers gain confidence and start to be aware of their accent.

Although English intonation in general is highly fluid and its native-like patterns are difficult to describe, we can focus on one simple principle, which cantonized HKCE severely violates. Thus, we could attempt de-cantonization of just one feature, avoiding using repetitive high tones for compound nouns and phrases, which leads to strange non-native accent.

Based on the trainer's discoveries, cantonization of classical HKCE accent comes with a highly rigid intonation patterns which are tonalized in terms of Cantonese. These patterns are not random but highly predictable, governed by a small set of rules. The rules can be applied in the reverse way to de-tonalize (hence de-cantonize) the intonation of HKCE. To attempt a falling tone, we could use a Cantonese low tone.

- Stress

English is a stressed-timed language whereas Cantonese is syllabic-timed and lacks sentence and phrasal stress. This leads to lack of contrast in stress and duration in HKCE.

- Duration

Among the three parameters, duration of vowels has a double role to play. On the one hand, it is quantitative. It is also used to realize stress to make an emphasized word in a phrase to stand out. On the other hand, it is associated with the segmental meaning of a word. While a



long vowel cannot be too short, a short vowel cannot be too long. Moreover, duration control of a stressed word in a phrase has to take into consideration. Depending on the duration nature of the three types of vowels - short vowels, long vowels and double vowels, the way to stress is different. While stressed short vowels can hardly be lengthened, stressed long vowels had to be lengthened even more than usual. If a short vowel is lengthened too much, it will sound like a long vowel. Duration problems of vowels affect double vowels as well, though in a more sophisticated way.

Cantonese speakers are found to violate such principles of duration control and result in great discrepancies in accent from native norms. Such principles can be applied to everywhere in a piece of speech and are independent of occurrence of vowels.

### iii. Qualitative vs. quantitative distortions

Sound distortions may consist of both qualitative and quantitative aspects coupled together like a two-dimensional vector. More often than not, the problem with the quantitative component is associated with more distortion than the qualitative one. Applicable to a few vowels instead of to a single sound, it is of greater generalization value than the qualitative aspect. Among the three variables, two of them also appear as an intrinsic, distinctive feature contrasting words, i.e. duration in short and long vowels, and intensity in stressed syllables of words. Quantitative control of these variables also plays a part in word meaning, in addition to their supra-segmental functions.

Correction of the quantitative component, which should be more efficient, will help trigger correction of the qualitative correction. The principle does not depend on particular sounds but can be applied to a group of sounds.

Reduction of vowels and liaison are the two such qualitative features which are strongly coupled with and influenced by quantitative features. While failure of reducing vowels can be



seen as a by-product of failure of realizing stress-timing, the reduced vowel as a segmental feature can be triggered more easily if a speaker has a good control of contrast of stress and timing at the suprasegment level. Lack of liaison results partly from the serious problem of missing ending consonants. By correcting liaison, the need of strengthening or lengthening consonants is indirectly taken care of.

### 8.3 Conduction of experimental training

The key study of the project, an experimental training to see whether teachers, as working adults, can be trained to change their accent, were based on the following categories.

#### *9 categories of accent problems*

As teachers seriously lack phonetics knowledge and qualitative description of vowels is highly technical, we concentrate on the quantitative aspect of duration and intensity, which is a more general principle applicable to all the sounds.

Errors and deviations are characterized under 9 categorizes, according to their order of priority. (See Appendix I-F).

- i. absence of liaison,
- ii. absence of vowel reduction,
- iii. short vowels becoming too long,
- iv. long vowels becoming too short,
- v. double vowels becoming too short (due to shortening or omission of the second part of the vowel glide),
- vi. absence of stress,

- vii. consecutive use of high tone,
- viii. mispronunciation or inaccurate articulation of consonants,
- ix. mispronunciation or inaccurate articulation of vowels

#### *Training-based accent evaluation*

The transcribed texts were listened through 2 times carefully by 2 research staff with good knowledge of phonetics for the purpose sake of identifying trainable parameters for experimental training. Their background is given in Appendix I-F. Accent problem evaluation was performed according to the new scheme of nine categories according to the order of priority shown in Appendix I-F. The most salient cases of each category were highlighted clinically for training. For the problems of vowel duration, perceptual judgement was laid only on the quantitative aspect, disregarding the qualitative aspect.

A segmental phonetic analysis by narrow IPA transcription could have been done for their whole transcript. However, it was worried that it might not be intelligible to teachers, who had only minimal to no prerequisite knowledge of IPA.

