EVALUATION OF THE EFFECTIVENESS OF A LITERACY INTERVENTION PROGRAM ON ENHANCING SCHOOL OUTCOMES FOR SECONDARY STUDENTS WHO ARE HAVING DYSLEXIA AND SPECIFIC READING AND WRITING DIFFICULTIES IN HONG KONG

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Evaluation of the Effectiveness of a Literacy Intervention Program on Enhancing School Outcomes for Secondary Students Who are having Dyslexia and Specific Reading and Writing Difficulties in Hong Kong

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CERTIFICATE OF ORIGINALITY

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Tam, Irelan Oi Lan

Dedication

This thesis is dedicated to all teachers trying to make a difference in the lives of student learners who struggle with dyslexia. I hope that the teachers could be provided with sufficient resources and support to meet the developmental and learning needs of the students with dyslexia.

This thesis is also dedicated to the school students for whom classroom learning is difficult and arduous. Finally, I sincerely hope that the students would soon become self-regulated learners and able to achieve their highest academic goals.

ABSTRACT

Students with dyslexia are reported to encounter significant difficulties in reading and writing. This often results in academic problems, which may lead to psychological issues such as lack of motivation in classroom learning, low self-esteem and school discipline problems etc. The intervention programs in Hong Kong focused mainly on primary students and there were limited published studies on the effectiveness of these intervention programs as well as lack of studies on the effectiveness of the specialized training provided to the teachers to teach secondary students with dyslexia.

This study aimed to evaluate the effectiveness of a structured literacy intervention program dedicated for secondary school students with dyslexia. The intervention program was one of the very first local studies using small-size, classroom-based and split-group intervention setting. The program strategies included over 100 hours of teachers' training on curriculum planning and intervention strategies as well as co-teaching conducted by Professional Specialist teachers in daily intervention lessons for both Chinese and English language, including both phonological and literacy content, throughout one academic year with approximately 160 intervention hours.

This study adopted a mixed method design with quantitative and qualitative approaches. For the quantitative part, quasi-experimental design was adopted with three schools as intervention schools (116 students) and three schools as control schools (98 students). Students were assessed on their academic performance using locally developed assessment instruments and they were also requested to complete questionnaires on their learning outcomes before and after intervention. Teachers were requested to complete a questionnaire on teacher efficacy before and after intervention.

The quantitative outcomes of the quasi-experimental study and qualitative analysis both showed positive change in students' learning outcomes and some limited improvement in their academic achievement. The implication from the study showed that with appropriate instruction, in a small-size,

classroom-based and split-group intervention setting through an intensive daily intervention, secondary school students with dyslexia showed improvement in behavioral and cognitive aspects which would be likely conducive to future success in academic learning.

In addition, findings from qualitative interview with school principals and teachers highlighted the challenges of future sustainability of the intervention program. Concerns included insufficient teaching resources, teachers' knowledge and confidence in integrating intervention content into school curriculum and skills in managing classroom behavior in an inclusive educational environment. This indicated the critical importance of school level support in the provision of teaching and educational resources, principal's leadership in supporting continuous professional development for teachers to equip them with pedagogical skills and intervention strategies to enhance teaching practices.

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I would like to sincerely thank the school principals and school teachers who provide comments and suggestions on the intervention program. Without their contributions, I would never have finished the qualitative research and analysis.
I also want to thank Ms Krissie Tam for the support in data collection, data input and research review.

The study is dedicated to my mother and my husband as they always believe in me and give their unconditional love and never-ending support especially when I was busy on the project. Finally, it is my hope the outcomes of this study will be the motivation to support the students and the teachers reaching their highest personal goals.

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CHAPTER 1 INTRODUCTION

This was a research study on the evaluation of the effectiveness of a structured literacy intervention program on enhancing the academic achievement and learning outcomes of secondary school students with dyslexia in the Hong Kong context.

1.1 DEFINITION OF DYSLEXIA

According to the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V; American Psychiatric Association, 2013), dyslexia is defined as “a pattern of learning difficulties characterized by problems with accurate or fluent word recognition, poor decoding, and poor spelling abilities”(American Psychiatric Association, 2013, p.67). It is regarded as “one of the most common manifestations of specific learning disorder” (American Psychiatric Association, 2013, p.68). DSM-V (American Psychiatric Association, 2013) defines specific learning disorder as follows:

> Specific learning disorder, as the name implies, is diagnosed when there are specific deficits in an individual's ability to perceive or process information efficiently and accurately. This neurodevelopmental disorder first manifests during the years of formal schooling and is characterized by persistent and impairing difficulties with learning foundational academic skills in reading, writing, and/or math. The individual's performance of the affected academic skills is well below average for age, or acceptable performance levels are achieved only with extraordinary effort. Specific learning disorder may occur in individuals identified as intellectually gifted and manifest only when the learning demands or assessment procedures (e.g., timed tests)

pose barriers that cannot be overcome by their innate intelligence and compensatory strategies. For all individuals, specific learning disorder can produce lifelong impairments in activities dependent on the skills, including occupational performance. (American Psychiatric Association, 2013, p.32)

According to DSM-5, there are four diagnostic criteria to be met which are based on a clinical synthesis of the individual's history including developmental, medical, family, educational, school reports, and psychoeducational assessment (American Psychiatric Association, 2013, p.66). The four criteria are:

Criteria (A): Difficulties learning and using academic skills, as indicated by the presence of at least one of the following symptoms that have persisted for at least 6 months, despite the provision of interventions that target those difficulties (American Psychiatric Association, 2013, p.66):

1. Inaccurate or slow and effortful word reading (e.g., reads single words aloud incorrectly or slowly and hesitantly, frequently guesses words, has difficulty sounding out words).
2. Difficulty understanding the meaning of what is read (e.g., may read text accurately but not understand the sequence, relationships, inferences, or deeper meanings of what is read).
3. Difficulties with spelling (e.g., may add, omit, or substitute vowels or consonants).
4. Difficulties with written expression (e.g., makes multiple grammatical or punctuation errors within sentences; employs poor paragraph organization; written expression of ideas lacks clarity).

5. Difficulties mastering number sense, number facts, or calculation (e.g., has poor understanding of numbers, their magnitude, and relationships; counts on fingers to add single-digit numbers instead of recalling the math fact as peers do; gets lost in the midst of arithmetic computation and may switch procedures).
6. Difficulties with mathematical reasoning (e.g., has severe difficulty applying mathematical concepts, facts, or procedures to solve quantitative problems).

Criteria (B): The affected academic skills are substantially and quantifiably below those expected for the individual's chronological age, and cause significant interference with academic or occupational performance, or with activities of daily living, as confirmed by individually administered standardized achievement measures and comprehensive clinical assessment. For individuals age 17 years and older, a documented history of impairing learning difficulties may be substituted for the standardized assessment (American Psychiatric Association, 2013, p.67).

Criteria (C): The learning difficulties begin during school-age years but may not become fully manifest until the demands for those affected academic skills exceed the individual's limited capacities (e.g., as in timed tests, reading or writing lengthy complex reports for a tight deadline, excessively heavy academic loads) (American Psychiatric Association, 2013, p.67).

Criteria (D): The learning difficulties are not better accounted for by intellectual disabilities, uncorrected visual or auditory acuity, other mental

> or neurological disorders, psychosocial adversity, lack of proficiency in the language of academic instruction, or inadequate educational instruction. (American Psychiatric Association, 2013, p.67)

According to International Classification of Disease (ICD-10: World Health Organization, 1992), Specific Reading Disorder is “a specific and significant impairment in the development of reading skills, which is not solely accounted for by mental age, visual acuity problems, or inadequate schooling” (World Health Organization, 1992, p192).

On the other hand, the term ‘developmental dyslexia’ was used in the 20th century in the case of children who, despite attaining an appropriate intellectual level with typical opportunities to learn in the classroom, exhibited severe reading difficulties. Lam (2009) specified that the term ‘Specific Learning Disabilities’ (SLD) was broadly used to describe larger sets of individuals with cognitive specific deficits, while the term ‘dyslexia’ was traditionally used among medical and psychological fields previously, with reference to adults with acquired brain injury, and subsequently lost their ability to read. Lyon, Shaywitz, and Shaywitz (2003) emphasized the biological and psychological underpinnings of the condition, and provided a working definition of developmental dyslexia as

> [A] specific learning disability that is neurobiological in origin. It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties are resulted from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of

> effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge (Lyon et al., 2003, p2).

In Hong Kong, Chung, Ho, Chan, Tsang and Lee (2010) defined dyslexia as “a disorder manifested by difficulties in learning to read and spell, despite normal intelligence and in the absence of sensory impairment, brain damage or environmental deprivation” (Chung et al., 2010, p.2-3). For the purpose of this study, the terminology and definition of Chung et al. (2010) would be used since it is the most recent Hong Kong definition and terminology, and is consistent with DSM-5 and ICD-10 definitions.

There were many theories explaining dyslexia. One of the more popular theories on dyslexia was the phonological deficit theory which postulated that dyslexia was related to phonological coding impairment, which was “the process of translating the subvocal units of print into sounds” (Oakland, Black, Standford, Nussbaum, & Balise, 1998, p.140). This impairment was associated with phonemic awareness, which was the processing of “speech sounds below the syllabic level” (Oakland et al., 1998, p.140). Phonemic awareness had been found to be correlated with reading (Calfee, Lindamood, & Lindamood, 1993). It had been observed that students with phonological deficiencies also exhibited deficiencies in speech and language development (Denckla, Rudel, & Broman, 1981). Research studies supported the notion that students with dyslexia performed poorly on tasks that require phonological skills (Van Orden, 1991, Vellutino, Fletcher, Scanlon, & Snowling, 2004). Furthermore, numerous researches also showed evidence that phonological deficits were associated with

deficits in paired associate learning and non-word repetition, and reading (Ramus, 2003; Ramus, Pidgeon, & Frith, 2003; Snowling, 2000; Thomson, Richardson, & Goswami, 2005).

While the phonological theory of dyslexia provided a sufficient explanation of the etiology of dyslexia through the usage of a cognitive framework, the magnocellular theory provided an explanation with a grounded biological origin for the cognitive manifestations that were observed in dyslexia. The magnocellular theory conceptualized dyslexia as a visual process deficit arising from the impairment of the visual and/or auditory magnocellular system (with spared parvocellular system) in the brain (Stein & Walsh, 1997) and suggested that reading difficulties were caused by dysfunction in the neuroanatomy and neurophysiology of the magnocellular subsystem. According to Stein (2001), dyslexia was caused by impairment in visual magnocellular system stemming from the dysfunction of magnocells in the lateral geniculate nucleus (LGN) and the dysfunction of magnocells of the medial geniculate nucleus (MGN) which would then lead to auditory impairment. Stein (2001) posited that low visual magnocellular sensitivity leads to orthographic weakness and low auditory magnocellular sensitivity led to phonological problems. When dyslexics had visual deficit impairments, Stein, Talcott and Witton (2001) found that it caused unsteady eye control when reading, which would explain the moving and blurred images reported by many dyslexics. Such moving and blurred images caused the visual confusion of letter order in dyslexics. The authors explained that this deficit might lead to poor memory of the visual form of words and an impediment in the acquisition of orthographical skills. Stein, Talcott and Witton (2001) found that impaired development of auditory transient processing could lead to auditory confusion of letter sounds and hence an impediment in the

acquisition of phonological skills among the dyslexics.

