

Final Report of Project

Project No. : 2010 / 0235

Part A

Project Title : Perceptual and acoustic characterization of Hong Kong English pronunciation errors, deviations
and accent of primary school (P.5 & P. 6) students

Name of Organization/School: The Centre for Communication Disorders, Faculty of Education
University of Hong Kong

Project Period: From 01/2012 (month/year) to 05/2014 (month/year)

Part B

Please read the **Guidelines to Completion of Final Report of Quality Education Fund Projects** before completing this part of the report.

Please use separate A4-size sheets to provide an overall report with regard to the following aspects:

1. Attainment of objectives
2. Project impact on learning effectiveness, professional development and school development
3. Cost-effectiveness – a self-evaluation against clear indicators and measures
4. Deliverables and modes of dissemination; responses to dissemination
5. Activity list
6. Difficulties encountered and solutions adopted

Name of Project Leader: _____ Name of Grantee*: _____

Signature: _____ Signature: _____

Date: 09/2014

Date: 09/2014

* Final Report of Project should be submitted via “Electronic Project Management System” (EPMS). Once submitted, these reports are regarded as already endorsed by the supervisor of the school/the head of the organization or the one who signed the Quality Education Fund Agreement for allocation of grant on behalf of the organization.

1. Attainment of Objectives

1.1 Speech data collection

- Objective statement
 - Speech recording with primary 5 & 6 students (1,000 students from as many districts and schools as possible were targeted)
- activities related to the objective
 - Invitation of schools
 - Formal invitation sent to all schools in Hong Kong
 - Free seminars were given to recruit schools for participation
 - Design of speech recording materials
 - 3 series of English words, a total of 89, are considered.
 - Speech recording trips
 - Speech recordings were conducted with students one by one, each taking 8 to 10 minutes.
- extent of attainment of the objective
 - Fully attained
 - More than 10 schools have participated in speech recording:
 - Speech recordings were collected from a total of 1000 students.
- evidence or indicators of having achieved the objective
 - Schools from which students' speech recordings have been collected

Hong Kong Student Aid Society Primary School

E.L.C.H.K. Hung Hom Lutheran Primary School

S.K.H. Kei Oi Primary School

Baptist (Sha Tin Wai) Lui Ming Choi Primary School

Hing Tak School

Alliance Primary School (Sheung Shui)

Northern Lamma School

Kowloon Tong School (Primary Section)

S.K.H. Kei Yan Primary School

Po Leung Kuk Lam Man Chan English Primary School

- Database available
 - i. The first series, consisting of 14 words, takes into consideration of English vowel contrast



- ii. The second series, consisting of 58 words, try to cover all English consonants and vowels occurred in initial, medial and final positions of a syllable and word, and in a great variety of environments
 - iii. The third series, consisting of 17 words, try to consider some common difficulties of pronunciation concerning consonant clusters
- reasons for not being able to achieve the objective, if applicable
 - Not applicable
 - However, this workload of this part has been underestimated and consumed most of our effort so that time remained for analysis has not been enough.

1.2 Preparation of speech tokens for analysis

- objective statement
 - Construction of a database consisting of speech tokens
 - Online retrieval of data
 - activities related to the objective
 - Data error inspection
 - Manual inspection of errors. The recorded speech data from a total of 1000 students have been checked for error. Unusable data due to noisy background and recording error have been discarded. Around 80% of data are usable.
 - Segmentation of speech data
 - Useful speech data are renamed and segmented to produce speech tokens ready for retrieval for perceptual experiment and acoustic analysis.
 - Programming of online speech data retrieval platform
 - First module of PHP programming for online retrieval of speech tokens has been written.
 - extent of attainment of the objective
 - Fully attained
 - Around 70000 usable speech tokens have been processed and saved.
 - Online retrieval of speech tokens has been successfully tested
 - evidence or indicators of having achieved the objective
 - Data available
 - Saved in our hard disks and server.
- i. *Book, Beat, About, Bit, Boys, Bob, Boat, But, Bought, Bat, Boot, Bite, Bet, Bait*
 - ii. *P, Yet, Singer, Speed, B, Top, Cheap, Tick, Key, Bob, Back, Sad, Guy, Thin, Sung, Author, Dick, Wet, Mother, Breath, Fan, Safe, Sat, Zoo, Sheep, Dish, Beige, Juice, Van, These, Rich, Pressure, Bag, Picture, Hate, Sue, Bus, Moon, Pleasure, Some,*

