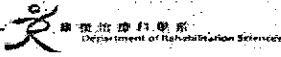




THE HONG KONG  
POLYTECHNIC UNIVERSITY  
香港理工大學



康復治療科學系  
Department of Rehabilitation Sciences



優質教育基金  
Quality Education Fund

## A Chinese handwriting Assessment Tool (CHAT) for assessing & evaluating Handwriting performance of primary school children in Hong Kong

Quality Education Fund Project: 2007/0020

Final Report (Reporting period: 1<sup>st</sup> August, 2008 – 31<sup>st</sup> May 2011)

### 1. Attainment of Objectives

This project was initially planned to be a two-year project which was scheduled between 1<sup>st</sup> August, 2008 and 31<sup>st</sup> July, 2010. However, due to the incident of SWINE FLU in 2009, most of the assessment and training schedule were interfered. An application of project extension was submitted and approved by the QEF secretary. The project completion date is extended till 31<sup>st</sup> May, 2011.

The five main objectives of this project were to:

1. develop an objective Chinese handwriting assessment tool (CHAT) for assessing handwriting performance and to collect the normative data of local Chinese children aged between 6-10 years;
2. screen and assess the handwriting performance and performance components of children with handwriting difficulties using the CHAT system;
3. identify specific deficits of children in the areas of phonological and morphological function, visual motor function, visual perceptual function and sensory-motor function, using standardized assessments;
4. evaluate the effectiveness of the comprehensive handwriting training programme (which includes basic training of performance skills and also practices of handwriting using the pattern recognition technology in helping children to improve handwriting performance);
5. transfer the training programme to teachers and parents if proven to be effective.

The project team was divided into the software development team led by [redacted] and the field team led by [redacted]. The software team began by designing a user friendly software system, Chinese Hand Writing Assessment Tool (CHAT) using JAVA system.

It was initially built up to assess:

- a. Handwriting speed (words per minute)
- b. Time per character
- c. In air time, ground time and its ratio (in air time/ground time);
- d. Pen pressure and its variability
- e. Variation of character size

The field team also started to develop the template for copying the Chinese characters based on extensive literature review and analysis of different conceptual framework, for construction of Chinese characters.

A pilot study was followed. 322 primary school students were recruited and were assessed using the CHAT system. Through the results, the sample size was subsequently calculated for the normative study. It was found to be around 900 participants. The writing template was further revised to ensure that children aged between 6-12 years old could read and write the template.

The main study was then started. Students were selected from six schools located at different regions of Hong Kong using stratified sampling method. Subject to the consent of the school principals, teachers and parents, one class was selected from each grade (grade 1-6) to join the assessment. A total of 1136 students were finally recruited.

Due to the SWINE FLU episode, the data collection was delayed for more than 7 months, and the project team had to apply for extension of project completion date such that the full set of data could be collected to formulate the norm. Fortunately, the project team managed to complete the project on time.

The Chinese Handwriting Assessment Tool (CHAT) was finally validated and the normative data for local students from grade 1 to grade 6 were collected. This serves a very good data set for discrimination of students with handwriting difficulties in an objective manner.

The second phase of study was then begun. Students who were assessed to have handwriting difficulties were invited to join the training programme to enhance their handwriting abilities. A total of 139 students were invited to join the “Interactive Computerized Handwriting Training programme (ICHTP) which was organized by occupational therapist in the team. Results from the training were extremely encouraging and details would be presented in the following report.

The third phase of the study was to implement teachers’ and parents’ training workshop to increase their awareness of handwriting problems among the primary school students and to enhance their knowledge and skills in screening, assessing and handling students with handwriting difficulties. A total of 276 teachers and 252 parents participated in the teachers’ or parents’ training workshop.

All the students’ training, teachers’ and parents’ workshop, and the evaluation of the outcomes by follow up assessment were completed in February 2011 followed by data analysis and preparation of the final report. Feedback sessions for participated schools were conducted afterward. We visited 4 schools to provide the report of the children’s performance in handwriting and get the feedback of the teachers from these participated schools. In order to share the project outcomes with professionals, teachers, parents, and public, as a bonus for this project, a one-day symposium titled “Children with Special Education Needs: Updates on Management of Children with Handwriting Difficulties” was conducted in February 2011 in the Department of Rehabilitation Science at the Hong Kong Polytechnic University.

**Table 1** summarizes and lists out the evaluation of the attainment of this project objectives. The proposed objectives are fully achieved.

**Table 1 Attainment of Objectives**

Statement objective	Activities related to the objective	Extent of attainment of objective	Evidence or indicators of having achieved the objective
To develop a Chinese Handwriting Assessment Tool (CHAT)	The concept and construct of CHAT is designed by PolyU team and the software is developed by CityU team. The validity and reliability is examined to ensure the quality and stability of the CHAT system.	Fully achieved	322 primary school students were invited to participate in the pilot study of CHAT project to examine the validity and reliability of CHAT system. The validated CHAT software is burned into CD-rom and distributed to collaborating primary schools. A user manual is also designed to facilitate teachers to use the software.
To obtain a local norm reference of handwriting performance of primary school students	1138 students (P.1-P.6) of 6 local mainstream primary schools were invited to the main study of CHAT project.	Fully achieved	A norm reference is statistically generated and a detail analysis is provided in the user manual of CHAT. The CHAT package including the software and user manual as well as the norm reference is delivered to collaborating schools.
To provide appropriate intervention and training for student with handwriting difficulties	139 students with handwriting problems received 8-sessions handwriting training (ICHTP). Occupational therapist delivered the intensive training twice a week in the collaborating schools.	Fully achieved	A training CD was given to students who received training as home exercise. A pre-training and post-training assessment was conducted to student and an assessment report for training effect was given to school/parent for reference. Two papers have been published in the international peer-review journals: 1. Computerized Visual Perception and Visual-motor Integration Training Program on Improving Chinese Handwriting of Children with Handwriting Difficulties.