To summarize, researchers had identified possible causes of dyslexia with a possible neurological basis of origin. The phonological theory explained the cognitive deficit and difficulty in reading and spelling in dyslexic individuals as a consequence of impairment in the ability of relating written letters to their speech sounds. The magnocellular theory suggested that the problems a dyslexic individual might display were a result of visual and auditory deficits. These two theories are examples of the major schools of thought in the field of developmental dyslexia that highlights the biological (neurobiology) and cognitive (for information processing) approaches.

1.2 DYSLEXIA IN CHINESE LANGUAGE

In the past, dyslexia was believed to be a disorder that only existed in western languages. However, research revealed that Hong Kong Chinese children had deficits in processing phonological information as well (Ho, Law & Ng, 2000). Some early research found that the percentage of children with dyslexia in Taiwan and Mainland China (approximately 4.5% to 8%) was similar to that of the United States (Stevenson & Stigler, 1982; Zhang et al., 1996). Ho et al. (2004) found that the nature of reading disability in Chinese children, both in terms of prevalence and manifestation of difficulties, was very similar to that found in children learning alphabetic scripts.

Nonetheless, there were aspects which were specific to the Chinese language, especially the Chinese script. Chinese is a complex visual form of morphosyllabic script called logographic and each basic graphic unit of Chinese is a character associated with a morpheme and represents a syllable of spoken

Chinese (DeFrancis, 1984). Students in Hong Kong speak and read Chinese characters in Cantonese and use whole-word method to learn and read whereas no commonly-used system of phonetic symbols is used to label the pronunciation of sonograms (Lee, Hung & Tseng, 2006). Chinese children with dyslexia were reported to have difficulties in reading and writing Chinese words and characters (Ho, Chan, Lee, Tsang & Luan, 2004). Earlier studies supported the phonological deficit hypothesis for Chinese dyslexic children (e.g., Ho, Law & Ng, 2000; Vellutino et al, 2004) and functional magnetic resonance imaging (fMRI) evidence has confirmed that visual-spatial deficit was specifically implicated in reading impairment in Chinese (Tan, 2005). In Chinese script, visual-orthographic knowledge is defined as children's awareness of conventional rules in structuring Chinese characters and their ability to identify and distinguish Chinese characters from a pool of pseudo-characters and visual symbols (Chung et al., 2011). It is believed that visual-orthographic processing is important in learning how to read Chinese. Ho et al. (2002, 2004) found that problems with orthographic knowledge and rapid automatized naming (RAN) were particularly evident in Chinese dyslexic readers, leading the researchers to conclude that "orthographic-related difficulties may be the crux of the problem in Chinese developmental dyslexia" (p. 70). Chinese children with reading disorders showed poorer reading performance than chronological age matched children with normal reading abilities on visual and auditory temporal processing tasks (Ho, Chan, Lee, Tsang, & Luan, 2004). McBride-Chang, Cho, Liu, Wagner. Shu ,Zhou, Cheuk, and Muse (2005) found that phonological awareness and morphological structure awareness were associated with one another as well as with vocabulary knowledge across languages (Chinese and Korean). However,

phonological awareness and morphological structure awareness was found to have different associations with word recognition in different scripts (McBride-Chang et al., 2005). Phonological awareness was specially more related to word reading in English and Korean than in Chinese, while morphological awareness was more related to word reading in Chinese and Korean than it was in English. Wu, Packard, and Shu (2009) argued that poor morphological awareness was the core deficiency underlying developmental dyslexia in Chinese.

In Hong Kong, the situation is further complicated by students speaking in Cantonese, but reading and writing in both Chinese (as Cantonese is primarily a spoken language not an official written language) and English as a second language which have limited daily application in Hong Kong context. In 2005, Ho and Fong (2005) showed that Chinese dyslexic students encountered difficulties in learning Chinese as well as English as a second language which was generally due to weakness in phonological processing. Chung and Ho (2010) found that Chinese children with dyslexia performed poorly in visual-orthographic knowledge, rapid naming, and phonological and morphological awareness for both Chinese and English. This finding added to the knowledge of cross-linguistic transfer deficiencies in reading-related cognitive skills between two languages.

In terms of assessment of Chinese-speaking students, tools have been developed for diagnosing dyslexia among upper primary students (The Hong Kong Test of Specific Learning Difficulties in Reading and Writing for Primary School Students, 3rd ed) and junior secondary school students (The Hong Kong Test of Specific Learning Difficulties in Reading and Writing for Junior

Secondary School Students, 2nd ed). A child is classified as dyslexic if the child is of normal intelligence but scores below average in literacy domain composite scores and at least one cognitive domain (naming speed, phonological awareness, phonological memory and orthographic knowledge) in the Hong Kong Test of Specific Learning Difficulties (Chan, Ho, Tsang, Lee & Chung, 2007). In addition, there are two teacher checklists for screening, namely, The Hong Kong Behaviour Checklist of Specific Learning Difficulties in Reading and Writing for Primary School Students (2nd ed.) (Ho, Chan, Chung, Tsang & Lee, 2009) and the Hong Kong Behaviour Checklist of Specific Learning Difficulties in Reading and Writing for Junior Secondary School Students (Ho, Lo, Chan, Chung, Tsang & Lee, 2009).

1.3 CURRENT PROVISIONS IN HONG KONG

In terms of policy, the Hong Kong government has adopted a whole school approach to support dyslexic students since 2000 (Tsang & Leung, 2006). This implies the schools are required to enforce and regularly review provisions including the enhancement of teachers' awareness and understanding of dyslexia, supporting the identification and assessment procedures, implementation of intervention in classroom, making accommodation in learning and examinations, and the engagement of parents in the approach (Ip, 2010). Within the school, Education Bureau (EDB) supports the establishment of a School Support Team to facilitate the above. Students with diverse learning needs, including students with dyslexia, are supported through a Tiered Intervention Model (EDB, 2009). The 3-tier intervention model is described in the Operation Guide on the Whole School Approach to Integration Education

(2010) and summarized as below:

- Tier-1 support is preventive in nature and refers to quality teaching in the classroom for all students. It takes the form of differentiated teaching in handling early signs of learning difficulties. (EDB, 2010, p33)
- Tier-2 support refers to the "add-on" intervention for students assessed to have persistent learning difficulties. This may involve small group learning, pull-out programs, etc. (EDB, 2010, p34)
- Tier-3 support targets a relatively small number of students who need intensive support, special accommodations, specialist support, etc. in the light of their more severe learning difficulties. (EDB, 2010, p37)

In 2003/2004, EDB launched a "New Funding Model" for primary schools and extended the scheme to secondary schools starting from 2008-2009 onwards. As of 2015, according to EDB(SES4)/ADM/150/31(3), financial subsidies of $13,403 are provided for each student requiring Tier 2 support and basic provision of $160,836 per school per annum for the first one to six student(s) requiring tier-3 support; a grant of $26,806 per student per annum for the seventh and each of the other students requiring tier-3 support. A ceiling is set at $1,546,500 per school per annum (EDB, 2015). For secondary schools, EDB provides additional teachers/teaching assistants in order to support students with SEN. According to LC Paper No.EDB(SA)/ADM/145/04/1(14), in 2015/16 school year, the teacher-to-class ratios for aided secondary schools are 1.7 teachers per junior secondary class (i.e. S1 – S3) (b) 2.0 teachers per senior secondary class (i.e. S4 – S6). According to EDB (2015), the school could have 0.7 additional teacher for each class of bottom 10% S1-S3 students enrolled

and 0.3 additional teacher for each class of other Band 3 S1-S3 students enrolled. According to LC Paper No. CB(4)410/12-13(03), the EDB initiated the School Partnership Scheme and Special School Resource Centres ("SSRCs") and invited mainstream schools with good practices to serve as Resource Schools to share their experiences with other schools under the Whole School Approach ("WSA"). In addition to school-based support, EDB also provides training and advice to teachers of mainstream schools and enhance their professional capability to teach dyslexic students. SSRCs also provided short-term attachment programs to assist mainstream schools in supporting SEN students. The EDB also published various teaching, support, and assessment guidelines for local primary schools, and organized a number of teacher training workshops to equip teachers to teach students with special education needs (SEN) including dyslexic students (Ip, 2010).

1.4 IMPORTANCE OF THE PROBLEM

In Hong Kong during the 80 and 90s, dyslexia and other specific learning disabilities were not universally recognized as conditions that caused difficulties in children's learning due to the lack of awareness by teachers, parents and physicians (Chan, Ho, Tsang, Lee, & Chung, 2007). Since the 2000s, with the development of local assessment tools, public awareness has been increasing remarkably (Ip, 2000). A study by Hong Kong Christian Service (2005) indicated that over 80% of primary and secondary school teachers reported that there were dyslexic students in their classes. A more recent finding by the Hong Kong Specific Learning Difficulties Research Team (Chan et al., 2007) indicated that based on a study in 27 schools in Hong Kong, Kowloon, and the New Territories with the use of the Hong Kong Test of

Specific Learning Difficulties in Reading and Writing (HKT-SpLD; Ho, Chan, Tsang & Lee, 2000), the prevalence rate of specific learning difficulties in reading and writing (dyslexia) in Hong Kong was 9.7% to 12.6% with 6.2% to 8.7% being mild cases, 2.2% to 2.3% being moderate cases and 1.3% to 1.6% being severe cases with the male to female ratio being around 1.6:1. In 2004, a study on sixty-two P.3 and P.4 students in Schools for Social Development in Hong Kong, which accommodate students with severe emotional and behavioral problems, showed that the prevalence of dyslexia there was at 61%, in contrast to less than 10% in the general population (Chan, 2004).

Dyslexia often results in academic problems, which may lead to other secondary problems (Lam & Cheung, 1997). These key problems included significant amounts of time being spent on homework with progressive restriction of extra-curricular and social activities; deterioration of relationships between child and parents (typically the mother, who supervises homework); frequent quarrelling between their parents on how to deal with school demands and failure in examination; lack of motivation in academic work; low academic results leading to low self-esteem and confidence; and lack of peer group acceptance. Literature showed that dyslexic children had low self-esteem (Humphrey, 2003) because of their continuous experience of failure. Dyslexic children displayed poor motivation and learning behaviours (e.g., inattention) which might be due to continuous failure in academic results (Chapman & Tunmer, 1995). Furthermore, there might also be other potential problems including school discipline problems and school dropout (Alexander-Passe, 2004; MacKay, 2004). Dyslexia was also often linked to other conditions, such as Attention Deficit Hyperactivity Disorder (ADHD) (Pope & Whiteley, 2003).