Stick, Choose, Summer, Save, Sky, Noon, Red, Let, Runner, Buzz, Narrow, Ate, Fear, Breathe, Schedule, Son, Feel, Follow

iii. *Snail, Pleasant, Sky, Tree, Clap, Fry, Space, Crab, Split, Stay, Spring, Smell, String, Fly, Present, Three, sleep*

- Online platform working
- reasons for not being able to achieve the objective, if applicable
 - Not applicable
 - However, this is a step which we have under-estimated. The data cannot be used without pre-processed.
 - There was a serious shortage of human resources for the time-consuming labour of data processing. It leads to a shortage of time for the remaining part of the project.
 - The programming task is too demanding for the assistant of that salary scale. Although the project manager turned out to have to be multi-functional, he was overloaded with tasks of different nature. More human resources and division of labour would have been necessary.

1.3 Perceptual evaluation

- objective statement
 - Perceptual evaluation by overseas and local native experts, local practitioners and teachers of phoneticians, local non-native and native English teachers from primary and secondary schools and English educators
 - Identify and reveal the distribution and patterns of students' English pronunciation problems and difficulties
 - Identify the needs of pronunciation correction and accent reduction training
- activities related to the objective
 - Examination of speech token to search for salient features worthy of perceptual analysis
 - Design of perceptual evaluation experiments
 - Visits to potential local specialists and invitation to give talks
 - Invitation of overseas specialists
 - Communication and testing with evaluators
- extent of attainment of the objective
 - Preliminary results have been achieved.
- evidence or indicators of having achieved the objective
 - Classification of errors underway and were presented in public seminars
 - Email correspondence with overseas and local practitioners
 - Seminars were given by the project manager
- reasons for not being able to achieve the objective, if applicable
 - Invitation of local specialists



- The knowledge of phonetics of local specialists and practitioners was disappointingly low and superficial, which could not live up to the standard and perspective of interpreting data from a point of view of speech science and acoustics. The training in phonetics for local teachers in general is too weak to be able to contribute constructively to our perceptual analysis.
- Invitation of overseas specialists
 - The invitation process was too time-consuming. Overseas specialists are subject to conditions and constraints much
 - We had somehow under-estimated the number of hours required due to lack of experience at the outset when the proposal was sketched.
 - Number of hours of analysis with which specialists could achieve what we intended would have been too limited anyway. We need a separate project and much bigger budget for this part of analysis.
- Invitation of overseas specialists not approved
 - Invitation of overseas specialists was not approved by HKU finance department although work had been commenced.

1.4 Acoustic analysis

- objective statement
 - Acoustic analysis of speech data
- activities related to the objective
 - Formant extraction
 - Manual extraction of the first series: *Book, Beat, About, Bit, Boys, Bob, Boat, But, Bought, Bat, Boot, Bite, Bet, Bait*
 - Comparison with native speakers' formants underway
 - Acoustic analysis of consonant (fricative) length, voicing of consonants have been attempted and in progress.
- extent of attainment of the objective
 - Fully attained
 - Formant extraction completed. Around 14000 tokens, for the first series of words, have been processed for formant analysis. Perceptual evaluation needs to be done to interpret the quantitative data.
- evidence or indicators of having achieved the objective
 - Data saved in server.
 - Preliminary results have been presented and shared to English teachers through seminars.
- reasons for not being able to achieve the objective, if applicable
 - Lots of analysis and computational work need to be done, which exceeds the approved human resources and the scope could not be predicted by the proposal.



1.5 Website

- objective statement
 - website dissemination.