			<p><i>Research in Developmental Disabilities</i>: 1552-1560. 2.</p> <p>(2011). Chinese handwriting performance of primary school children with dyslexia. <i>Research in Developmental Disabilities</i> 32: 1745-1756.</p>
To assist educational professionals with effective means in tackling handwriting problems of students without adding extra workload such that the effectiveness of curriculum teaching can be facilitated	Seven teachers' workshops (276 teachers) were conducted.	Fully achieved	Over 80% of teachers were satisfied with the content of the workshops and more than 2/3 of them appreciated the workshops were able to reinforce their knowledge in common handwriting problems. Teachers were impressed by the assessment tool and they actively participated in the discussion. They also provide us valuable opinion in refining the CHAT system in assessing children's handwriting problems.
To facilitate parent involvement and assist them in helping their children's handwriting performance at home	Four parents' workshops (252 parents) were conducted.	Fully achieved	Over 85% of parents satisfied with the content of the workshops. The workshops can help them to have a better understanding of their children's needs. Parents appreciated this kind of informative talk and have platform to share the children's problem with other parents. They can also take the opportunity to ask for solutions/suggestions on tackling the handwriting problems of their children.
Feedback Session for Participated Schools	Four feedback session were conducted (80 teachers)	Bonus	4 schools were visited

## **2. Project Impact on Learning Effectiveness, Professional Development and School Development**

### *Impact on Learning Effectiveness of Students*

A total of 139 students (P.1 to P.6) with SEN or screened to have handwriting problems by CHAT received handwriting training under supervision of occupational therapists. 8 sessions of training using the Interactive Computerized Handwriting Training Programme (ICHTP) were arranged for the participants. The ICHTP aimed to improve handwriting performance of children by enhancing basic performance components of handwriting, i.e. visual perceptual and visual motor integration abilities.

Among the measurements for handwriting performance, handwriting speed was significantly improved after the training for both groups. Significant decrease in average pen pressure and standard deviation (SD) of pen pressure was observed in both groups. However, no significant improvement was found in the measures of time ratio, accuracy, character size variation and number of characters exceeding grid. This indicated that children displayed a better force modulation so that they would be less prone to fatigue in handwriting.

Visual perceptual and ocular motor skills also improved for the children that received training, which were important components in recognizing and perceiving word structure. In addition, the training produced significant improvements in ocular motor skills, which also helped in reducing chance of skipping lines and words.

### *Impact on Professional Development of Teachers*

One major component in this project was to launch teachers' educational workshops. Thirteen workshops had been organized to enhance teachers' knowledge and understanding on strategies in facilitating handwriting performance through classroom training. Totally 276 teachers had participated in the workshop. The CHAT assessment system was also introduced to school. Teachers could apply this quick screening tool to notice any potential handwriting problems of students. Upon the CHAT demonstration, teachers were encouraged to use the CHAT system; they were impressed with the CHAT system and actively provided valuable advises in improving the system. Community occupational therapy services were also introduced during the workshops, teachers became more familiar with related organizations and even enhance network.

Feedbacks on the workshops obtained from the teachers (Appendix I) showed that they, as a whole, appreciated the training workshops with about 80% of them rated at least 4 on how much they were satisfied with the workshops (1 being lowest, 5 being highest). Moreover, around 80% of teachers thought that the workshop was effective in enhancing their professional development. Over 90% of teachers expressed that the workshops could help them better understood about the handwriting problems of students and know more methods to help out the children.

### *Impact on School Development*

With the trend of inclusive education, teachers are facing children with wider scope and variety of learning problems. Handwriting problems could happen in any children despite that they have developmental disabilities or not. Teachers and parents are

facing difficulties on teaching and need to widen their knowledge. The schools receive many enquiries from parent about different types of writing problems and ways of solving it. Foreseeing the increasing challenge that teachers and parents would face, several teachers and parents workshops were organized. The aim of the workshops was to raise teachers and parents knowledge on common handwriting problems of children and to introduce the existing services of helping children with relative needs. With better understanding of handwriting problems, teachers and parents would be able to recognize the unusual handwriting performance of children and thus the children could receive early assessment and intervention.

#### Impact on Parents

Launching children training and parent workshop by occupational therapists expert in pediatrics in primary schools became important. More than 80% of parent participants (Appendix II) appreciated the workshop as it raised their awareness and improve their knowledge about children with handwriting difficulties, as well as the methods and skills in enhancing children's Chinese handwriting performance. Moreover, parents from the workshop generally showed positive attitude to the schools in organizing this kind of workshops more frequently, and would like the school to have more events and handouts to teach them on training their children. The workshops were not simply an informative talk but also a platform that parents are able to express their thoughts and need to school while teachers and the school could know more about the parents' expectation to school. This kind of workshops provided an opportunity for enhancing parents-teachers communication and feedbacks from parents could provide a direction for school in future development.