Apart from creating a substantial psychological burden on the affected children, there were difficulties encountered by their parents who have to support their children's learning and seek resources to help their children's difficulties (Leung, Lau, Chan, Lau, & Chui, 2010). According to the report "Study on Equal Opportunities for Students with Disabilities under the Integrated Education System" by the Centre for Special Educational Needs and Inclusive Education of Hong Kong Institute of Education (2012), the parents of students with special education needs (SEN) found that the teaching practices in schools have not met their expectations. There were limited studies on understanding the specific needs of parents with children with dyslexia. However, taking reference from the experience of parents of students with mild developmental disabilities who are integrated into mainstream schools, it could be envisaged that the parents of dyslexic students are in need of information, coping skills and resources on dealing with their children's behavioural and learning problems in school and stress in the family.

Since the enforcement of Inclusive Education Implementation in 2000, the EDB has provided resources (e.g., educational psychology service, speech therapy service, student guidance service, enhanced advisory service for schools, teacher professional development, support for parents, etc) to equip schools to address the needs of SEN students (including dyslexia). EDB's objective of implementing inclusive education in Hong Kong is to enable children with special educational needs to fully develop their individual potential so that they can study in mainstream schools (EDB, 2012). Meanwhile, in order to implement inclusive education successfully, school teachers needed to be trained on understanding inclusion and how to design appropriate curriculum and adopt creative teaching to enhance their perceived self-efficacy

in implementing inclusive practices (Forlin & Sin, 2010). However, teaching SEN students (including dyslexia) require significant resource especially in today's inclusive education environment as there are substantial challenges for the school teachers, who struggle in delivering quality instruction and helping the affected children to overcome their difficulties in learning while at the same time addressing possible behavioural and motivation problems. The key concerns raised by the teachers are the lack of necessary skills and the availability of resources to support the students' learning needs in the inclusive classrooms (Sharma, Forlin, & Loreman, 2007).

Although primary and secondary school teachers were aware of dyslexia, the majority of them desired more in-depth training on its nature and management (Hong Kong Christian Service, 2005). Tsui (2007) conducted a study on the knowledge on dyslexia among health-care professionals and the results showed that the respondents did not have adequate knowledge of dyslexia. This suggested that pre-service and in-service training were needed to equip professionals working with children in knowledge of dyslexia and intervention strategies.

1.5 AIM OF THE STUDY AND RESEARCH QUESTIONS

The aim of the current study was to evaluate the effectiveness of a school-based intervention program for dyslexic secondary school students, using quasi-experimental design.

The intervention program would be delivered in a small-size, classroom-based split-group mode within an intensive daily intervention setting. There were two

major components of the program: (i) specially designed curriculum content and treatment setting dedicated for teaching dyslexic students; and (ii) teacher training on curriculum planning and intervention strategies. The research questions were as follows:

1. Is the intervention program effective in enhancing dyslexic students' academic achievement and learning outcomes?
2. Is the training on intervention strategies effective in enhancing teacher efficacy?
3. Is teacher efficacy positively related to students' academic achievement and learning outcomes?

1.6 JUSTIFACTION OF STUDY

Although there was significant progress in the development of assessment instruments for dyslexic children and funding for schools, there were still limited evidence-based intervention programs and published data regarding the effectiveness of these intervention programs in Hong Kong despite the presence of a lot of research studies on dyslexia in the western countries. There were many locally developed training packages (eg. Pre-primary Language Learning Package; READ and WRITE program; learning kits for pre-school and primary school students at risk by Heep Hong Society etc) but most of the existing resources are in Chinese and there was a lack of resources for English reading and comprehension. Furthermore, there were limited published findings on the effectiveness of the published programs, except the READ and WRITE program. The 8-year READ & WRITE program was initiated in 2006 with the goal of training 5,000 primary school Chinese language teachers and

reported positive improvement on students' reading and vocabulary skills (Chung & Ho, 2010). The READ & WRITE program also included materials for secondary school students. There was a need for more rigorous research studies to demonstrate the effectiveness of programs. Chan (2004) commented that despite the significant awareness of developmental dyslexia, further work on research, practice, and evaluation of practices were needed.

Apart from the lack of evaluation of intervention programs, there were limited studies on the school support in intervention programs. A review conducted by Ngan-Keung (2008) criticized that the school support to students with dyslexia remained very insufficient and ineffective. The author observed that though there were higher awareness and acceptance towards students with dyslexia and provision of some simple accommodation in classes and examinations, most of the effort were focused on primary school students only. The author pointed out that there was a lack of support for secondary education or employment.

Within the school, teachers had the main responsibility for teaching dyslexic students. Teacher efficacy was a very important factor for supporting students with dyslexia. When teachers were highly effective, their students were found to have higher level of academic achievement and motivation to study (Lin, Gorreil & Taylor, 2002). The EDB has launched a 5-year professional development framework for training in-service teachers to support SEN students. The initiative started in the 2007/08 school year. As per EDB(SES2)/TR/02/2 2015 update, EDB had set the training targets for public sector mainstream schools to be achieved by end of 2019/2020 school year: 15-25% of teachers would have completed the Basic Course; and at least six to

nine teachers in each school would have completed the Advanced and Thematic Courses which focus on teaching students with SEN. However, there was very limited published data on the effectiveness of these programs on teacher efficacy or student outcomes. It is important to identify effective elements of teacher training that could bring about changes in teacher efficacy and positive student outcomes.

Apart from academic achievement, student learning behavior is also an important area of concern (Jarvela & Jarvenoja, 2011; Zimmerman, 2008). Student learning behavior such as self-regulated learning was found to be associated with better learning habits and study skills, which were associated with higher academic achievement (Zimmerman, 2002). Research on analyzing results from Program for International Student Assessment (PISA, 2000) found that learning was more likely to be effective where a student played a proactive role in the learning process. It was reckoned that students who employed self-regulated learning strategies to acquire knowledge and skills could become lifelong learners and capable to achieve future academic and career success.

1.7 SIGNIFICANCE AND CONTRIBUTIONS OF THE STUDY

THEORETICAL CONTRIBUTIONS

It is important to understand the characteristics of an effective intervention program for dyslexic students. There were limited studies on intervention program for students with dyslexia conducted in secondary schools. Most of the research previously conducted in Hong Kong focused on screening and assessment as well as understanding the nature of dyslexia among Chinese students. The study was one of the very few on the development, implementation and evaluation of a structured literacy program within the

secondary school context.

This current study also addressed the gap of an evidence-based outcome study on the effectiveness of an intervention program to enhance the academic outcomes of secondary school students with dyslexia. Using the theory of change model, the study linked critical program variables (intervention content, teacher training, co-teaching and intervention setting) with students' academic achievement and learning outcomes. In particular, it could increase understanding of the specific positive outcomes bought about by the intervention program in the context of the whole-school approach in inclusive education.

In this study, mixed methods embedded design approach was adopted, combining both quantitative and qualitative data in the evaluation research study to provide a better understanding of the research questions (Creswell & Plano Clark, 2007). By using mixed method approach with both quantitative and qualitative data set, the qualitative data could supplement and complement the quantitative outcomes with the voices of teachers and principals. This served the purpose of data triangulation to better understand the key success factors in program implementation and to yield convergent findings to strengthen the validity of findings (Denizin, 1970). In addition, it could provide insights on contextual factors related to the effectiveness of the program.

This study also contributed to the existing knowledge regarding the relationship among teacher training, teacher efficacy and students' achievement and learning outcomes. Specifically, there were limited studies on teacher efficacy in the dyslexia literatures though Bandura (1977) accentuated that teacher training could enhance teacher efficacy. Research indicated that there was a general

sense of insufficiency among teachers in teaching dyslexic students (Lyon et al, 1989). This study aimed to evaluate the change in teachers' sense of efficacy on delivery of instruction and student engagement after attending teacher training. The Hong Kong Government advocates inclusive education within a whole-school approach so that schools are capable of catering for learners' diversity; making adjustments to curriculum and accommodations in assessment. Through this study, it was expected to provide a multi-angle view to understand the complex process and relationship within schools that were necessary in promoting a constructive learning environment for students.

The long-term goals and objectives of this study were to provide robust research evidence that could demonstrate the effectiveness of structured intervention programs for secondary school students with dyslexia and specific reading and writing difficulties, who could learn the strategies and skills in future academic learning.

1.8 OUTLINE OF THE STUDY

This thesis is divided into seven chapters. Chapter 1 (the current chapter) is the introduction chapter and provides the background and context of the study. Chapter 2 is a literature review of overseas and local intervention programs for dyslexic students. Chapter 3 describes the intervention program and its design framework. Chapter 4 describes the methodology, together with the hypotheses of the study and measures to be used in the study; Chapter 5 reports the quantitative results and Chapter 6 reports the qualitative results based on interviews with the principals, the school teachers and Professional Specialist teachers. The discussion, conclusion and limitations are included in Chapter 7.

CHAPTER 2 LITERATURE REVIEW

This chapter presents a review of previous research on effective approaches of intervention programs in terms of improving academic achievement and learning outcomes of students. The chapter is divided into eight parts. In the first part of the literature review, theory of change used in program evaluation was discussed. Second, effective intervention programs, program content and strategies in the western culture were presented. Third, skills important for learning Chinese language were considered. Fourth, literatures on school environment and its importance in the successful intervention program were examined. Fifth, the role of teachers and teachers training linking to teacher efficacy was explored. Sixth, specific review into the relationship between intervention programs and students' academic achievement and learning outcomes in Hong Kong were discussed. Seventh, existing intervention programs in Hong Kong were reviewed. Finally, research gaps were identified and conclusions based upon the literature were drawn for the development of the intervention framework for the current study.

2.1 THEORY OF CHANGE

Chen and Rossi (1983) proposed a theory-based evaluation approach for understanding the intervention process (Chen, Donaldson & Mark, 2011). Theory in this context referred to a "theory of change" that represented a "plausible and sensible model of how the program is supposed to work" (Bickman, 1987). In program development and evaluation, it was important to specify the underlying logic (cause and effect relationships) of the program; including what resources and activities were required to generate the expected outcomes. According to the W.K. Kellogg Foundation (2004), the use of the

theory of change approach in program design and implementation could help to systematize program planning, management, and evaluation. Theory of change was often used in the program planning stage to make explicit assumptions that guided the design of intervention strategies to achieve the desired outcomes. Theory of change also guided program implementation and the evaluation strategies to assess the achievement of the expected outcomes.