- activities related to the objective
 - Website design, construction and management
 - Speech data have been posted onto the website. Online access of speech data without the possibility of speech file being copied is implemented by PHP programming.
 - Design of web interface for online access and evaluation.
 - Design of web interface for result dissemination.
 - extent of attainment of the objective

 - Partially attained
 - Limited by the availability of manpower and working hours
 - Limited by the availability of expertise

- evidence or indicators of having achieved the objective
 - Website “ [http:// www.speech.hku.hk/ssl/hke/](http://www.speech.hku.hk/ssl/hke/) ”.

- reasons for not being able to achieve the objective, if applicable
 - The university provided very limited server space.
 - Website was re-directed to privately owned server <http://www.rerrario.hk/hke/> as temporary solution.
 - No budget was provided for this service. We did not expect that the university would not support this.

2. Project Impact

2.1 Increasing training opportunities for teachers and enhancing their professional development

- In the course of conducting this project, we had educated English teachers through different activities and channels – first, school visits and second, public seminars. First, school visits were conducted before, during and after speech data collection. Before speech data collection, on some occasions, we needed to visit school heads and teachers in charge in order to invite them to join the research. Sometimes, we needed to give a talk to explain what we planned to do, or sometimes simply to give a free talk on relevant topics. During the course of speech data collection, we needed teachers’ help to monitor students who would turn up for speech data collection. There was always an English school teacher who acted as a contact person. So our team leader would need to socialize with teachers and school heads. After speech collection, some schools requested free talks to be given to their English teachers on our results of acoustic analysis and perceptual evaluation. Second, a series of seminars were also given in public venues before and after data collection, in order to call for schools’ participation in our research project and to learn about the results.
- Through these activities, we had direct contact with school heads and teachers and got their heartfelt feedback which they might not be willing to openly voice out black and white, as in the form of questionnaires. As already stated in the project proposal, and echoed in our seminars, teachers’ feedback generally confirmed our criticism of the current situation of English pronunciation and



phonetics education. English teachers in Hong Kong generally lack training in English phonetics and pronunciation, both before and after becoming teachers. During his/her undergraduate studies, a student who majors in English linguistics, English literature, Applied English linguistics or English education, on average has received only a few hours of relevant lectures on English pronunciation and phonetics. As for teacher development in this core skill of teaching English as a foreign language, it is a vacuum. Teachers admitted their shortage and expressed a strong wish of receiving on-the-job training in English pronunciation. To some extent, this project has aroused the awareness of English teachers about the need of teacher development in this area. The series of seminars served as pilot training, which is worth extending by a separate project.

2.2 Broadening teachers' horizons

- When talking about English pronunciation, what English teachers have in mind is pronunciation within traditional framework of descriptive phonetics, where description of pronunciation is done by means of phonetics symbols. Within this traditional framework, it does not take into account the realistic discrepancy in the perceptual frameworks between native and non-native experts, let alone that between native speakers and non-native English teachers.
- Going far more deeply than teachers' traditional knowledge about English pronunciation, we tackle the problems of English pronunciation errors and accent from a scientific point of view, where pronunciation error or accent, is viewed in terms of degree of deviations and can be objectively measured and quantified. Upon learning about this after attending the seminars given by our expert, many teachers expressed that they had an eye-opening experience. Also new to them is the concept of differentiation between Cantonese perceptual framework and native-speakers' perceptual framework. Quantitative measurement, together with perceptual evaluation, can help elucidate the discrepancy between native and non-native perception. Only with this new perspective can we overcome our limit and achieve a near-native accent.
- The foretaste of our key concepts, which are pioneering and unheard of in the academic world, had obviously helped teachers unravel their life-long riddle of the problem English accent. They said the seminars had helped them account for lots of students' pronunciation problems and their own accent which they were unaware of. Exactly because of limitations in their personal experience and knowledge, they admitted, they were not able to point out and correct student's pronunciation. In general, teachers expressed very strong interests in learning more about the scientific perspectives of English pronunciation and wished to attend more professional seminars organized by us in the future, and looked forward to accent reduction training we initiated based on realistic data.