### **3. Cost-effectiveness**

A summary of the budget and expenditure is reported in **Table 2**. It is important to note however, that items where budget and expenditure were reallocated has been reported in our first progress report.

We encounter great difficulties in recruitment of qualified Occupational Therapist I and II due to the severe shortage of OT in the local market. Therefore, in our new budget proposal, we changed the appointment of one OT I to one OT II, part time OT/project assistants/student helpers such that we could maintain a more flexible staff strength to cope with our final work on this project.

One the other hand, we also refine the salary of project assistants according to their education levels, experiences and/or job nature, i.e. salary ranged from HK\$10,000 to HK\$ 13,500. Since some staff resigned before the proposed employment period, we rearranged the remaining budget from each post to employ some part time staff for easier employment. In addition, we used the amount of \$70,000 to print out the CHAT instructors' manual and the CD software of CHAT, the teachers' training manual and the parents' training manual. Our goal is to distribute the CHAT package to the partnership schools such that they can continue the assessment, screening. The teachers and parents may also have the opportunities to know more about some strategies in managing children with handwriting difficulties. In addition, we were able to complete the project well within the original budget, such that approximately \$9,398 will be returned to the QEF.

**Table 2 Budget Checklist**

<b>Budget Items</b>	<b>Approved Budget</b>	<b>Actual Expense</b>	<b>Balance</b>
Staff Cost	2,254,900.00	2,251,733.22	3,166.78
Equipment	105,000.00	106,215.00	(1,215.00)
General expenses	99,250.00	91,803.38	7,446.62
Total expenditure	2,459,150.00	2,449,751.60	9,398.40

**4. Deliverables and Modes of Dissemination**

After this project, (1) Health care and educational professions could have a common parameter and tool in evaluating students' handwriting performance. (2) A better understanding of the underlying problems encountered by children with handwriting difficulties in terms of both handwriting process and the product; (3) Enhancement of awareness to handwriting problems among students in primary schools. It is important to note that the newly developed CHAT system can be used to assess the students' handwriting problems in an objective, quantified way and a norm on primary students' handwriting performance has been created in Hong Kong after this project. **Table 3** provides information on the deliverables and mode we generated from the project. **Figure 1-Figure 4** shows the photos of Teacher Manual, Parent Manual, User Manual, and Software CD of the CHAT system. Two educational booklets introduce the handwriting development among different stages of children; types of pencil grip; handwriting checklist for quick screening of handwriting problems; home exercises (for parent) and classroom/examination modification (for teachers). The educational booklets will be distributed to teachers and parents free of charge.

**Table 3 Deliverables and Modes of Dissemination**

<b>Item description</b>	<b>Evaluation of the quality and dissemination value of the item</b>	<b>Dissemination activities conducted and responses</b>	<b>Is it worthwhile and feasible for the item to be widely disseminated by the QEF? If yes, please suggest the model(s) of dissemination.</b>
CHAT CD-ROM	The assessment system is in a CD-ROM format, which is reusable and easy for storage. The school teacher can conduct handwriting assessment once installed the CD in any computer.	Distributed to 6 collaborating schools with teachers' workshops were conducted.	No, because there is a need for training prior to use of CHAT.
CHAT user manual	As the manual states the assessment objectives and illustrates the operation of each function. The norm reference is printed in User Manual and The school teacher can conduct handwriting training without the presence of occupational therapist. So the skills can transfer from occupational therapist to the school.	Distributed to 6 collaborating schools with teachers' workshops were conducted.	No, because there is a need for training prior to use of CHAT.
Educational Booklet for Parents and Teachers	The educational booklets provide additional information for readers on identifying handwriting problems, simple training activities are recommended to parents and several examination modulations are recommended to teachers.	The 4 types of booklets are freely distributed to parents and teachers who attended the workshops. 1. Parents booklet 2. Teacher booklet 3. Userprocess booklet 4. Userproduct booklet	Yes, they can be freely distributed to parents and teachers who are interested in the issue of Children's handwriting.