Most evaluations of social interventions required an understanding of the theories that mediated between inputs, activities, and outcomes (Weiss, 1997). Weiss (1995) advocated the use of theory of change approach to guide the implementation of specific programs, treatments or intervention. Data were collected to evaluate the effectiveness of the programs, treatments or intervention whether the ultimate outcomes were achieved or not. The approach facilitated the program developer and evaluator to examine the set of assumptions that explained both the mini-steps that led to the long-term goal of interest and the connections between intervention program activities and intended or observed outcomes. Weiss (1997) pointed out:

> "The theory in question is the set of beliefs and assumptions that undergird program activities. Programs are inevitably based on a theory - in fact, often on several theories - about how activities are expected to bring about desired changes. However, the theories are rarely explicit. Programs are usually designed on the basis of experience, practice knowledge, and intuition, and practitioners go about their work without articulating the conceptual foundations of what they do. (Weiss, 1997, p503)"

Building on her work, Hernandez and Hodges (2001) defined a theory of

change framework by adding one more component: the population being impacted by the intervention program, and examined both program development and implementation/evaluation. Hernandez and Hodges (2001)'s theory of change had two components (Figure 1). The first component involved conceptualizing and operationalizing three elements: the population to be served, the strategies believed to lead to desired outcomes and the outcomes that are intended to be accomplished. The second component involved the implementation/evaluation process by examining the three elements defined previously in terms of the actual population reached, the actual strategies being implemented, and the outcomes achieved. The theory of change approach should be able to reflect the characteristics and needs of the target population and their links to the identified strategies. In this aspect, the theory of change approach could serve as a program design and evaluation tool to facilitate reflection on specific strategies deployed and their associated results to be accomplished.

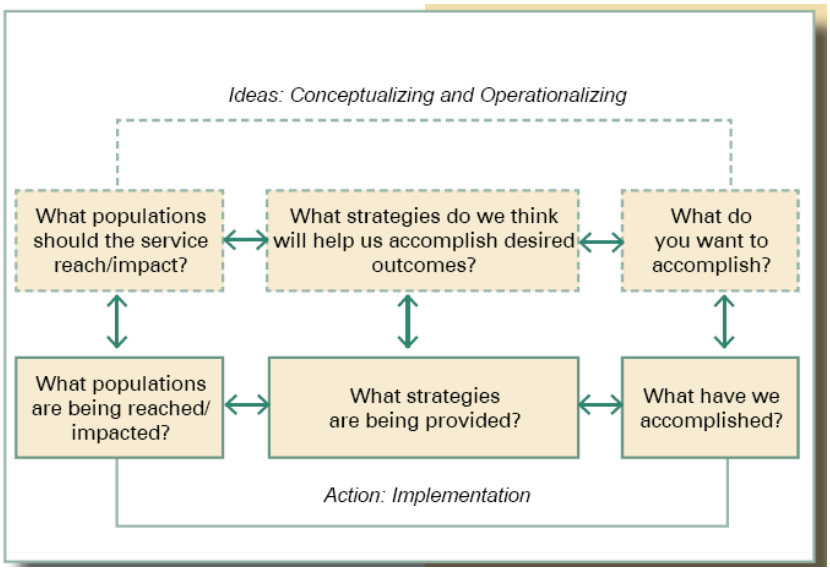


Figure 1 Hemandez and Hodges'(2001, p.29) theory of change model

The authors stressed that the advantage of using the theory of change approach

was conceptual in nature as the process was designed to make the assumptions underlying implementation plans and strategies explicit. When used during the design phase, the approach increased the likelihood that all stakeholders agreed on the clearly intended outcomes, the activities that need to be implemented, and the contextual factors (e.g., policy environment, funding and resources etc.) that would influence these activities in order to achieve those intended outcomes. Fixsen, Naoom, Balase, Friedman, and Wallace (2005) argued that successful program implementation was dependent on having an integrated, coherent evaluation theoretical framework i.e. guided by a clearly articulated "theory of change" linking the components of practice to the desired outcomes.

2.2 INTERVENTION PROGRAMS

There was a rich body of research on intervention for students with dyslexia covering a very wide scope including effective intervention strategies, intensity of treatment and context of implementation. The preponderance of intervention program highlighted the importance of early intervention and effective teaching strategies in improving students' classroom learning experiences and academic outcomes. Below is a review of oversea service provisions and critique of the relevant literature.

2.2.1 Service provision models

A wide range of service provision approaches are used to improve the educational experience and achievement of dyslexic students in the western countries. In the United States, a multi-tiered (3-tiered) model is used to address the leaning needs of children with special educational

needs such as dyslexia (National Association of School Psychologists, 2007). Approximately 2.9 million children with specific learning disabilities in the United States receive special education services (U.S. Department of Education, 2006). Tier 1 refers to the provision of an initial literacy instruction in the general education setting and also Tier 1 instruction represents the first "gate" (Johnson, Mellard, Fuchs, & McKnight, M.A, 2006, P3.5) in a system designed to determine students who need supplemental support (e.g., small-group or individualized instruction that is more intense or frequent) and evidence-based remediation intervention in Tier 2 (e.g., Berninger, Winn et al., 2008). Tier 2 interventions consist of general education plus specialized intervention using small groups (two to four students) and focusing on problem solving and standardized intervention curriculum (e.g. alphabet knowledge, print knowledge, phonological awareness, and vocabulary for those children with dyslexia) for a period of nine to 12 weeks with closely monitored progress to determine whether continuous intervention is needed (Justice, Meier, & Walpole, 2005). Tier 3 is the most intensive 1:1 intervention with specially trained professional focusing on the student's core academic area(s) of need, e.g., listening, reading, writing and speaking. Tier 3 represents 1-5% of the population and the child will be assessed to determine the need for ongoing remediation and/or special education placement from grade 4 onwards (Fuchs et al., 2008).

In UK, the system is also similar to that of the US. There are three tiers of intervention and they are referred as 'waves'. Similar to Tier 1 in the US in which the focus is on literacy instruction, 'wave 1' in UK refers to the initial teaching of literacy (i.e. the ability to read, write, speak and

listen) in schools in which there should be effective inclusion of all children in a daily quality literacy hour with appropriate differentiation where required (DfES, 2003). Similar to Tier 2 in the US model on the provision small-group instruction for those who need more support, wave 2 in the UK model includes specific and additional small-group intervention for children who do not respond to initial classroom literacy instruction and need help to catch up with their peers to enable them to work at or above age-related expectations. Wave 3 describes targeted provision for a minority of children identified as requiring SEN support (DfES, 2003). The interventions are usually conducted in 1:1 or small group by specialized trained teachers focusing on reading (both accuracy and comprehension), spelling and writing. This is similar to the US tier 3 model where the focus is on intensive 1:1 intervention.

2.2.2 Content areas of intervention programs

In the theory of change approach, intervention strategies were the key building blocks in the intervention programs leading to the achievement of the desired outcomes. Alexander and Slinger-Constant (2004) conducted a meta-analysis and summarized the findings regarding effective intervention approaches for children diagnosed with dyslexia. The authors reported that:

a) Content should include systematic phonological decoding, fluency, reading, spelling and comprehension skills;

b) Content should also include cognitive/metacognitive strategies (focus on techniques, principles or rules that enable students to learn and solve

problems so that students can learn to complete tasks independently);

c) Instruction should be conducted in small-group (2:1 or 3:1) with frequent occurrences (4-5 days per week); and

d) Using direct instructions (intense and explicit and teacher-centered with clear instructional presentations and the content skills being broken down into small units, sequenced and taught explicitly).

e) Integrating teaching strategies across phonics and literacy content such as fluency, vocabulary and comprehension, to help students on linking the sounds with words and sentences.

Alexander and Slinger-Constant (2004) identified six content areas as the key essential domains areas for an intervention program for junior students with dyslexia: (i) phonemic awareness (understanding the sounds of language and manipulating them); (ii) phonics (linking the written symbol with phonemes to recognize words, decoding multisyllabic words and generalizing the learned rules of language to new words); (iii) vocabulary (recognizing the meaning of words and then building new words); (iv) comprehension (the ability to think about and extract the information provided in text while reading and being able to answer the questions regarding what they have read); (v) spelling and writing (writing letters sound, patterns, words and sentences) and (iv) fluency (reading words and sentences smoothly and accurately, while understanding them as expressions of complete ideas).

Research on intervention programs, including 15 research studies and and meta-analyses (Alexander et al, 1991; Foorman et al, 1997; Swanson

& Hoskyn, 1998, Swanson, 1999; Torgesen, et al, 1999; Abbott & Berninger, 1999; Wise et al ,1999; Mastropieri, et al, 2001; Vadasy et al, 2002; Wilcox et al, 1991; Torgesen et al., 2001; Torgesen et al., 2003; Torgesen et al, 2004; Jenkins et al, 2004; Mathes et al, 2005; Vadasy, Sanders & Abbott, 2008 and Ryder et al, 2008), showed that these strategies were effective in improving students' learning outcomes. The results were incorporated in **Table 1** below. The table provided evidence of positive intervention studies focusing on small-group and more frequent intervention. The positive outcomes from the studies showed improvement in phonemic decoding, phonics, vocabulary, reading and comprehension. Analysis showed that key elements of intervention program included: a) small group size and sufficient intensity of intervention; b) pull-out and classroom-based setting; c) intervention content focusing on phonics, reading and comprehension; and d) positive improvement in students' outcomes including phonics and reading and writing etc.

Table 1

Literature Review of Intervention content, treatment setting and outcomes by intervention study

Authors	Population, frequency, duration, group size	Treatment Setting	Elements of the intervention program	Findings and outcomes
Alexander et al., 1991	10 students; Age 7-12 years; 1hour per session 4 times a week, total 65 hours ; 1:1	Pull-out	Explicit and systematic instruction in phonemic awareness and phonics	Improvement in phonemic decoding and reading accuracy
Foorman et al., 1997	114 students in Grade 2-3 ;60 mins per session , five days per week for 1 year , total approx. 175 hours;	Pull-out	Three types of reading interventions a) analytic phonics (b) synthetic phonics c) sight-word program in reading and	Improvement in phonological awareness

	small group		story telling	
Swanson & Hoskyn, 1998, Swanson, 1999	NA	NA	Direct instruction, on fluency, vocabulary, reading comprehension strategies, word study, and learning strategies	Improvement in fluency, reading, vocabulary strength and comprehension skills
Torgesen, et al., 1999	180 students in Grades 2-3; 20 mins per sessions 2-4 times a week for 2½ year; total 173 hours; small group	Pull-out	Direct instruction on phonological awareness and synthetic phonics, word reading and letter sound training with sight words	Improvement in phonemic awareness and decoding (phonics)
Abbott & Berninger, 1999	20 students in Grades 4 to 7; 16 sessions, total 80 hours, Small group	NA	Word study , alphabetic principle, phonological decoding, structural analysis focused on affixes and suffixes, and oral reading with error correction	Improvement in word and phonics
Wise et al.,1999	122 students aged 8-9; 30 mins per sessions; total 40 hours; 1:4 and 1:1	Pull-out	Teacher-delivered instruction and computer-administered instruction on phonemic awareness and phonemic decoding and encoding skills in reading	Improvement in phonemic decoding; reading accuracy; comprehension
Mastropieri , et al., 2001	24 students in Grade 7; 50 mins per sessions daily for 5 weeks, total 21 hours, small group	Classroom-based small group and pull-out	Fluency, vocabulary, reading comprehension, strategies, word study	Improvement in text reading and vocabulary and overall academic gains
Vadasy et al., 2002	65 students in Grade 1 and 2; 35 week total 140 sessions, 30mins per sessions, total 72 hours, 1:1	Pull-out	Multi-component-reading comprehension program including letter sounds, segmenting, decoding, spelling, sight words, fluency and ready decodable story books	Improvement in text reading and vocabulary, phonemic decoding, spelling, sight word efficiency and word identification
Wilcox et al., 1991	20 children, 2-4 years old; 24 sessions, 3-hr sessions twice a week ; total 144 hours, small group	Classroom-based	Vocabulary and words	Improvement in vocabulary and words identification.
Torgesen et al., 2001	30 children 8-10 years old; 50 mins per sessions, 2 times per week for 8 to 9 weeks, total 67.5 hours and follow up 50mins per week over 8 weeks after	Pull-out	Phonemic awareness through writing and spelling activities, phonemic decoding strategies; word identification strategies were practiced extensively while reading the text.	Improvement in reading accuracy and comprehension