2.3 Increasing training opportunities for teachers and enhancing their professional development

- With the many seminars held, teachers and possibly their students should be aware of the accent associated with their English. In particular, the errors can be explained or related to their mother tongue - Cantonese. The seminars themselves provided opportunities for the teachers to improve their English, thus enhancing their professional development.

3. Cost-effectiveness

3.1 Utilization of available resources

- We have been fortunate to employ with a lesser salary a qualified and multi-functional project manager. He also functioned as a programmer and IT engineer, which would have been unlikely in a normal research project. We should have needed two project managers, one devoted to research and one devoted to



administration and other matters. And an engineer of longer employment period and a higher salary scale would have been required. The salary cost spent was far lower than what would have been required. In this sense, the team has been extra-ordinarily cost-effective, but at the expense of our staff's overwork.

3.2 Sustainability

- Our data will form an objective basis for implementation of training on reduction of Cantonese English accent and native-like enhancement of English pronunciation and accent.

3.3 Expenditure items

- The recording equipment including the audio recording systems and the video recorder can be used by others for replicating or carrying out similar projects. The completed project successfully established a simple yet sufficient platform for acoustic and video acquisition for language studies.

4. Deliverables and Modes of Dissemination

4.1 Online platform

- A platform has been implemented. All data are available to those who have special interest in the data. This platform would be useful for pronunciation education and for the purpose of expert evaluation, as a separate project and continuation of the present work.

4.2 Research data

- We have accumulated a lot of useful data and are planning to publish some academic articles based on these data.

4.3 Public seminars

- Public seminars have been given to address a few hundred teachers.

4.4 Continuation of projects

- Since not all the speech data have been looked into, and expert consultation have been underway and yet to be approved, it makes sense to work on another project in its own right focusing on analysis and perceptual evaluation of the data. More data from native speakers need to be collected so that mispronunciation and deviation of pronunciation exhibited by local students can be compared against a standard.

5. Activity List

5.1 Public seminars

- 15 free seminars (a total of 38 hours) were given during the period of Jan 2014 to May 2014. They were mainly held in two locations: first, the University of Hong Kong; second, Hong Kong *Teachers' Centre*, West Block, Education Bureau *Kowloon Tong*, Education Services Centre, 19 Suffolk Road. Individual seminars were also offered to schools which have contributed to the research and those which expressed special interest after attending public seminars. A total of around 500 English teachers have attended such seminars.

Teachers express strong interest in scientific aspects of the speech data, their implications and applications in implementing potential pronunciation and accent reduction training, to extend their knowledge beyond the traditional limit of linguistics.

Date	Time	Duration (hours)	Venue
11 Jan 2014 (Sat)	2:00 pm - 5:00 pm	3	Hong Kong Teachers' Centre, West Block, Education Bureau Kowloon Tong, Education Services Centre, 19 Suffolk Road
18 Jan 2014 (Sat)	9:30 am - 12:30 am	3	Chong Yuet Ming Chemistry Building, Lecture Theatre, University of Hong Kong
18 Jan 2014 (Sat)	2:00 pm - 5:00 pm	3	Hong Kong Teachers' Centre, West Block, Education Bureau Kowloon Tong, Education Services Centre, 19 Suffolk Road
25 Jan 2014 (Sat)	9:30 pm - 12:30 am	3	Chong Yuet Ming Chemistry Building, Lecture Theatre, University of Hong Kong
25 Jan 2014 (Sat)	2:00 pm - 5:00 pm	3	Hong Kong Teachers' Centre, West Block, Education Bureau Kowloon Tong, Education Services Centre, 19 Suffolk Road
28 Feb 2014 (Fri)	7:00 pm - 9:00 pm	2	Hong Kong Professional Teachers' Union (Causeway Bay)
1 Mar 2014 (Sat)	9:30 am - 12:30 pm	3	Hong Kong Teachers' Centre, West Block, Education Bureau Kowloon Tong, Education Services Centre, 19 Suffolk Road
7 Mar 2014 (Fri)	7:00 pm - 9:00 pm	2	Hong Kong Professional Teachers' Union (Causeway Bay)
8 Mar 2014 (Sat)	1:30 pm - 3:30 pm	2	Hong Kong Teachers' Centre, West Block, Education Bureau Kowloon Tong, Education Services Centre, 19 Suffolk Road
14 Mar 2014 (Fri)	7:00 pm - 9:00 pm	2	Hong Kong Professional Teachers' Union (Causeway Bay)
21 Mar 2014 (Fri)	7:00 pm - 9:00 pm	2	Hong Kong Professional Teachers' Union (Causeway Bay)
22 Mar 2014 (Sat)	9:30 am - 12:30 am	3	Chong Yuet Ming Chemistry Building, Lecture Theatre, University of Hong Kong
28 Mar 2014 (Fri)	7:00 pm - 9:00 pm	2	Hong Kong Professional Teachers' Union (Causeway Bay)