As highlighting too many mistakes might be discouraging, we restricted ourselves to use one script to point out all mistakes and selectively.

#### *Training*

Each transcribed text was listened through before training to get an impression of teachers' accent profile. Training was conducted based on highlighted errors in order of the categories. Tailor-made training was offered to individual participants addressing their conspicuous problems. For articulation problems of consonants and vowels, irregularities were also handled. Typical student-like problems are expected to be corrected by teachers themselves.

Given the time constraint, focus was given to those problematic sounds which occurred repetitively, across different words. Some important features were pinpointed for teachers to focus on for practice, correction and improve.

- *Priorities of training*

Under a great time constraint, we had to set a priority to the categories on which training was to be provided. Preference was given to those which, firstly, show less resistance to alteration upon training; secondly, affect a wide range of sounds and features; thirdly, are associated with greater deviations from native norms and hence lead to unintelligibility more seriously.

- *Trainer*

A trainer with professional knowledge of English IPA and native-like skills of pronunciation was recruited to take up the role of training (See Appendix IV-C). Preferably, (s)he had to be able to

- tell details of accent difference and deviations
- act out pronunciation according to IPA transcriptions
- carry a near-native British accent

## 9. Results and Discussion

### 9.1 Basic characterization of mispronunciation and accent deviations

#### *Observations*

Except some individual irregularities, a lot of student-like classical HKCE problems are observed in teachers' speech, which will be discussed in detail in the next section. Primitive errors that should not be expected from teachers are noticed, e.g. "ruler" sounds like "luler".

Sometimes, even students were observed misguided by their teachers. Mispronunciations associated with grammatical errors are common, e.g. /t/ and /s/ sounds for indication of conjugation of verbs and plurality of nouns. Mispronunciations are not restricted to single words. Accumulation of manifold errors lead to unintelligibility in a whole phrase (e.g. “take out your book” sounds like “tell your book”).

Every teacher had his/ her own unique errors, e.g. one teacher’s “bakery” always sounded like “bakewy”, another’s intended “That means” always sounded like “that’s mean” or even “that’s me”. One teacher’s “Take out the book” became “tell the book” due to multifold sound distortions her extreme fast speech without stress. A slight impression is that younger teachers speak more fluently with less errors than more senior teachers. More details could be found in Appendix V.

### *Qualitative analysis*

We examine HKCE accent problems starting from the most basic word level, that laymen can understand - some classical examples of word mispronunciation that lead to merging and great distortion. They are accounted for in terms of omission and substitution of individual sounds within and beyond the English phonemic inventory. Simple statistics is conducted to study which vowels or consonants are, rarely or easily, omitted or substituted. With respect to the phonetic properties unique to the two classes of phonemes, the tendency for the two types of errors is examined and accounted for.

#### ● *Consonants*

For problems of single consonants, a full list of observations for each consonant with respect to the problem of omission and substitution is given in Appendix V-A.

First, we try to understand the error patterns of omission and substitution of consonants –

which sounds are affected more by which type of error, their dependence on the position within a word and a syllable (initial, medial or final). We try to account for them in terms of more phonetically technical features of consonants - place of articulation (whether they labial, dental, alveolar, velar, etc. ), manner of articulation (whether they are plosives, fricatives, affricates, lateral, nasal, semi-vowel or vowel-like), whether they aspirated or unaspirated, voiceless or voiced, appearing in a consonant cluster or not. A full description is available in Appendix V-A. Their potential unintelligibility due to the presence of words in minimal contrast with them is listed in Appendix V-A.

Among all the sounds, some tend to be more easily omitted and some substituted. In general omission of the plosives is the most and a lot more serious than we expected.

- Vowels

A great deal of classical errors together with sporadic non-classical errors were observed. Starting from the most basic level, the classical merging of words to existing (e.g. “take” sounds like “tick”) and non-existing words (“plane” sounds like “pling”), which affects almost everyone, is elucidated in terms of merging of single sounds.

Unlike consonants, vowel mis-articulations rarely includes problems of omission but only substitution. And they are rarely substituted by existing sounds, but by those which do not exist in the native English vowel inventory, which are better described as deviations or distortions in terms of other IPA symbols. An accurate transcription of errors requires more advanced phonetics and experience with speech sounds beyond the English phonetics, e.g. /o/ exists in French.

### *Vowels vs. consonants*

Omission and reduction of consonants is a serious problem whereas vowels tend to be

replaced and simplified instead of entirely omitted.