	intervention			
Torgesen et al., 2003	20 students in Grade 6-11; total 100 hours, 1:4	NA	A multisensory, bottom–up, explicit approach for phonemic awareness and phonemic decoding and reading skills	Improvement in phonemic decoding; reading accuracy; comprehension
Torgesen et al., 2004	Students aged 9 years to 10; 133 hours, 1:1 and 1:2	Pull-out	Phonemic decoding skills and comprehension	Improvement in phonemic decoding; reading accuracy; comprehension
Jenkins et al., 2004	99 students in Grade 1; 30 mins per sessions, 4 days per week for 25 weeks total 50 hours; 1:1	Pull-out	Reading decodable words, spelling, reading non-decodable words and text reading using story books	Improvement in decoding, reading, spelling and comprehension skills
Mathes et al., 2005	252 students in Grade 1 students; 40 mins, 5 days weeks for 35 weeks, 175 sessions, total 117 hours, 1:3	Classroom-based small group and pull-out	Direct instruction and regular classroom environment focusing on phonological awareness, reading and spelling	Significantly higher scores on phonological awareness, word reading and reading fluency
Vadasy, Sanders, & Abbott, 2008	79 students in Grade 1; 30 mins 4 days per week for 2 year, total approx. 160 hours, 1:1	Pull out	Phonological and alphabetical instruction; relationship between letters and sounds; decoding; sight words, spelling, and practice reading orally.	Improvement in word reading fluency and comprehension
Ryder et al., 2008	Students aged 6; 56 sessions of 25 mins for 24 weeks; total 24 hours, small group	Classroom-based and small group	Phonemic awareness, alphabetic coding skills, word recognition and reading comprehension	Improvement in phonic decoding, reading accuracy, word recognition and comprehension.

NA mean information was not available

2.2.3 Group size and intensity of intervention programs

In the studies summarized in Table 1, the amount of intervention varied from 40 hours to 175 hours with a mean of 90 hours and all of them were conducted in either small groups or on one to one basis. Results from the meta-analysis conducted by Scammacca et al. (2007) found that effective interventions programs must be conducted in small group setting (ranging from 3 to 8 students) with sufficient dosage (daily or 4 to 5

times a week for a whole school year which is approximately 35 weeks). Literature studies revealed that small group size intervention setting was adopted in most intervention studies as individual case approach was very expensive to implement. Small group intervention setting is likely to be more cost-effective. Consistent with Scammacca et al. (2007), Singleton (2009) reported that effective intervention should be conducted in groups of up to four or five students by adequately trained teachers and teaching assistants.

Frequency of intervention lessons was important to producing effective outcomes. Torgesen et al. (2003) demonstrated that interventions with more frequent and intensive input (daily; one on one or small group); and longer instruction period produced greater gains in reading, accuracy and comprehension (Alexander & Slinger-Constant, 2004; Swanson, 1999; Vadasy, Sanders, & Abbott, 2008). Scammacca et al. (2007) commented that intensive daily practice for 10 minutes could be effective and Rose (2009) also supported the concept of 'little and often' (Rose, 2009, p14).

2.2.4 Pull-out versus classroom-based small-size approach

In term of intervention treatment setting, there were two approaches commonly adopted: the pull-out or out-of-school approach and classroom-based small-size approach. In the pull-out or out-of-school programs/courses, dyslexic learners were offered intervention sessions several times a week in a setting outside the regular classroom either by school teachers or trained specialists (Blachman, 1997; D'Agostino & Murphy, 2004; Torgesen et al., 1999; Vellutino et al., 2004). Most of the

studies in Table 1 were conducted using the pull-out approach and these studies were able to generate positive outcomes with intensive and frequent intervention sessions (Torgesen et al., 1999, 2001, 2004).

The classroom-based small-size approach was the approach where the schools made arrangement to split into small groups within the classroom. The intervention program was delivered in classroom and students' learning was integrated with the mainstream normal school curriculum. (Adams & Carnine, 2003; Foorman et al., 1998; Fuchs & Fuchs, 2005).

Sargent (1981) criticized pull-out programs for being poorly integrated with the student's regular classroom study and could not offer sufficient in-school time to learn, apply, and master the complexities of skills essential for continuous and appropriate progress toward competent literacy performance. The pull-out approach to intervention was criticized as not being able to offer sufficient time for intervention. There were two barriers to effective utilization of these resources: first, the inability to allocate sufficient teaching resources due to conflict in teachers' timetable; and second, the inability to integrate the intervention content and knowledge into school curriculum plus addressing routine demands of the classroom in the intervention setting.

In contrast with pull-out program, classroom-based interventions were often viewed as adhering to a more inclusive philosophy of education for children with disabilities and were viewed by some experts as being more effective than pull-out models, particularly in the area of skill generalization (McGinty & Justice, 2006). Classroom-based

interventions were teacher-led initiatives in a classroom environment and it capitalized upon the many contexts available within the classroom milieu to promote children's learning. It was found that classroom-based small-size approach was conducive to enhancing skill generalization through an emphasis on naturalistic routines and materials, involvement of peer groups as conversational models and partners, and the involvement of teachers who can extend language instruction throughout the day (Wilcox, Kouri, & Caswell, 1991; Throneburg, 2000).

Studies had demonstrated that combining classroom-based and pull-out instruction approaches were effective in closing the gap between their current reading levels and grade-level goals. (O'Connor, 2000; Vaughn et al., 2003). This mixed approach required that small-size classroom-based interventions be implemented first and with pull-out supplemental interventions being implemented later. This approach could provide additional support to non-responding children, but there was no clear timeline being specified for each mode of intervention (Fuchs, 2003). However, there were limited studies on small-size classroom-based approach in the Hong Kong context.

2.2.5 Intervention content of phonics and literacy

In Chapter 1, the predominant cognitive explanation of dyslexia was due to phonological deficit affecting the processing of speech sounds in words (Oakland et al, 1998; Vellutino et al., 2004). In respect of intervention, National Reading Panel (2000) suggested training on phonological awareness and phonics instruction which was designed for primary grade students and for children having difficulty in learning to read.

Phonological awareness is defined as understanding of the sound structure of language which is made up of words, syllables, rhymes, and sounds (phonemes)(Trehearne, 2003).

According to UNESCO (2004), literacy is “the ability to identify, understand, interpret, create, communicate, compute, and use printed and written materials associated with varying contexts. Literacy involves “a continuum of learning in enabling individuals to achieve his or her goals, develop his or her knowledge and potential and participate fully in community and wider society” (UNESCO, 2004, p13). Moats’ (2000) defined literacy as the ability to read, write, spell, listen and speak. In U.S., the National Reading Panel (2000) advocated a broadest concept of literacy emphasizing learning to read and write across an individual’s entire life span (USAID, 2014). In U.S., a literacy framework which consists of five components (phonemic awareness, phonics, vocabulary, fluency, and comprehension) is developed by National Reading Panel (2000). The framework suggests a stage approach with early instruction which focuses primarily on phonemic awareness and phonics and then adopts a simultaneous approach addressing all five components at once. (USAID, 2014).

The U.S. literacy framework highlighted phonemic awareness and phonics instruction as critical components in early literacy content so as to meet the diverse learning needs of children and youth. Wood and McLemore (2001) identified alphabet knowledge and systematic phonics instruction as critical elements in early literacy in promoting successful reading. Snow et al. (1998) also regarded teaching students about phonological

awareness as effective reading intervention strategies.

In UK, National Literacy Strategy Framework (1998) was implemented to engage schools in developing a structured teaching program of literacy which fostered four interdependent strands of language: speaking, listening, reading and writing (Rose, 2006). Rose's (2006) recommendation was to implement the literacy framework for beginner readers and the focus was on phonic skills to enable students' to listen attentively and speak clearly and confidently before moving to literacy content of reading and writing. When reviewing Alexander and Slinger-Constant's meta-analysis (2004) on six domains areas for intervention program for dyslexia, it was found that intervention content was adopted from the national literacy frameworks and included phonics and literacy (Figure 2).

National Reading Panel five components of literacy (USAID, 2014)	National Literacy Strategy Framework(1998)	Alexander and Slinger-Constant(2004) six content areas
• phonemic awareness • phonics • vocabulary • fluency • comprehension	• speaking • listening • reading • writing	• phonemic awareness • phonics • vocabulary • comprehension • spelling • fluency

Figure 2 Compare literacy content and intervention content for dyslexia

Based on the studies and review in **Table 1,** almost all intervention

programs included phonological awareness and phonics instruction and integrated phonics in a broader literacy curriculum including reading, writing and comprehension. The outcomes of the intervention program showed significant improvement in word reading, spelling, phonic decoding, reading fluency and comprehension.

To summarize, consistent with Ehri et al.'s (2001) recommendation, intervention content should foster integration of phonological awareness and phonics instruction with literacy curriculum including listening, speaking, comprehension, writing and reading fluency in order to prevent and remediate reading difficulties.

2.2.6 Cognitive and Metacognitive Strategies

Cognitive strategies incorporate visualization, verbal rehearsal, paraphrasing, summarizing, and estimating. Metacognitive strategies include self-management, self-instruction, self-monitoring, self-evaluation on when, where and how to use the knowledge or learning strategies (Swanson & Deshler, 2003). By using the cognitive and metacognitive strategy learning, it enabled students to learn and solve problems so that students could follow the guided practice exercises in actual problem solving and generalization to the subjects being taught and learn to complete task independently (Woloshyn et al., 2001). Combining the use of metacognitive strategies and direct instruction approach, teachers could guide students how to select and monitor strategy use (Montague & Dietz, 2009) and could keep track of (or monitor) their learning progress.

Emphasis on using cognitive and metacognitive strategies was found to be effective for reading comprehension with dyslexic students (Guthrie & Alao, 1997; Swanson, 1999; Guthrie, Wigfield, & VonSecker, 2000, Swanson & Sachse-Lee, 2000; Gersten, Fuchs, Williams, & Baker, 2001). The theoretical underpinnings of the use of cognitive and metacognitive strategies were rooted in both cognitive and behavioral theories and social development theory of learning. Cognitive behavior modification (Meichenbaum, 1977) provided evidence in utilizing cognitive strategies, self-instructional training, and self-reinforcement to change behaviors and improve task performance. Social development theory (Vygotsky, 1978) supported purposeful teacher-student interactions and the use of modeling to demonstrate how individuals think and behave as they engaged in academic tasks. Lenz (2006) highlighted the advantages of teaching cognitive strategies in reading and comprehension especially in helping students to monitor their own learning so that students can take control of and direct their own thinking processes in problem solving such as paraphrasing, visualizing by drawing a schematic representation, hypothesizing and setting up a plan, predicting the answers, checking that the plan and the answer are correct, etc., in a variety of academic content in accordance to the individual students' needs.