24 May 2014 (Sat)	9:30 am - 12:30 pm	3	Kowloon Tong School (Primary Section)
30 May 2014 (Fri)	6:00 – 8:00 pm	2	Baptist (Sha Tin Wai) Lui Ming Choi School

Total 38

- Through questionnaires collected from attendants of the series of public seminars, and through direct feedback expressed by attendants after the seminars, we know that teachers had an eye-opening experience of looking at pronunciation errors and accents from a new and deeper point of view based on quantitative methods of speech science of acoustics, which helped them explain away lots of students' problems of pronunciation and accents which cannot be dealt with by traditional phonetics, which they had never thought of and were not able to point out and correct due to the limitations of their personal experience and knowledge. It also helped them explain away the discrepancy between perceptual judgment under a native and a non-native framework. In general, teachers expressed strong interests in our seminars and looked forward to more professional seminars and accent reduction training based on our data. It will usher in a pioneering methodology of enhancing teaching and learning of more native-like English pronunciation and accent.

6. Difficulties Encountered and Solutions Adopted

6.1 Invitation of schools to participate in the project

- Gaining access to a school to carry out speech recordings was a tedious process. Schools were in general not very cooperative and not helpful. Heads of school always had reasons to reject our invitations. We needed to gain approval from not only school heads but also teachers and parents. This is particularly so for probing pronunciation as it is a sensitive issue. Many school heads expressed worries by their English teachers. They might think that part of our hidden goals was to evaluate their students and indirectly the standard of their schools (as well as English teachers), although we insisted that results would not be disclosed in a way to correlate with schools. But there was still mistrust. In addition, many schools would consider joining the research only when they gain some immediate benefit. We needed to offer extra free seminars in order to attract schools' support and participation. A lot of such unexpected work had not been expected in the original plan. The time for contacting a school, filing applications and waiting for approval of conducting speech recording took much longer than expected.

6.2 Logistics of speech collection

- Since most schools prefer having the recording done during certain periods of the year, e.g. before summer, sending the maximum of assistants, spending the least number of hours, so that students' lessons would be minimal interfered, there was often a huge shortage of recording operators. It turned out that our project manager and IT engineer, who were originally not intended to conduct recording but to concentrate more on the processing and analysis of data, were also deployed to carry out such duties. Even so, our laboratory had to employ extra part-time operators to help with the project. We have drastically under-estimated the need of manpower and travelling for conducting speech data collection. We should have proposed



recruiting some part-time assistants for this specific purpose.

6.3 Logistics and travelling reimbursement

- Logistics has been a problem. It was not practical to store all the equipment in our laboratory and start the journey for each recording from our office (located in Pokfulam, Hong Kong) to various schools some of which are located in the northern part of the New Territories. The reimbursement system of the university assumed our team to start from the office every time we went on a speech data collection trip. Otherwise, the university would not reimburse our travelling expenses. Also it was assumed that only public transport would be used, which was not possible especially when carrying all the recording equipment. Extra travelling cost was paid by our project manager himself.