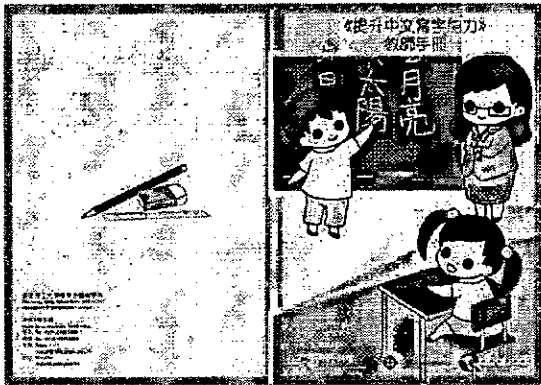


Figure 1. Teacher Manual



Figure 2. Parent Manual

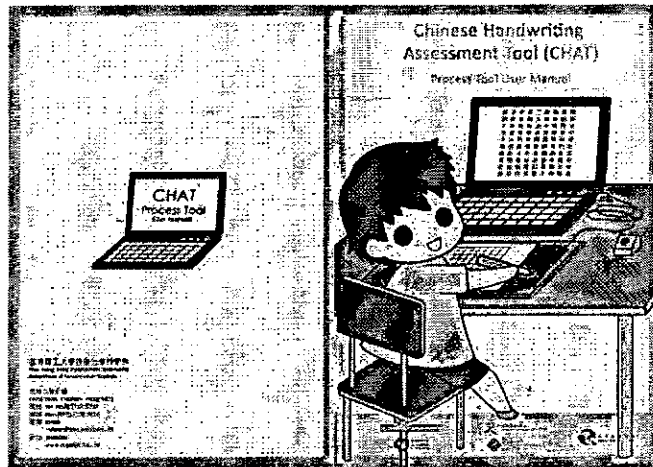


Figure 3. CHAT User Manual

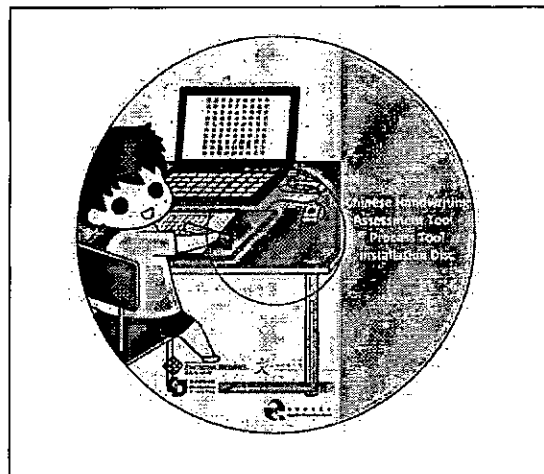


Figure 4. CHAT Software CD

## 5. Activity List

### 1. Normative study for local primary students' handwriting performance

One of the major objectives of this CHAT project is to obtain a local norm reference of the handwriting performances of primary school students. We invited 1136 children to form the norm group. **Tale 4** shows the schedule of the normative study. They were randomly selected from six primary schools in Hong Kong. The original sample (N=1136) consisted of 642 boys (56.5%) and 494 girls (43.5%). The age of the participants varied from 6.06 to 14.20 years. Table 5 and Table 6 show the grade distribution of this original sample. Between grade 1 and 6, the distribution of subjects was quite even, with a variation of 15.3% to 19.7% of the sample. It also shows the proportion of each of six schools occupied about 15% of the original sample except School A had occupied a higher proportion rate of 21.2%. Table 7 shows the example of norm reference for CHAT items (Grade 1 to Grade 2).

For each primary grade, the accuracy measures and handwriting time of each student were converted into standardized z scores, i.e.  $Z\text{-score} = (\text{raw score } X - \text{mean score } X) / \text{standard deviation of score } X$ . Then the handwriting-time z scores was subtracted from accuracy z scores to compute the performance composite z score, i.e.  $\text{Composite } Z \text{ score} = \text{Accuracy } Z \text{ score} - \text{Time } Z \text{ score}$ .

For interpretation, those students wrote with high accuracy would result in a high positive Z score for accuracy and fast hand-writer would yield a lower handwriting time and thus result in a negative z score for handwriting time. Consequently, it would yield a positive composite z score indicating high overall handwriting performance for the student.

**Table 4. Activity List-Normal Study**

Date	School	Nature	Number of participants (Targets:900 students)
2-3, 16 Apr 2009	S.K.H.T.K.O. Kei Tak Primary School	Pilot (v.2 template)	177
25-27 May 2009	T.W.S. St Bonaventure Catholic Primary School	Validation	241
22-26 Jun 2009	S.K.H. Tsing Yi Chu Yan Primary School	Main study	175
20-22 Jan 2010	S.K.H. Ling Oi Primary School	Main Study	188
15, 18-19 Jan 2010	S.K.H. Kam Tin St. Joseph's Primary School	Main Study	182
31 <sup>st</sup> Mar, 12 <sup>th</sup> -13 <sup>th</sup> Apr 2010	S.K.H. Kei Fook Primary School	Normative study	168
<b>Current Achieved:</b>			<b>1136/900 students</b>

Table 5 Grade distribution of the original sample

Grade	Sample (n)	%
1	219	19.7
2	175	15.7
3	176	15.8
4	185	16.6
5	189	17
6	170	15.3
Total	1136	100

Table 6. Distribution of Geographical Region of Participants

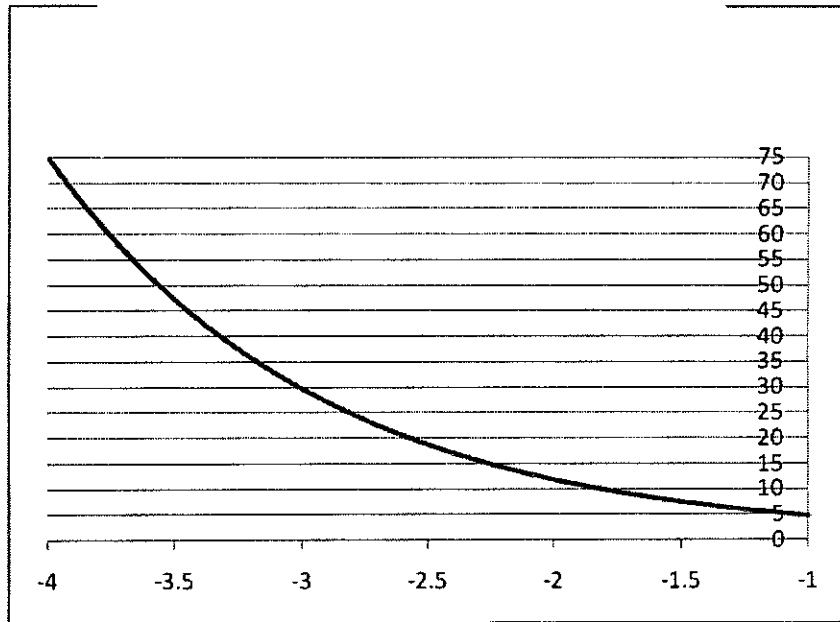
Grade	Sample (n)	%
A	241	21.2
B	175	15.4
C	188	16.5
D	189	16.6
E	168	14.8
F	175	15.4
Total	1136	100