In Hong Kong, Lau and Chan (2007) developed a reading and comprehension program by using the cognitive and metacognitive strategies for low-achieving students. Results showed that students who were taught to use cognitive and metacognitive strategies in learning for four months had significant improvement in reading and comprehension

and showed more positive attitude in learning versus the control group.

To summarize the above literature reviews, many studies suggested teaching dyslexic students using cognitive and metacognitive strategies in reading, comprehension, and mathematical problem solving (Harris & Graham, 1993; Macciniv & Hughes, 2000; Montague, 2003). Studies showed that using cognitive and metacognitive strategies were effective in developing higher level literacy skills such as reading and comprehension (Gersten, Fuchs, Williams, & Baker, 2001). Wong (1991) asserted that metacognition had to do with knowledge and awareness of one's cognitive strengths and weaknesses which guided an individual in cognitive activities. Thus, in order to turn students with dyslexia into motivated learners, students should be encouraged to learn how to use cognitive and metacognitive strategies to develop confidence and executive control processes to monitor their own learning outcomes.

2.2.7 Teaching Instruction

Review and meta-analysis were conducted to identify effective instruction methods for students with learning disabilities. Swanson (1999) conducted a meta-analysis of intervention outcomes for children with learning disabilities and direct (explicit) instruction was found to be effective for reading comprehension. Rosenshine (1986) described direct (explicit) instruction as a systematic and skills-oriented method with an emphasis on small steps approach through checking student understanding. The author recommended direct instruction program as suitable for teaching well-defined knowledge and skills (eg Mathematics,

grammar and vocabulary) in a step-wise progression to help students accomplish learning tasks and objectives. Due to the heterogeneous and complex nature of dyslexia and learning difficulties, Swanson (2001) concluded that there was no single teaching approach which could produce positive outcomes on its own; however, direct instruction was regarded as one of the more effective teaching practices.

Most of the studies cited in Table 1 adopted a direct instruction approach to teach the phonological and reading domains with positive outcomes in a small group treatment setting (Lovett et al., 2000; Torgesen et al, 2001; Sawyer, 2006; Simpson, 2000; Snowling & Hayiou-Thomas, 2006). Direct instruction was consistently identified as an effective practice in the National Reading Panel Report (National Reading Panel, 2000). Swanson (1999) explained that the focus of direct instruction was on instruction strategies which were intense, explicit, and teacher-centered with clear instructional presentations and was delivered over a period of time to assist in generalization. This teacher-centered approach was characterized by explicit performance expectations, systematic prompting, structured practice, monitoring of achievement, reinforcement and corrective feedback (Jones, Wilson, & Bhojwani, 1997). Gersten (1985) suggested that the direct instruction approach could support dyslexic students in the explicit teaching of ‘general case’ problem-solving strategies wherever possible and was suitable for an emphasis on small group instruction in a highly structured learning environment which permit large amounts of practice.

In terms of content, direct instruction can be used in both academic

content and cognitive and metacognitive strategy in catering for different students' individual needs (Swanson, Carson & Sachse-Lee, 1996; Swanson, 1999; Alfassi, 2004; Gersten et al., 2001; Vellutino et al., 2004, Leach et al., 2003.)

Archer and Huges (2011) identified key instructional elements of using direct instruction in lessons including: a)focused instruction on critical content matching students' needs; b) carefully sequenced instruction provided by the teacher to tell students what to do; c) breaking down complex skills into a step-by-step practice to model the skill; d) designing lessons with clear goals and expectations; e) modeling the skill and clarifying the decision-making processes needed to complete a task; f) guided practice to assist students to practice in order to build confidence and success so that they can complete the task on their own; g) provision of immediate affirmative and corrective feedback to ensure accuracy; and h) independent practice, cumulative practices and repeated practices during the lesson and over time.

On the other hand, the Orton-Gillingham Approach was considered to be the very first in combining direct instruction with multisensory visual-auditory-kinesthetic (VAK) to teach students with dyslexia to read. The Orton-Gillingham principles of instruction were identified by the International Dyslexia association and listed in the manual as essential components for teaching dyslexic students. The components of Orton-Gillingham approach included using systematic and explicit instruction in teaching phonemic awareness, alphabetic phonics and synthetic/analytic skills. The approach also used techniques including

systematic and logical, sequential, cumulative and integrated, cognitive, and reading fluency etc. in reading and oral (Gillingham & Stillman, 1997).

Gillingham and Stillman (1997) developed a multi-sensory instruction to teach students using visual, auditor, kinesthetic and tactile sense to build words. Then students could be able to associate what is seen in print (visual), what is heard (auditory), and what is felt orally as the sounds of the letters are produced (tactile sensations in the mouth) and the letters are printed (kinesthetic sensations in the large muscle movements) (Gillingham & Stillman, 1997).

Research found that students learnt best when vowel sounds, digraphs, and phonograms were often reviewed with multisensory techniques as additional sensory input in enhancing phonics and spelling (e.g., synthetic phonics, analytic phonics, embedded phonics, analogy phonics, onset-rime phonics, and phonics through spelling (Ehri et al., 2001).

In addition to the above, Swanson and Hoskyn's (2001) meta-analysis identified three components to achieve positive intervention outcomes that strongly influenced student learning: a) reducing task complexity by breaking down skills and teaching them in a sequence through direct instruction, b) teaching in small, interactive groups of two to five students; and c) directed response questioning in which students were encouraged to think aloud or engage in self-dialogue as they read.

2.3 SKILLS IMPORTANT FOR LEARNING CHINESE

LANGUAGE

The basic units of written Chinese are characters and more than 80% of modern Chinese characters are phonetic compound characters and consist of sub-character components or radicals arranged under the orthographic rules (Shu & Li, 2012). The Chinese word usually consists of two parts: a semantic radical which carries the meaning information of a character and a phonetic radical which provides the information about the pronunciation of a character. The semantic and phonetic radicals may be further divided into about 600 subcomponents with fixed internal structures. Then the components or subcomponents can combine to form thousands of characters. There are about 4,600-4,900 commonly used Chinese characters in Hong Kong (Cheung & Bauer, 2002). Previous studies had highlighted that visual skill and orthographic awareness played significant roles in Chinese character recognition and Chinese reading (e.g., Ho, Chan, Lee, Tsang, & Luan, 2004; Li, Peng, & Shu, 2006). Chan (1982) found that Chinese characters were very complex which were made up of different strokes to form stroke patterns. To further complicate the learning process, Hong Kong students spoke Cantonese every day and learnt to speak Putonghua. Moreover, the students used Chinese standard characters and Putonghua grammar in reading and writing.

Tong, McBride-Chang, Shu and Wong (2009) identified four main types of skills (phonological awareness, rapid naming, orthographic skills, and morphological awareness) in Chinese language that were found to be uniquely associated with three literacy skills (word reading, reading comprehension, and writing and dictation). A recent study by Yeung, Ho, Chik, Lo, Luan, Chan and Chung (2011) incorporated two additional reading-related skills namely,

listening comprehension and syntactic skill, as the six important reading-related skills to Chinese word and test reading. Chung et al (2011) found that Chinese dyslexic students were less competent than the control students in all cognitive (morphological awareness, visual-orthographic knowledge, rapid naming, and verbal working memory) and literacy measures (Chinese word reading, word dictation, and reading comprehension), which was similar to the research evidence that Chinese dyslexic primary school students had several underlying multiple cognitive deficits including visual-orthographic skills, rapid naming, morphological awareness, verbal memory, and phonological awareness (Ho et al., 2002, 2004).

To summarize the above studies, phonological awareness, rapid naming, orthographic skills and morphological awareness were key skills in Chinese reading and writing and these four skills should be included in the content of Chinese curriculum in intervention program. For secondary school students, higher level of literacy skills such as listening comprehension and essay writing needed to be included in the secondary school curriculum.

2.4 INTERVENTION PROGRAMS AND SCHOOL SUPPORT

Bronfenbrenner's (1979) ecological systems theory viewed child development as occurring within the context of a complex system of relationships in his or her environment. The main tenet of his theory regarding cognitive development is that cognitive development is powerfully shaped by the interactions between the child's own biology, immediate family, community environment, and the larger society. For students, the school environment was critical in influencing their growth and development.

Within the context of the school environment, school culture and principal's

leadership were captured as key criteria in Edmonds' (1979) study on school effectiveness research. School culture and climates were found to be related to student achievement (Maslowski, 2001). The term "school culture" was often used interchangeably with the terms "school climate", "school atmosphere", "school environment" and "academic climate" (Hoy & Hannum, 1997). Fullan (2001) defined a "good" school culture as a shared sense of purpose and value, continuous teacher professional development, and commitment to enhance student learning. Bandura (1993) claimed school culture could be shaped by school leadership and the decision-making process. The principal and teachers, with their shared values and beliefs, were able to promote higher levels of academic progress (Bandura, 1993). Research demonstrated that the principal's support and 'resource support' were good predictors in achieving school goals (Fullan, 1991). Hoy and Tarter (1992) found that there was a positive relationship between school effectiveness and student achievement and motivation. The key effective school attributes included principal's leadership, feelings of teacher ownership, and ongoing commitment of school resources to support students' achievement goals. The principal's leadership provided a climate more conducive to student success and achievement (Freiberg & Stein, 1999; Wang et al., 1997 and Maslowski, 2001; Hoy et al., 1990, Hoy & Hannum, 1997; Hill and Crévola, 1997). Bateman and Bateman (2001) also highlighted the importance of principal's leadership in defining the school's educational objectives, in school curriculum design and instruction, supporting teachers' professional development, monitoring students' progress, and promoting a positive learning culture. The principal's leadership was related to school culture, which is related in turn to student achievement (Witziers et al., 2003).

In dyslexia research, MacKay (2001), the creator of Britain's Dyslexia Friendly schools concept, advocated that effective intervention programs needed to be operated in a "Dyslexia Friendly school" characterized by strong leadership, emphasis on staff development, high quality instruction and learning, and social and emotional support for the dyslexic students. In these schools, all children – irrespective of their abilities – were deemed important and so they were provided with the appropriate resources and environment that they needed to develop optimally. MacKay (2005) identified four major factors in a "dyslexia friendly school environment".

The first factor was the teaching resources and the school should provide adequate teacher training on understanding the strengths and weakness of students with dyslexia. Teaching resources (e.g., teaching tips, teaching toolkits, subjects materials, teaching methods etc), additional teaching assistants, a co-operative classroom culture of peer support, computer equipment and assistive software were critical elements. Curriculum and classroom routines needed to be adjusted to cater for students' classroom learning (Riddick, 2006; Pavey, 2007). Continuous training was required to enhance the teacher's capability to teach these students; this aligned with Jerald's study (2007) on teachers training and teacher's efficacy in delivering better students' learning outcomes.