6.4 Travelling expense not reimbursed

- We have drastically under-estimated the need of manpower and travelling for conducting speech
- The travelling reimbursement of the university did not follow what we stipulated in the project proposal. The university has her own system of reimbursement, which is rigid and does not meet our needs. Due to the need to transport recording equipment, and the need to deploy more people in the data collection trips, it was more economic and time-saving to drive to the schools. Our proposal had not predicted this special situation. In the end, all these travelling costs could not be reimbursed.

6.5 Staff ranking and salary

- Our estimation of the number of staff required for the project was too conservative. Both the university and funding authority have their own constraints governing the rank and salary scale of staff. Fitting into constraints from both sides resulted in a downward shift of the requested ranking and salary our staff. The approval of the project has probably under-estimated the academic ranking of staff required to carry out the task. In the end, the salary grade of the staff approved by the funding authority had been much lower than what the tasks required. For example, the project manager was originally intended to be of post-doctoral grade and someone who had years of experience and multi-disciplinary skills. The salary assigned to this position was really only half the market value. Have we not had a candidate who brought in the project, it would not have been possible to employ anybody.
- The IT assistant was originally intended to be an engineer with a few years' experience in programming. The salary fell 40% short of the market price. The approved salary only allowed us to employ a fresh graduate somebody with a so-called IT degree but with no practical skill nor experience in programming.
- In the end, the technical manager has been overloaded with various responsibilities, playing the role of project manager, researcher and programmer, working excessively over-time without due payment.

6.6 Administration

- A lot of administration work was required due to employment, re-employment, filing of claim forms and so on, which arises from the side of the university. We should have had an additional assistant to handle all



these. It turned out that the project manager was overloaded with unexpected administrative duties that he could hardly have enough time during the official hours to devote to his work. Another project manager devoted to administration and external communication would have been necessary.

6.7 Testing with local specialists

- As we have predicted in our project, since we know very well the real situation of English phonetics and pronunciation education in universities, there is a general lack of local experts of English pronunciation who could meet the international standards. Among the local specialists, those who are English teachers at traditional departments of English and/or Linguistics are neither convincing in academic expertise nor personal practice. Their knowledge and expertise in the area of speech science is highly skeptical. We are looking at the problem at an even deeper level. However, scientific analysis has to be interpreted in terms of existing limits of specialists of English phonetics and pronunciation, and English teachers, we held tests with English teachers and practitioners of phonetics teaching. The result has been disappointing.

6.8 Shortage of researchers

- It would have been more effective to employ two managers, one focusing on administration and one on research and data investigation. One project manager who oversees everything and at the same time has to conduct research and routine tasks is too ideal.
- It was clearly indicated in the original proposal that we needed a researcher of the post-doctoral grade. However, the discrepancies between QEF and university employment systems have rendered this person underpaid.

6.9 Seminars held

- During the short period of re-employment of the technical manager, the technical manager has been very effective in giving holding seminars. A total of 15 seminars were delivered, addressing 1000 English teachers.

6.10 Formant extraction

- Formant extraction from segmented tokens was performed manually and far exceeded the availability of manpower. Automatic extraction would have been a faster solution but required highly sophisticated programming that can be handled only by employers of the grade of post-doctoral researchers and experienced speech engineers.

6.11 Project extension

- The period for conducting the project, originally terminated on 31st Dec 2013, was extended to 31st May 2014, without additional funding. In this connection, application for employment extension to a duration equivalent to that of unemployment, without affecting the total budget for staff employment, was attempted:



first, for the position of technical manager II, for an extension of his employment for 18 days, from 1st Jan 2014 to 18th Jan 2014; second, for the position of research assistant, for an extension of her employment for a period of 64 days, from 1st Jan 2014 to 5th Mar 2014; and third, for the position of research assistant II (IT technician), for an extension of his employment for a period of 64 days, from 1st Jan 2014 to 5th Mar 2014. Extension of the first employment had been approved and accepted whereas the approval of the remaining two came with some miscommunication and delay, and therefore were not taken up despite work being done.