Table 7. Example of Norm Reference for CHAT items (Grade 1 to Grade 2)

Grade Age (years)	p.1 (n=149) <7		p.2 (n=120) 7-7.99	
	Mean	SD	Mean	SD
handwriting speed (words/min)	6.23	1.62	8.50	2.00
Total handwriting time (second)	923.18	233.04	668.60	149.16
Ground time (second)	307.15	95.91	232.33	66.41
Air time (second)	616.03	189.16	436.26	117.59
Time ratio (air/ground)	2.14	0.76	1.98	0.66
Mean pen pressure (Newton)	1.14	0.62	1.16	0.62
Standard deviation of pen pressure in copying	0.75	0.36	0.76	0.35
copying time per second	8.47	4.10	5.31	1.81
Standard copying time	11.81	16.03	5.78	5.20
size of character (millimeter)	12.81	1.27	11.99	1.50
Standard deviation of the size of characters	2.08	0.50	1.89	0.33

#### *Estimation of Extra time Allowance (ETA) for Students with Handwriting Problems*

With the norm of handwriting performance of students, teachers and schools can use this information to estimate examination adjustment for students. Prior to ETA estimation, the handwriting speed for each student is converted into z-score. If the z-score of a student is greater than -1, no ETA will be allocated. Under the constraint that the ETA will be given from 5% to a maximum of 75%, an exponential model, i.e.  $ETA = 1.832 * \exp(b * -0.928)$  is established from our current sample. For parameter estimation of the exponential model, the ETA (the values of dependent variable for the exponential model) for each student should be known beforehand with previous simple linear model assumed by Hong Kong Examination and Assessment Authority. The R-square of our established exponential model is close to 0.6 which is acceptable. Students with z-score equal to 1.0 will be allocated with a minimum ETA of 5% and those with Z-scores less than 4.0 will be allowed to receive a maximum ETA of 75%. Students with z-score between -1.0 and -4.0 will be allocated to receive a corresponding % of ETA which is estimated through aforementioned equation model. The **Figure 5** shows the nonlinear relationship between ETA allocation and z-score of the handwriting speed.



**Figure 5 Allocation (%) versus z-score of handwriting speed**

**2. Students' training, Teachers' and Parents' Training Workshops, and Feedback Session for Participated Schools**

Table 8-Table 11 provides a summary listing student training (Table 8), Teachers' workshop (Table 9) and the Parents' training workshop (Table 10),

**Table 8. Activity List-Student Training**

Date	School	Nature	Number of participants (Targets: 120)
Nov & Dec 2008 Feb & Mar 2009	S.K.H. Tsing Yi Chu Yan Primary School	ICHTP	16
May 2009	S.K.H.T.K.O. Kei Tak Primary School	ICHTP	6
Sep-Oct 2009	S.K.H.T.K.O. Kei Tak Primary School	ICHTP	15
Sep-Oct 2009	S.K.H. Kam Tin St. Joseph's Primary School	ICHTP	21
Nov-Dec 2009	S.K.H.T.K.O. Kei Tak Primary School	ICHTP	21
Jan-Feb 2010	S.K.H. Tsing Yi Chu Yan Primary School	ICHTP	7
Apr-May 2010	S.K.H. Ling Oi Primary School	ICHTP	36
Mar-Apr 2010	S.K.H. Kei Fook Primary School	ICHTP	17
<b>Current Achieved:</b>			<b>139/120 students</b>

**Table 9. Activity List- Teachers' Workshop**

Date	School	Nature	No. of participants (Targets: 200)
7 <sup>th</sup> October 2009	S.K.H.T.K.O. Kei Tak Primary School	Teachers' workshop	34
2 <sup>nd</sup> March 2010	The Hong Kong Polytechnic University	Teachers' workshop	31
17 <sup>th</sup> November 2010	The Hong Kong Polytechnic University	Teachers' workshop	51
17 <sup>th</sup> December 2010	S.K.H. St Timothy Primary School	Teachers' workshop	30
12 <sup>th</sup> January 2011	S.K.H. Tsing Yi Chu Yan Primary School	Teachers' workshop	52
24 <sup>th</sup> January 2011	The Hong Kong Polytechnic University	Teachers' workshop	40
22 <sup>nd</sup> February 2011	The Hong Kong Polytechnic University	Teachers' workshop	38
<b>Current Achieved:</b>			<b>276/200 teachers</b>