The second factor addressed the integration of school curriculum into the intervention program. The program should cater for dyslexic students' self-esteem and learning requirements, together with the appropriate assessments tools and continuous monitoring in order to achieve better results (Mackay, 2005).

The third factor that Mackay (2005) advocated was the dominant driving force

of school principal's leadership in shaping the school environment for the implementation of intervention program. Principal's leadership was ranked as one of the key variables associated with effective schools. Gersten, Keating, Yovanoff, and Harniss (2001) stressed that the principal of an effective school was the leader for all programs including special education for disabilities. Strong principal's leadership was important in providing administrative support for additional educational resources, high-quality professional development for teachers and positive learning environment. Sergiovanni (2001) suggested principal's leadership was the key to school improvement. It involved allowing teachers to develop their skills, giving them the scope to bring new ideas and initiatives into the school and enabling staff to take a lead in an atmosphere of openness, support and no blame.

The final factor Mackay (2005) pointed out was the collaboration with parents and training should be provided to them so that they could understand the symptoms and difficulties of dyslexic students, while addressing their anxieties and offering advice to assist these students at home.

Hill and Rowe (1996) advocated that schools' support on teachers' professional development could enhance the students' outcomes for students with learning disabilities. Hill and Crévola (1997) further articulated that school support required designing and aligning the system, process, and resources in the school to effectively support the students. The designing and aligning of system, process and resources allocation included setting appropriate educational standards, designing curriculum, providing system and technology resources, school and classroom organization and monitoring and assessment of student progress. In term of the teaching process and appropriate system support, Hill and Crévola (1997) pointed out that school support could drive

the creation of a positive learning environment that maximized student learning outcomes. Hoy and Tarter (1992) also emphasized the importance of resources support; so that relevant and appropriate materials were available to support teaching. A study showed that additional trained teaching assistants were found to be effective in the classroom interventions setting as they not only supported regular classrooms learning, but also provided individualized 'learning support' and 'practical support' (to handle emotions and frustrations) when students encountered significant difficulties in their reading and writing assignments (Hatcher at el, 2006).

To summarize the above reviews; three key factors for school support were required to promote students' academic achievements: a) principal's leadership b) quality teaching resources and ongoing professional training for the teachers c) and designing and aligning systems, processes and resources.

2.5 THE ROLE OF TEACHERS

Based on social cognitive theory, Bandura (1997) postulated that "human agency" operated within a transactional causal framework that consisted of a triad of interdependent factors: behavioral; cognitive-biological and affective-biological; and environmental factors. The concept of efficacy came from Bandura's social cognitive theory (Bandura, 1977) and Bandura depicted that teachers' efficacy belief was very powerful in bringing about desired outcomes of student engagement and learning, even among students who might be difficult or unmotivated (Bandura, 1977). The self-efficacy of teachers was found to be directly related to their performance in the classroom and Bandura

and Locke (2003) found that through teacher professional development, it was possible to enhance teacher's self-efficacy.

2.5.1 Teacher efficacy

Teacher efficacy was defined as "the teacher's belief in his or her capability to organize and execute courses of action required to successfully accomplishing a specific teaching task in a particular context" (Tschannen-Moran, Woolfolk-Hoy, & Hoy, 1998, p233). In this regard, teacher efficacy was believed to be teachers' self-efficacy beliefs to lead to higher students' and motivation (Gibson and Dembo, 1984; Bandura, 1995; Tschannen-Moran, Woolfolk Hoy & Hoy, 1998).

Self-efficacy was believed to be central to the motivation of teachers. Bandura (1986) described the source of teacher's sense of self-efficacy : a) mastery experiences (direct teaching experiences which were challenging and successful in the case of teachers), b) vicarious experiences (observing peers with similar performance levels who could overcome challenges successfully), c) physiological and emotional states (feelings of confidence and success), and d) verbal and social persuasion (in the case of teachers, receiving positive feedback from students, their peers, management staff, and families). Out of these four sources, mastery experiences were regarded as the most influential on teacher individual and personal self-efficiency (Bandura, 1997; Tschanen-Moran et al., 1998). Practices such as the observation of good teaching and direct teaching with positive feedback from peers were also likely to enhance teacher self-efficacy. Increased experience as a teacher was also

found to be associated with higher levels of teacher self-efficacy (Hoy & Woolfolk, 1993; Ross, Cousins, & Gadalla, 1996).

Research showed that teachers with high teacher efficacy displayed four characteristics in their teaching practices. First, high efficacy teachers were committed to try new teaching ideas (Jerald, 2007) and experiment various strategies and curriculum ideas (Tschannen-Moran et al., 1998); teachers were more persevering when encountering obstacles, more actively engaged in planning, providing feedback to students having difficulties and were less likely to be critical of students (Ashton & Webb, 1986; Bruce, Esmonde, Ross, Dookie & Beatty, 2010).

Second, high efficacy teachers were capable to use classroom management approaches to stimulate student autonomy and enhance students' motivation in classroom learning (Ross, 1998). On the other hand, Brouwers and Tomic (2000) found that low efficacy teachers had experienced in burnout due to students' misbehavior and inability to maintain students on tasks in the classroom. In comparison, high efficacy teachers were confident to use proactive approaches effectively to handle disruptive behaviors (Ashton & Webb, 1986; Martin et al., 1999).

Third, high efficacy teachers had positive attitudes toward low achievers and were able to build a close and friendly relationship with the students and helped them to set higher academic standards and strived for achieving their set expectations (Alderman 1990). Through the good relationship, higher efficacy teachers were confident in "his or her capabilities to bring about desired outcomes of student engagement and

learning, even among those students who may be difficult or unmotivated" (Tschannen-Moran and Woolfolk-Hoy, 2001, p. 783).

Fourth, teachers with high perceived efficacy beliefs were able to design appropriate curricula and created an environment conductive to the development of cognitive thinking skills and capabilities (Bandura, 1993). Research evidence also showed that teachers' self-efficacy beliefs were powerful forces in producing positive effects on the achievement of teaching goals, sustaining teachers' persistence when things did not go smoothly, and their resilience in the face of setbacks (Johnson, 2010).

2.5.2 Teacher training

Bruce et al (2010) proposed that an effective intervention program should include continuous professional training as a key factor in enhancing teacher efficacy and raising teachers' personal competence levels. Friedman (1999) suggested that adequate training, or training in innovative techniques, could enhance a teacher's sense of competence and teaching efficacy.

A UK study reported that classroom teachers did not feel confident if they did not have sufficient knowledge about dyslexic students (Rose, 2009). Rontou (2012) reported that general education teachers did not have sufficient knowledge about dyslexic students. Teachers' lack of confidence was due to lack of the right training to help them teach students with dyslexia. In addition, the author remarked that teachers might know that there were beneficial resources available, however; they did not use them due to lack of knowledge of how to use them. Lyon et al (1989) also observed a general sense of insufficiency among teachers in

teaching dyslexic students in the area of reading and comprehension skills. The authors found that many teacher training programs were inadequate in supporting the teaching of dyslexic students. They found that both regular and special education teachers were lacking in content expertise, knowledge of validated pedagogical principles, and supervised experience with students with special learning difficulties (e.g., dyslexia).

Rontou (2012) suggested that general education teachers should be offered appropriate training courses regarding how to teach students with special educational needs and how to use resources including multi-sensory methods and materials etc. Rose (2009) recommended that teachers who provided literacy interventions for students with dyslexia should be trained and updated through in-service training. Also, the author recommended the establishment of a tier of specialist teachers who played a role in training other teachers, monitoring the implementation of programs, and devising tailored programs for specific children in order to increase the success of intervention program.

Rowe (2006) indicated that quality teaching by competent teachers, who were equipped with effective evidence-based teaching strategies, could lead to effective students' learning. Teachers' professional training was found to be an important factor correlated to teachers' higher self-efficacy believes (Ross& Bruce, 2007) and ongoing teachers' training was essential to maintain high teaching standards to teach students at all levels of schooling (Hattie, 2003, 2005). Mackay's (2005) concept of "dyslexia friendly schools" asserted that teacher training and continued professional development was critical to support teachers in

teaching students with dyslexia. Most intervention programs were provided by classroom teachers and specialists who had undergone specialist training and attained qualifications in teaching children with dyslexia. Humphrey and Mullins (2002) accentuated the importance of specially trained teachers to teach students phonological skills, decoding, and language comprehension skills. Thus, effectiveness of an intervention program was highly dependent on the teachers' knowledge and the use of appropriate intervention strategies to teach dyslexic students. Vaughn and Roberts (2007) concluded that successful interventions must be delivered by well-trained teachers and professionals. When teachers were provided with extensive and on-going professional development, coaching and guidance on instructional practices, teachers could make a difference in classroom in promoting students' learning experiences and generating positive academic outcomes (Hattie et al., 1995, Denton, Vaughn, & Fletcher, 2003, Hattie 2003, Tolman, 2005; Wanzek &Vaughn, 2007; Slavin et al, 2008).

2.5.3 Co-teaching

According to Bandura's model, vicarious and actual success experiences were ways to enhance self-efficacy. Within the context of teaching students with dyslexia, co-teaching, i.e. having a general education teacher and a special service provider (e.g., special education teacher, speech/language pathologist) teaching together in the same classroom to meet the needs of individual students (Murawski, 2005) was a viable strategy. The mainstream teacher could observe the successful teaching of the specialist teacher, and could experience success in teaching

through a supportive co-teaching work arrangement. Friend and Cook, (2010) emphasized collaboration between general teachers and specialist teacher in special education. Co-teaching was characterized as the partnering between professional peers with different types of expertise, knowledge and skills to meet the instructional needs of the diverse student population. Friend (2008) explained that both special education teachers and general education teachers would actively participate in the delivery of instruction and share responsibility to teach the students. Friend (2008) suggested four areas of co-teaching opportunity in exemplifying a) explore in-depth knowledge and skills required on curriculum and how it can be taught; b) maintain in-depth knowledge on pacing of instruction, strategies and tools to facilitate student learning; c) manage students' classroom behavior through variable activities (classroom management); and d) understand students' individual needs in relation to learning e.g. family and emotions etc.

Friend and Cook (2010) described six different co-teaching models (one teach, one observe; station teaching; parallel teaching; alternative teaching; teaming; one teach, one assist) and teachers could determine which model worked best in classroom teaching practices. The authors stated no one co-teaching structure was better than another but different structures could be used for different purposes such as pre-teach, review, and enrichment etc. The teachers could use various co-teaching approaches based on the variations of students' needs, caseloads and class size, professional responsibilities and instruction intent. Co-teaching should involve "specific content (objectives), with mutual ownership, pooled resources, and joint accountability, although each

individual's level of participation may vary" (Friend, 2005).