6.12 Employment and re-employment

- Employment process taken by the university administration was very ineffective. For example, the employment process of the first assistant had taken nearly two months after she had started working. Her salary payment had been postponed by more than a month. This happened to all other candidates and hampered seriously their working spirit.
- Re-employment process was also highly ineffective due to university's administrative system. Because of the uncertainty of approval on both sides, the assistants were not willing to restart working for fear of no payment. By the time their positions were approved, it was already too late. Either the candidates had had other jobs or were reluctant to take up the job which lasted only for a very short period. In the end, the assistant positions were not taken up in the period of extension of the project.
- Only the intended budget for the project manager was fully utilized, however, with a postponement of employment. Practically, only the project manager had worked during the extension period.

6.13 Invitation of local English teachers and phonetics specialists

- We have attempted to invite local teachers and scholars to participate in perceptual evaluation and experiment. The majority have rejected on grounds of lack of confidence and expertise. For those few enthusiastic volunteers, results have been unsatisfactory. This shed light to the realistic problem of lack of training of our local teachers and scholars in this core part of English linguistics and education.

6.14 Appointment of overseas experts

- We are conducting a pioneer research. There is hardly a few souls in the world could help solve the problem. Our research requires an expertise and experience which go beyond many traditional boundaries. Overseas experts, mostly lacking Cantonese competence, can only see things from the point of view of mother tongue speakers of English. They tended to be very cautious. They would not be willing to take up any black-and-white commitment until they could see the full set of data available while the university administration would not process their appointment unless they made commitment. Also overseas experts were subject to the constraints of their associated institutes.
- The university administration has her interpretation as to the definitions of overseas experts, the number of hours of employment and so on, which QEF does not impose. The university administration has often superseded that of QEF, causing unpredictable blockage of payment and postponement of employment. In

the end, their appointment could not be processed and some of their work started could not be paid.

6.15 Under-estimation of hours of analysis

- Without due support by experts and specialists, the work of analysis itself should have required a full-time post-doctoral researcher. Even with the assistance of experts and specialists, we should not require such a researcher to support and integrate their consultation.

6.16 Re-employment of technical manager in the role of specialists

- Due to the lack of local expertise, our technical manager, by virtue of his cross-disciplinary background, was employed to play the role of specialists. However, the human resource department of the university first tended not to approve this solution. The difference in the administrative systems between QEF and the university have hindered immediate re-employment. It was not known if the technical manager could be employed or not. In the end, the regulations required that we had to wait for the employment of his first role to expire until we could employ him to play another role. This led to significant delay of analysis work. The number of hours of his re-employment was so limited that we could not use up the large part of budget for analysis work.

6.17 Re-direction of website

- The official website, under the PI's website, is virtually re-directed to a private server belonging to one of our staff. Since the beginning, HKU has not been able to support hosting of our website by providing enough server space for storage of our speech data. In fact, the memory space is far too small. We did not predict this and applied for this budget in the proposal. So the budget did not allow us to rent server space from ISP companies. We need another project to handle proper storage and hosting of data for public access and for the purpose of teacher training and research.

Table 1: Attainment of Objectives

Objective statement	Activities related to the objective	Extent of attainment of the objective	Evidence or indicators of having achieved the objective	Reasons for not being able to achieve the objective, if applicable
Speech data collection	<ol style="list-style-type: none"> 1. Invitation of schools 2. Design of speech recording materials 3. Speech recording trips 	100% attained	<ol style="list-style-type: none"> 1. Schools from which students' speech recordings have been collected 2. Database available 	N/A
Preparation of speech tokens for analysis	<ol style="list-style-type: none"> 1. Data error inspection 2. Segmentation of speech data 3. Programming of online speech data retrieval platform 	100% attained	<ol style="list-style-type: none"> 1. Data available 2. Working online platform 	N/A
Perceptual evaluation of speech data	<ol style="list-style-type: none"> 1. Perceptual evaluation by overseas and local experts 2. Identify and reveal distribution and patterns of errors 3. Identify the needs for correction and accent reduction 	75% achieved: Preliminary results obtained	<ol style="list-style-type: none"> 1. Classification of errors presented at public seminars 2. Email correspondence with overseas and local specialists 3. Seminars provided 	1. Difficulty and obstacles faced in inviting and recruiting overseas specialists
Acoustic analysis of speech data	<ol style="list-style-type: none"> 1. Formant extraction 2. Comparison with native productions 3. Acoustic analyses 	100% attained	<ol style="list-style-type: none"> 1. Data saved in server 2. Preliminary results have been presented and shared with English teachers through public seminars 	N/A
Development of dedicated website	<ol style="list-style-type: none"> 1. Website design, construction and management 2. Design of web interface for online access 	50% attained	http://www.speech.hku.hk/ssl/hke	<ol style="list-style-type: none"> 1. Limited manpower and working hours 2. Website server cost not budgeted