**Table 10. Activity List- Parents' Workshop**

Date	School	Nature	Targets served (Targets: 200)
7 <sup>th</sup> October 2009	S.K.H.T.K.O. Kei Tak Primary School	Parents' Workshop	40
14 <sup>th</sup> January 2010 & 16 <sup>th</sup> February 2011	S.K.H. Kei Fook Primary School	Parents' Workshop	56 +52
8 <sup>th</sup> May 2010	S.K.H. Kam Tin St. Joseph's Primary School	Parents' Workshop	40
13 <sup>th</sup> November 2010	S.K.H. Tsing Yi Chu Yan Primary School	Parents' Workshop	64
<b>Current Achieved:</b>			<b>252/200 parents</b>

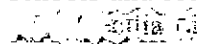
### 3. Feedback sessions with the participating schools

Upon the completion of the whole project, feedback seminars were arranged by the project team to the participating schools (table 11). Most of the school principals and teachers were impressed by the quality of the project and they appreciated the project team's effort to prepare a normative record of students' performance in Chinese handwriting using the CHAT system. In addition, they were very interested to compare their students' performance with the normative data that the project team has prepared. They also show interest to continue the collaboration with the PolyU project team to look into the intervention strategies of those children with handwriting difficulties.

**Table 11. Activity List- Feedback Session for Participated Schools**

Date	School	Nature	Targets served
18th May 2011	S.K.H. Kei Fook Primary School	Feedback Session	20
20th May 2011	S.K.H. Ling Oi Primary School	Feedback Session	25
21st June 2011	S.K.H. Tsing Yi Chu Yan Primary School	Feedback Session	10
25th August 2011	S.K.H. Kam Tin St. Joseph's Primary School	Feedback Session	25
<b>Current Achieved:</b>			<b>80 teachers</b>

### 4. Symposium on "Children with Special Education Needs: Updates on Management of Children with Handwriting Difficulties"

In order to share the project outcomes with professionals, teachers, parents, and public, a one-day large-scale symposium titled "Children with Special Education Needs: Updates on Management of Children with Handwriting Difficulties" was conducted on 19th February 2011 in the Department of Rehabilitation Science at the Hong Kong Polytechnic University. It was well-attended by over 130 participants from all fields related to children development. Seven invited speakers in education sector and child care experts in rehabilitation sector from different institutes of Taiwan and Hong Kong share their experiences in managing children with handwriting problems in schools and recent research on children with dyslexia (Figure 6). Our project leader,  introduced the current status on "Research for Children with learning difficulties" in the seminar (Figure 7a, Figure 7b). The seminar received enthusiastic responses from both the public and professionals.

# Children with Special Educational Needs:

## Updates on Management of Children with Handwriting Difficulties

A one-day symposium to share on recent local studies on Chinese handwriting difficulties encountered by mainstream primary students

Date: 19th February, 2011 (Saturday)  
Time: 9:15 am - 5:30pm  
(Registration starts at 8:45 am)

Venue: Room TU103,  
The Hong Kong Polytechnic  
University

Language of Presentation: English  
Target Audience: Occupational Therapists,  
Teachers, Principals, Special Education Experts,  
Psychologists, etc.

Registration Fees:  
HK \$200 for practicing OTs  
HK \$300 for all other disciplines  
Registration forms can be downloaded at:  
PolyU Dept. of RS Website:  
<http://www.rs.polyu.edu.hk/>  
\* Due to limited seating space, seats will be  
allocated by lot drawing. Successful applicants  
will be notified on or before 4th Feb 2011 (Fri)

CPD: 6 points for OTs

Further Information and Enquiries:  
Tel: [Redacted]  
Email: [Redacted]

### Guest of Honour:

### Speakers:

[Redacted]  
Associate Professor,  
Department of Special Education and Counselling,  
The Hong Kong Institution of Education

[Redacted]  
Director of Pediatric Rehabilitation,  
Department of Physical Medicine and Rehabilitation,  
Chang Gung Memorial Hospital, Taiwan

[Redacted]  
Associate Professor,  
Department of Applied Social Sciences,  
The Hong Kong Polytechnic University

[Redacted]  
Assistant Professor,  
Department of Computer Science,  
City University of Hong Kong

[Redacted]  
Senior Occupational Therapist,  
Princess Alexandra Red Cross Residential School

[Redacted]  
Senior Occupational Therapist,  
Hong Kong Red Cross John F. Kennedy Centre

[Redacted]  
Professor,  
Department of Rehabilitation Sciences,  
The Hong Kong Polytechnic University



Figure 6 Symposium on Children with Special Education Needs: Updates on Management of Children with Handwriting Difficulties



**Figure 7a** Pro... share the QEF research findings (above), and have a group photograph with the invited guest speakers (below) in the symposium

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#### **4. Sharing Seminar**

In order to share the project outcomes with professionals, teachers, parents, and public, an Inter-school Resource Center Sharing Seminar on Supportive Experience was conducted on 24<sup>th</sup> June 2011 as a bonus for this project (Figure 8-Figure 10).