## 9.2 Advanced characterization of mispronunciation and accent deviations

Several new concepts were introduced to account for realistic unintelligibility of HKCE to native English speakers, which are beyond the former's imagination.

### *Partial omission and distortion*

In reality, mispronunciations and accent consist of sounds which are partially distorted rather than perfectly distorted.

- **Vowels**

It is discovered that vowel substitution does not occur within their own categories of short vowels, long vowels and double vowels. Cross-category substitution tends to prefer those which exhibit partial omission (double vowels becoming single vowels by omitting the second component and long vowels becoming short vowels by omitting its duration) or fusion (double vowels becoming single vowels by merging the two vowel components). Both have the common tendency of simplifying or reducing the inner structure and complexity of a vowel.

- **Consonants**

Consonants could be partially omitted, e.g. the duration of a fricative could be too short, the intensity of a plosive could be too weak.

### *Multiple-way and multi-fold distortions*

In a one-word context, an alteration of a single sound cannot easily be mistaken as another word unless they are minimal pairs. Lots of such partial and manifold pronunciation distortions may take place simultaneously. They accumulate to cause greater distortions in

speech sounds. Besides partial omission, other new concepts are introduced, like two-fold and manifold distortions as well as two-way and multi-way distortions. These mechanisms are powerful in accounting for creation of many more unimaginable possibilities of word merging out of words which are originally not in minimal contrast, particularly in some teachers' fast HKCE lesson speech. It results in total misunderstanding and unintelligibility, as exemplified by a specimen of our HKCE teachers' speech - "take out your book" becoming "tell your book".

### *Cantonese framework*

If teachers' speech is re-analysed and interpreted with a Cantonese phonology framework, we may find that most of their deviated pronunciations conform to the simple syllabic structure of Cantonese, which favours only one preceding consonant and one highly selective final consonant. The tendency is the more serious, the more complex the consonant-vowel make-up of a syllabic environment a vowel is in, containing more pre-syllabic and post-syllabic consonant clusters. Such severe cantonized distortions render teachers' English pronunciation more like Cantonese than English. Teachers get so used to such a way of speaking that they are not aware of the stark deviations from the target accent model because their students are listening to them under a Cantonese framework, as if they are listening to Cantonese. Their fast cantonized connected speech contains so many reduced and omitted consonants, as well as non-reduced vowels at unstressed syllables, with no liaison, that it is exactly the opposite of the English mechanism. Their severely cantonized reduction and distortion of English phonology would cause severe intelligibility problems to native ears.

In summary, HKCE generally simplifies consonants while British English simplifies vowels in connected speech. This can be explained by the central role of tone in Cantonese because it is the vowel which carries the tone. Its seriousness is immediately clear when



viewed in the context of connected speech, where missing final plosives will affect liaison, the salient feature of native speaker's English. This justifies our trainer's view on the prioritized categories in the new training scheme.

### *Acoustic distortions*

When a consonant is too weak or too short to be heard by a native speaker, it may still sound existing to HKCE ears, hence creating a quantitative discrepancy between native and non-native listeners' perception. When a vowel is distorted so much that it sounds like a certain vowel other than the original one for HKCE listeners, it could well sound like a different one for native English listeners. This phenomenon was first hypothesized by our trainer and we had commenced to conduct investigation to verify it based on some of our data. Three conference papers came out from the data.

In such a case, the problematic sound cannot be said to be represented by a symbol or not. We need to talk about half of a sound or a quarter of a sound. For example, it totally makes sense when dealing with duration of a fricative. Hence, one reaches the limit of description of sound by discrete symbols in classical phonetics and needs to call for speech physical measurement to verify linguistic claims about deviations of foreign accent and assist in implementing a scientific training programme.

## 9.2 Training-based characterization of mispronunciations

The full highlighted transcripts of teachers were reproduced in Appendix II. They are accessible online with passwords (Appendix I-G).

## 9.3 Training

In general, teachers made progress during training, in particular within the individual



training sessions. However, in spite of very limited training time, they could only concentrate on one or two interesting and manageable categories of accent problems and apply them in their lessons. Since the second lesson recording was based on free speech with totally different content from the first lesson, their improvement might not show up so obviously and they might lose control of some of their problems they were aware of.

Their evaluation of the training and comments made by teacher participants is available in the form of recorded interview, accessible on the project website with a password (Appendix I-G) and summarized below.