	and evaluation 3. Design of web interface for result dissemination			
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Table 2: Budget Checklist

Budget Items <i>(Based on Schedule II of Agreement)</i>	Approved Budget (a)	Actual Expense (b)	Change [(b)-(a)]/(a) +/- %
Staff Cost	\$995,268	\$983,684.98	-1.16%
Services	\$248,000	\$55,320.00	-77.69%
Equipment	\$63,900	\$55,046.00	-13.86%
General expenses	\$45,000	\$32,108.17	-28.65%



Table 3: Dissemination Value of Project Deliverables

Item description (e.g. type, title, quantity, etc.)	Evaluation of the quality and dissemination value of the item	Dissemination activities conducted (e.g. mode, date, etc.) and responses	Is it worthwhile and feasible for the item to be widely disseminated by the QEF? If yes, please suggest the mode(s) of dissemination.
Public seminars (15 seminars, totaling 38 hours)	Public seminars have been given to address a few hundred teachers.	Free public seminars with teachers, parents, students and others	N/A
Online Platform		A platform has been implemented. All data are available to those who have special interest in the data. This platform would be useful for pronunciation education and for the purpose of expert evaluation, as a separate project and continuation of the present work.	Not for the time being, but once a permanent website is secured, QEF can post the website address for others to visit.
Research data		The project has accumulated a lot of useful data regarding the specific errors in English pronunciation by Cantonese ESL learners. We are planning to publish some academic articles based on these data.	No, due to confidentiality reasons.

Table 4: Activity List

Types of activities (e.g. seminar, performance, etc.)	Brief description (e.g. date, theme, venue, etc.)			No. of participants				Feedback from participants
	Date	Time	Hrs	schools	teachers	students	others (Please specify)	
Public seminars	11 Jan 2014 (Sat)	2:00 pm - 5:00 pm	3	various	80			
	18 Jan 2014 (Sat)	9:30 am - 12:30 am	3	various	80			
	18 Jan 2014 (Sat)	2:00 pm - 5:00 pm	3	various	80			
	25 Jan 2014 (Sat)	9:30 pm - 12:30 am	3	various	80			
	25 Jan 2014 (Sat)	2:00 pm - 5:00 pm	3	various	80			
	28 Feb 2014 (Fri)	7:00 pm - 9:00 pm	2	various	30			
	1 Mar 2014 (Sat)	9:30 am - 12:30 pm	3	various	80			
	7 Mar 2014 (Fri)	7:00 pm - 9:00 pm	2	various	30			
	8 Mar 2014 (Sat)	1:30 pm - 3:30 pm	2	various	50			
	14 Mar 2014 (Fri)	7:00 pm - 9:00 pm	2	various	30			
	21 Mar 2014 (Fri)	7:00 pm - 9:00 pm	2	various	30			
	22 Mar 2014 (Sat)	9:30 am - 12:30 am	3	various	80			
	28 Mar 2014 (Fri)	7:00 pm - 9:00 pm	2	various	30			
	24 May 2014 (Sat)	9:30 am - 12:30 pm	3	1	20			
	30 May 2014 (Fri)	6:00 pm - 8:00 pm	2	1	15			

Please refer to the report for further details