 二零一零至二零一一年度聯校資源中心  
 支援經驗分享會
 

**主題：** 支援經驗分享

**內容包括：**

- (一) 專題講座：書寫中文的挑戰：研究及經驗分享  
香港理工大學康復治療科學系教授 主講
- (二) 香港紅十字會雅麗珊郡主學校暨資源中心  
與伙伴學校攜手合作經驗分享(小學分享)
- (三) 中華基督教會基順學校暨資源中心  
與伙伴學校攜手合作經驗分享(中學分享)
- (四) 來年度資源中心伙伴學校與暫讀計劃介紹  
及申請詳情

**學行日期：** 二零一一年六月廿四日(星期五)  
**時間：** 下午2:00 - 5:20  
**地點：** 教育局九龍塘教育服務中心平台EP12室  
**報名方法：** 透過學校報名  
**對象：** 各中、小學校長、主任及教職員

**歡迎參加!**



Figure 8 2011-2012 Inter-school Resource Center Sharing Seminar on Supportive Experience

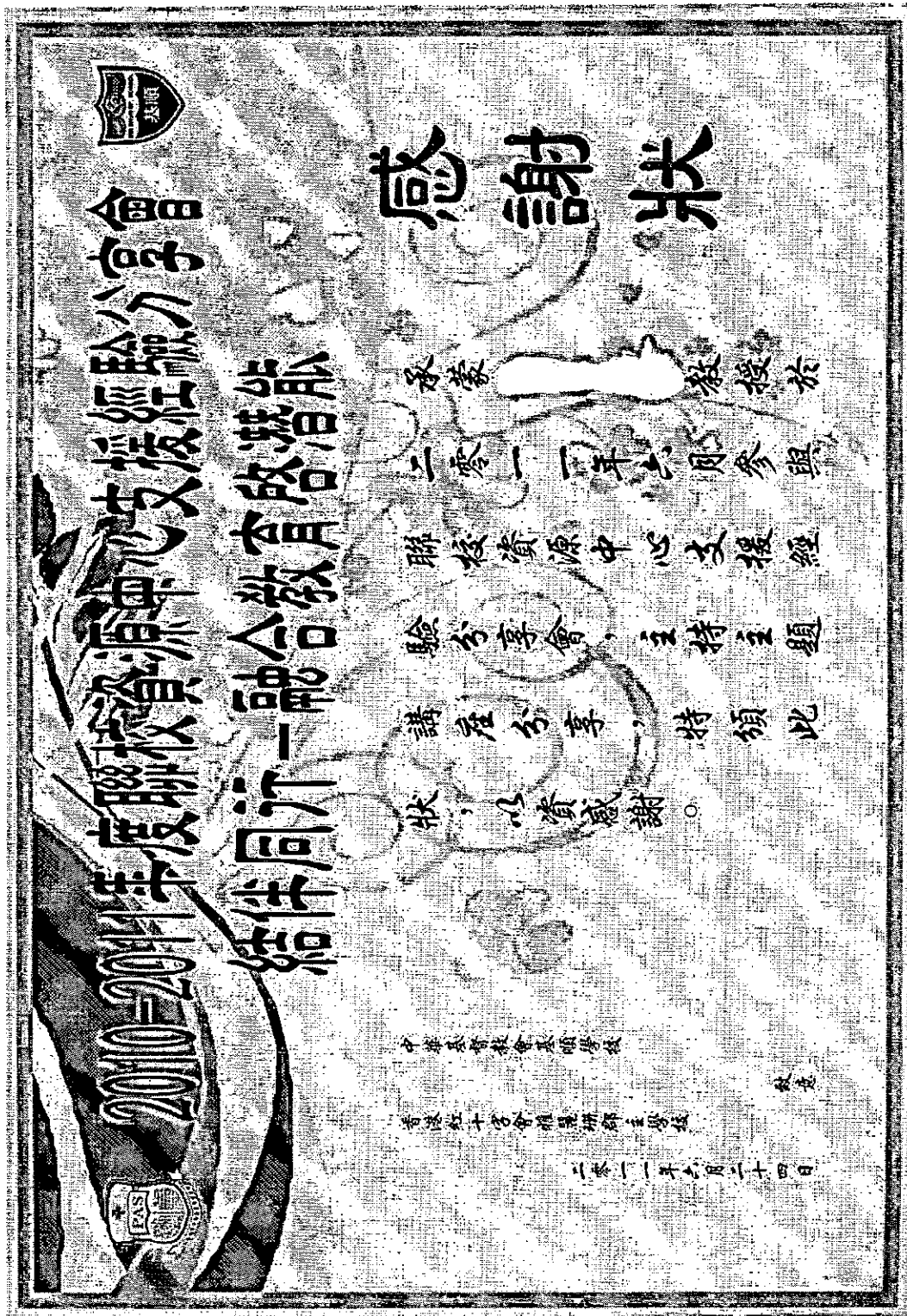


Figure 9 Presentation of Acknowledgment Certificate from the Organization Committee of the Sharing Seminar

香港紅十字會雅麗珊郡主學校暨資源中心  
中華基督教會基順學校暨資源中心

## 結伴同行－融合教育啟潛能

2010-2011 聯校資源中心支援經驗分享會

日期：2011年6月24日(星期五)  
時間：下午2:00-5:20  
地點：教育局九龍塘教育服務中心平台 EP12 室  
九龍塘沙福道19號

### 程序

1:45 - 2:00	登記(社會服務單位資源分享)
2:00 - 2:15	嘉賓致辭  總課程發展主任(課程發展處特殊教育需要組)
2:15 - 2:50	演講  題目：書寫中文的挑戰：研究及經驗分享 <i>Challenges in Chinese Handwriting: Research and Clinical Practice</i>  主講：  香港理工大學康復治療科學系教授及副系主任 <i>Professor &amp; Associate Head Department of Rehabilitation Sciences The Hong Kong Polytechnic University</i>
2:50 - 3:20	分享(一) 香港紅十字會雅麗珊郡主學校暨資源中心
3:20 - 3:35	小休(社會服務單位資源分享)
3:35 - 4:05	分享(二) 天主教善導小學(雅校伙伴學校)
4:05 - 5:05	分享(三)及(四) 中華基督教會基順學校暨資源中心及 彩虹邨天主教英文中學(基順伙伴學校)
5:05 - 5:20	簡介申請下年度資源中心服務流程 / 答問時間