In general, many teachers expressed that they were shocked to find so many mispronunciations in their recorded lesson speech. After participating in the project, they became more aware of their errors. They were very satisfied with the experimental training. Their comments confirmed the lack of teacher training in English phonetics and pronunciation. They had never had training of this kind and expressed they would like to have more hours of training.

They get used to their daily routines of giving lessons. They said they have become more aware of their problems after the research

Consonants and vowels were given the last focus. Only special irregularities from dominant classical patterns unique to individuals were selected for special practice. Dominant classical errors were assumed to be handled by teachers themselves catching up phonetics and phonics knowledge.

#### 9.4 Knowledge of phonics

Some errors show that teachers lack exposure to native sounds through communication. Most of their pronunciation is triggered by text and their own internalized rules of phonics. Lack of phonics and phonetics training makes teachers stick to their personal habitual mistakes acquired through their earlier education and apply wrong generalization of phonics. Without learning the IPA transcription, they could still learn to group words into categories according to the vowels a given spelling maps to (Appendix IV-G).

Some teachers expressed that they had never learnt about the contrast between long and short vowels properly. They were not aware of it also because the writing does not tell it. Some teachers said they would need to learn how to recognize it from the spelling.

Through the individual training sessions, problems of teachers' knowledge about phonics were confirmed through spontaneous oral quiz and practice of general speech materials. For example, the majority of teachers were ignorant about the facts that the vowel associated with pronunciation of the letter name of "C" is a long vowel, that "C" sounds exactly the same as "see" and "sea", that "B", "C", "D" & "E" are associated with the same vowel and it is a long vowel, that the numerals "2", "3" & "4" are all associated with long vowels, that "A", "I", "O" are associated with a double vowel. A few teachers admitted frankly that they did not know that common words like "path", "class", "talk" and so on contain long vowels. And they had asked explicitly how to tell from the spelling that a word or syllable represents a short, long or double vowel. Teachers' lack of systematic training on phonics was confirmed.

#### 9.5 Knowledge of phonetics

The above problems of phonics have to be resolved ultimately by phonetics. However, it was confirmed that teachers' knowledge of phonetics was inadequate to read transcription fluently. Teachers had on average received less than 10 hours of lectures or lessons in

phonetics in their previous education. There was a lack of on-the-job training on this aspect. Use of phonetics symbols in training was minimal.

It is worth commenting that this kind of error is the most primitive form of error that teachers themselves would not have tolerated students if they were given enough time to judge their students reciting a passage. In other words, this type of mistake is within their awareness if they are asked to listen to their own recordings again. Most of the consonants concerned are reflected in the spelling. It is within their control not to omit them if they are asked to read their own transcribed speech again slowly. This experiment shows that there is a huge gap between knowledge and performance. Proper pronunciation, even with the simplest kinds of words, does not come naturally for non-native teachers. It is not clear whether visualization of the words they want to say in their mind will help them prevent this kind of low-level mistakes.

#### 9.6 Teachers and student seminars

Seminars and workshops were held in the schools of some participating teachers for them and their students, and in public venues to educate students about cantonization and the importance of reducing HKCE accent and pronouncing more native-like. Topics cover vowel reduction, liaison, duration of long vowels and short vowels (Appendix I-L) so that teachers could also learn about how these areas of pronunciation could be taught to students.

#### 9.7 Dissemination

The results were disseminated in two seminars. They had drawn widespread attention of the media. Photos of the dissemination seminars and screenshots of online news coverage can be found in Appendix I-M.

## 10. Conclusions and Recommendations

We have demonstrated that Cantonized English can be reduced and enhanced to a more native standard through scientific and sophisticated knowledge of phonetic and physical analysis, and physical therapy.

### *English teachers' English accent problems*

Based on audio recording of authentic English lessons given by 25 primary school English teachers, the current weakness states of teachers' English accent (mispronunciations, phonetic and prosodic distortions) have been probed with reference to the standard British model. Lots of severe pronunciation problems amidst broken English grammar and syntax are discovered. Their accent nativeness, or resemblance to British English accent, rated by teachers themselves and by our research staff, is estimated to range from 20% – 40 %.

### *English teachers' knowledge of English phonetics*

A lot of teachers' mispronunciations are still primitive and could have been avoided, even under a Cantonese framework, if they have received some basic training on English phonetics and phonics. Knowledge of phonetics could shorten the training time on correction of mispronunciation at the phonemic level.