Figure 10 Time Schedule of the Sharing Seminar

## **6. Difficulties Encountered and Solutions Adopted**

The incidence of Swine Flu has greatly affected the progress of the study. All the schools were suspended from May 2009 onwards till end of August 2009. Thus, all assessments and training workshops had to be deferred until later stage.

In addition, the data collection and analysis were also impaired somewhat by the frequent changes of the research staff and Occupation Therapist during the study. We encounter great difficulties in recruitment of qualified Occupational Therapist I and II due to the severe shortage of OT in the local market. Therefore, we changed the appointment of one OT I to one OT II, part time OT/project assistants/student helpers such that we could maintain a more flexible staff strength to cope with our final work on this project. Thus the project applied for extension 8 months to 31st March 2011 in order to complete the targeted numbers of training and assessments.

A validated Chinese Handwriting Assessment Tool (CHAT) had been developed and a local norm reference of handwriting performances of mainstream primary schools was created after we finished this project. The 8-sessions intensive handwriting training also seemed effective for the pupils with handwriting difficulties. There are still areas for further development. Teachers who participated in this project commonly complained that the trouble problems of their pupils faced in their learning are more than just handwriting difficulties, there are still emotional, behavior, health, and physical issues. Thus a single training model, such as visual training, muscle exercises, or the intensive handwriting training used in the current project, is not the one solution for all the problems in these pupils. A more comprehensive school-based training programme should be developed in the future using multimedia and IT that focused on the students with different health or educational deficits.

In order to ensure the interests and sustainability of assessment and training of children with handwriting difficulties, parents and teachers' training workshops were conducted. enhance their abilities to continue the training programme and incorporate it on the students with this needs after this project is finished. Feedbacks from the workshops showed that teachers appreciated the training programme and ~80% of teachers thought that the workshop was effective in enhancing their professional development. Over 90% of teachers expressed that the workshops could help them better understood about the handwriting problems of students and know more methods to help out the children. However we had to shelve some new knowledge transfer plan to the public due to lack of funding in the current project. We will continue to recommend our deliverables to teachers and parents if more research funding was devoted in the future.

## Appendix I: Feedback from Teacher Workshops

No. of teachers workshops: 7

Response rate: 248/276 teachers

Questions	Satisfaction				
	5 (Highest)	4	3	2	1 (Lowest)
1. The date of the workshop is suitable.	41.18%	52.60%	5.88%	0.35%	0.00%
2. The duration of the workshop is suitable	36.68%	55.36%	6.23%	1.38%	0.35%
3. The venue of the workshop is suitable.	43.60%	51.21%	4.84%	0.35%	0.00%
4. The speaker presents the topic clearly	38.41%	54.33%	6.23%	1.04%	0.00%
5. The content of the workshop is useful to my teaching.	35.29%	55.71%	4.84%	0.35%	0.00%
6. This workshop can raise my knowledge about the common problems of Chinese handwriting encountered by children	31.49%	59.17%	8.65%	0.69%	0.00%
7. This workshop can raise my knowledge on methods and skills in enhancing children's Chinese handwriting performance	19.38%	55.71%	19.72%	3.46%	0.35%
8. This workshop can facilitate me to help children in classroom.	21.80%	56.06%	20.07%	2.08%	0.00%
9. This workshop can enhance my professional development	21.45%	61.25%	14.53%	1.73%	0.00%
10. Overall, I am satisfied with the workshop.	25.61%	64.36%	8.65%	1.04%	0.00%

## Appendix II: Feedback from Parents' Workshops

No. of parents' workshops: 4

Response rate: 221/252 parents

Questions	Satisfaction				
	5 (Highest)	4	3	2	1 (Lowest)
1. The date of the workshop is suitable.	56.17%	31.06%	10.64%	1.70%	0.43%
2. The duration of the workshop is suitable.	51.49%	30.64%	14.47%	2.55%	0.85%
3. The venue of the workshop is suitable.	64.26%	28.51%	6.81%	0.00%	0.43%
4. The content of the workshop is useful.	59.15%	30.64%	8.94%	0.85%	0.43%
5. The speaker presents the topic clearly.	56.17%	35.74%	7.23%	0.43%	0.43%
6. This workshop can raise my knowledge about the common problems of Chinese handwriting encountered by children.	50.21%	39.15%	10.21%	0.00%	0.43%
7. This workshop can raise my knowledge on methods and skills in enhancing children's Chinese handwriting performance.	47.23%	40.85%	11.06%	0.43%	0.43%
8. This workshop can facilitate me to help children at home.	49.79%	37.87%	11.91%	0.00%	0.43%
9. This workshop can enhance my knowledge in seeking professional support in the community.	44.68%	40.00%	13.62%	1.28%	0.43%
10. Overall, I am satisfied with the workshop.	51.91%	38.30%	9.36%	0.00%	0.43%