Basic concepts of phonetics which teachers lack have to be supplemented. They include definition of vowels and consonants, distinction between vowels and vowel letters, distinction between consonant and consonant letters, vowel letters representing consonants, consonant letters representing vowels, same sound manifested by different letters, same letter representing different sounds, mapping between spelling and sounds, minimal word pairs in pronunciation. In addition, the definition, concept and interpretation of some technical terms

of English phonetics are the prerequisites for discussion and understanding correction of mispronunciation and reduction of foreign accent. For consonants, they include manner of articulation, place of articulation, plosive, fricative, affricate, liquid, half vowel, approximant, nasal, dental, alveolar, labial, glottal, velar, and so on. For vowels, they include cardinal vowels of standard British English, breakdown of vowels into short vowels, long vowels and double vowels.

#### *Rigorous analysis of Cantonization of HKCE accent*

Rigorous segmental (vowels and consonants) analysis has been conducted within the framework of English and Cantonese phonetics and phonology, as well as general and multi-lingual phonetics, from the point of view of native speakers, near-native speakers and Cantonese evaluators. While the majority merge with the student-like classical cantonization patterns of Hong Kong English, irregularities from the dominant patterns are nonetheless cantonized but in a less predictable way. Innovative concepts of twofold and multi-fold accent distortions, multiple word merging through two-way and multi-way distortions, have been devised to account for accent production mechanism leading to realistic unintelligibility and misunderstanding of HKCE. New concepts based on speech physics are developed to account for the evaluator-dependent discrepancy of intelligibility by Cantonese listeners but unintelligibility by native English listeners. We have discovered some important cues that are hidden even to native speakers. We have embarked on conducting acoustic measurement to verify the hypothesis objectively and report in scientific publications. The rigorous analysis embarked, with its developed framework, if extended, are useful in for a complete analysis of Cantonization of HKCE, which can be applied to our future plans of training for users of different levels and sectors.

### *New scheme for training on Cantonese English accent reduction*

A new experimental training scheme consisting of nine speech parameters in a prioritized order has been designed, which gives a new emphasis on quantitative aspects, contrary to traditional preoccupation with improving pronunciation through teaching the IPA and a qualitative description of vowels and consonants. Established foreign accented segmental phonetic features would have been more obstinate to change, requiring not only more sound-by-sound therapy but also more of learners' understanding of advanced knowledge of phonetics to make training effective. Given participants' primitive knowledge of phonetics, and the limited time of the pilot training, the new scheme stresses training on those phonetic features permeating everywhere of a native speech (reduced vowels, liaison) rather than specific sounds, and on general principles governing a broader range of sounds (duration contrast of different types of vowels and stress contrast).

### *Training*

Following the prioritized order of the nine categories, and with reference to the individual transcripts of their authentic lesson speech, tailor-made experimental training has been offered to teacher subjects, following the order of vowel reduction, liaison, duration of vowels and intonation. Despite the myriad of accent problems, limited number of hours for the pilot training, the pilot training demonstrated that it was possible to train working adults to correct their mispronunciations and improve their accent. Participants selectively concentrated on improving some features which were of interest to them and that they could cope with. Teachers reported an impact on their awareness of their own accent problems and desired for more training. The experimental training modules for Hong Kong Cantonese English accent reduction should be developed into a full-fledged programme to benefit more teachers English teachers and teachers using English as an instruction language.



### *English Teachers' professionalism of spoken English*

In short, a fluent command of spoken English, with correct pronunciation, is of paramount importance and the very first prerequisite of an English teacher, just the same as the importance of speaking with correct grammar takes precedence to teaching of grammar. Both should come first and prior to teaching methodology. Teachers' English pronunciation has to be stepped up considerably, so as not to impede students' development and to promote teaching professionalism.

Although the English pronunciation skills of younger teachers have been better than the older generation as a result of evolutionary process across generations, the progress may not be fast enough to catch up with the improvement of English users in society as a whole and the growing education and expectations of parents. Mispronunciations made by English teaching professionals which are obvious even to students, not to say to parents, are simply not acceptable. Teachers' English pronunciation and accent needs to be enhanced considerably in order to bridge the great expectation of stakeholders and the general public, to promote teaching professionalism, and to boost the global competitiveness and status of our next generation.

This could be done through intensive training on skills of mastering more native-like pronunciation based on speech physical therapy supplemented with systematic learning of phonics and phonetics. For current teachers, they should be offered remedial on-the-job training by relieving them of their teaching hours. For potential teachers, it has to be ensured that they have received adequate training before being permitted to teach with the English language. Assessment on their pronunciation should be implemented more seriously and the passing requirement should be tightened considerably. Loopholes arising from loose exemption should be filled.