Friend (2008) claimed co-taught class creating a more positive learning environment with flexible and standards-based instruction to tailor for students' individualized learning needs. With co-teaching by specialized education teachers, students with disabilities would be benefited from specialized instructional strategies and more attention to students' individualized learning needs until the general education teachers were able to master the teaching process.

Weigel, Murawski, and Swanson (2001) conducted a meta-analysis regarding co-teaching and found that co-teaching or collaborative teaching might be a suitable strategy for teaching a heterogeneous group of students with and without special education needs. Bacharach, Heck, and Dahlberg (2008) reported improvement in students' reading and mathematics results by using co-teaching models. The authors also identified key areas for success including sufficient time for co-planning, building positive working relationship between co-teaching partners, and ensuring school support in implementing co-teaching models.

Although co-teaching became more common, teachers reported a variety of frustrations with co-teaching due to lack of training (Mastropieri et al., 2005), lack of administrative support (Rea, 2005), and a lack of parity in the classroom (Dieker & Murawski, 2003; Spencer, 2005). Friend and Cook (2010) advocated strong principals' leadership; sufficient administrative support in facilitating common planning time, and the providing professional development for teachers as the critical success factors to implement co-teaching in schools.

In Hong Kong, the EDB also advocated collaborative teaching which involved a teaching team formed by two or more teachers who prepared the lessons as well as teaching students together for certain subjects (EDB, 2008).

2.5.4 Summary

To summarize, a teacher with a high level of teacher self-efficacy was shown to be more resilient in their teaching. Teacher efficacy was found to be positively correlated with higher student achievement. Furthermore, continuous teacher training and development was critical for effective intervention programs for dyslexic students. Co-teaching was also a viable strategy in teaching students with diverse learning needs. Though there were ample studies on the correlation between teachers' efficacy belief and students' academic achievement/learning outcomes, there were limited studies on the association of teacher training, teacher efficacy with students' academic achievements, and learning outcomes among students with dyslexia.

2.6 INTENDED STUDENT OUTCOMES

The primary student outcome was the improvement in the student's academic achievement. Through participation in the program, students would become more competent in their reading and writing skills, with improvement in academic achievement in English and Chinese language assessments.

The academic achievement for dyslexic students was usually well below the average and they likely encountered difficulty with social acceptance and poor

self-concept (Bender & Wall, 1994). These students required support to become effective learners who can monitor their own studies in order to achieve their own academic goals (Zimmerman, 2002).

The secondary outcome was students' learning outcome and included their self-regulated learning and their quality of school life. Self-regulated learning, synonymous with self-learning, referred to a process whereby the learner consciously and actively directed his/her actions in the learning process (Mok, Cheung, Moore & Kennnedy, 2004; Mok & Chen, 2001). It allowed students to develop skills necessary for lifelong learning in a rapidly changing environment. Mok and Chen (2001) considered self-regulated learning a cyclical process based on three components: mindset, action, and outcomes. The students' learning mindset was linked to their pre-existing conditions of motivation, cognition, and willingness to learn. Action indicated the students' intended activities and behavior. The outcomes indicated the academic results from the school learning process. These three components were linked by the four processes of planning, monitoring, feedback to mindset, and feedback to action. Planning was the process of preparing for monitoring and feedback. Monitoring indicated the process of identifying a mismatch between the intended targets and action and the outcomes of the learning process. Feedback to the mindset supported students in reflecting and changing their mental models, and then changing the planning process. Feedback was also directly linked to action so the students could modify and improve their learning behaviors. Mok and Chen (2001) documented that the cyclical nature of self-regulated learning took place over several cycles before long-lasting learning occurred when the students could achieve high levels of knowledge and be able to perform higher levels of tasks. In the present study, with input on

cognitive and metacognitive learning strategies, it would be expected that there would be an improvement in students' self-regulated learning.

Quality of school life was accepted as an indicator of general well-being and had been accorded special significance by educators because it was viewed as important in its own right and also because of the relationship between students' quality of school life and their academic achievement (Mok & Flynn 1998; Leonard, Bourke, & Schofield, 2013). The students' quality of school life was believed to be strongly related to their positive attitude towards learning and a stronger sense of belonging to school, while their participation in school and class were strongly related to the fulfillment of the achievement goals. Several studies identified that students with positive views on the quality of their school life, attendance, and social outcomes of schooling reported better learning and achievement outcomes (Ainley, 1995). Student perception of the fun and enjoyment was seen to be gained from schooling and relationship with their teachers. With the additional support in the current intervention in terms of small-group teaching, direct instruction on academic content and acquisition of cognitive and metacognitive learning strategies, the students would be more likely to experience success in their learning which was related to quality of their school life. The additional support from schools in terms of the intervention provisions may also contribute to a more positive view of school life.

2.7 INTERVENTION PROGRAM FOR DYSLEXIC STUDENTS IN HONG KONG

Over the past ten years, most of the efforts were spent on the development of

assessment tools to assist teachers and professionals to identify students with specific learning disabilities. In response to the increased needs of teachers and parents, EDB supports school to build up an infrastructure to deliver intervention through a whole school approach. Teachers are given training support to conduct intervention in an inclusive school environment.

2.7.1 Support services for schools

In 2000, the Equal Opportunities Commission (EOC) included Specific Learning Disabilities (including dyslexia) in the Code of Practice on Education under the Disability Discrimination Ordinance (DDO). The Education Bureau (EDB) published various teaching and assessment guidelines to support students with Specific Learning Disabilities. In 2005, in order to cater for student diversity, the EDB launched the whole school approach and continued to promote an inclusive education policy (EDB, 2005). The EDB provided multiple levels of service for students diagnosed as dyslexic:

a) specific language support by speech therapists (LC Paper No. CB(2)2518/11-12(01)) outside of regular classroom sessions;

b) guidance to schools on making general teaching adaptation and accommodation;

c) support for the development of special learning support teams within the school to provide overall administrative and educational support to the dyslexic students;

d) professional support (educational psychologists) to support the

school's learning support team; and

e) training to teachers to support the dyslexic students.

2.7.2 Intervention packages

In addressing the educational needs of these dyslexic students, a 2002-2003 QEF funded project named “Dyslexia: Awareness and Teaching” by The Hong Kong Institute of Education focused on developing a training package to help school teachers teach dyslexic students effectively. The project had successfully raised awareness of teachers and developed a structured program focused on reading and word recognition. However, there was a lack of outcome measures on the effectiveness of the materials and program. Since the training program was conducted during recess, there was lack of evidence whether the program can be integrated in the school curriculum.

In response to the need for developing the learning resources, the EDB collaborated with many stakeholders and non-government organizations on programs, resources development, and service provision. In 2006, a $150 million budget was approved by the Jockey Club for a 5-year (later extended to 8-year until 2014) READ and WRITE project led by the University of Hong Kong and Chinese University of Hong Kong, in collaboration with Heep Hong Society and the Society of Boys’ Centres. The program included:

a) the development of a prevention program at kindergarten level;
b) a school-based support model for primary schools;

c) school-based training for teachers of the participating schools;
d) development of secondary school Chinese language learning kit with IT support system for teachers and parents;
e) development of district-based support model;
f) learning kits for pre-school and primary school students at risk; and
g) research, development and production of screening and assessment tools to help teachers' in assessing the literacy and cognitive functioning of primary and secondary school students.

There are some additional resources materials including: a resource pack for supporting junior secondary school students in Chinese Reading and Writing (2010) called "Read and Write Made Easy" for teachers and a booklet to help teachers on teaching suggestions accompanying The Hong Kong Specific Learning Difficulties called "Helping Children with SpLD : Teaching Suggestions" (2001) (Chinese version only); a multi-media CD-ROM for school-based training material for primary schools' teachers to promote awareness, early identification and teaching strategies of SpLD (2001); "Rebuilding our Word Planet", a set of multi-media CD ROMs and web-based version with games, developed for parents and teachers to train the phonics skills of students with SpLD (for use by Primary and Secondary School) and to be tried out by schools (2007); and a CD ROM called "Overcoming the Barrier: a Guide for Teachers on Helping Secondary School Students with Specific Learning Difficulties" (2009) (Chinese version only). These resources provided tips for teachers on effective teaching and management strategies under the Whole School Approach to supporting students with dyslexia.

There are some resources to help parents to understand dyslexic children including「學得生動，教得輕鬆：如何幫助有讀寫困難的學童」(2001) (Chinese version only).

There was, however, limited published data on the effectiveness of the above packages and the READ & WRITE program on secondary school students. Moreover, there was limited published data on how this program could be effectively used within a mainstream school setting while catering to the demands of a full curriculum, examinations, and students' learning outcomes.

Though intervention programs were available, there were some general issues regarding the intervention programs in the Hong Kong context. First, curriculum constraints and insufficient time and made it difficult to fit the intervention curriculum into normal school mainstream curriculum. Second, there were insufficient teaching resources that could help junior secondary students with dyslexia during normal lessons. Third, most students were quite unwilling to attend after-school tuition classes since such after-school arrangement limited the students' time in participating extra-curricular activities even though the teaching resources were available (Assessment of Children with Specific Learning Difficulties (Disabilities), 2007).

A review conducted by Ngan-Keung (2008) had summarized the key inadequacies of the current services for dyslexia students in Hong Kong. First, he commented that school support was very insufficient and ineffective for dyslexic students due to the lack of knowledge on dyslexia and the appropriate teaching methods in teachers and lack of resources

and guidance in schools from the government. Second, with the EDB's New Funding Model launched in primary and secondary schools to adopt a whole-school approach to create a supportive learning environment for dyslexic students, there was no assurance system for measuring the extent that the students could benefit from this program. Third, the current training materials and tools were in Chinese and focus on primary school students and unable to address the training needs in higher level literacy content in English reading and writing. Finally, the support from school varied between schools and there was a lack of uniform monitoring process of allocation of the resources to ensure that the needs of all students with special needs are met, leading to conflicts between schools and parents.

There was also a lack of published studies on how the intervention was conducted (e.g. group size and frequency of interventions; teaching strategies used and the strategies found to be effective etc.).

2.7.3 Teaching training

Given the Whole School Approach's, specific emphasis on teacher training, the EDB launched a 5-year professional development framework to enhance teachers' capacity in supporting students with SEN. Under the updated framework, as stipulated in EDB (SES2)/TR/02/2, structured training courses would be in three levels: basic, advanced and thematic (BAT courses) (EDB, 2015):

1) A basic course (of 30 hours) and an advanced course (102 hours) consisting of principles, theories and practices of teaching strategies, curriculum and assessment accommodations to cater for diverse

learning needs. These courses aim at strengthening teachers' professional capacity in providing tier-1 and tier-2 support for students with SEN.

2) A series of thematic courses grouped according to the educational needs of students under three categories (cognition and learning needs; behavioral, emotional and social development needs, and sensory, communication and physical needs). These courses aim at providing in-depth training for teachers to help them acquire the knowledge and skills in catering for students requiring tier-3 support. The duration of a thematic course ranges from 90 to 120 hours under each category.

In addition to the above training, the EDB also organized training courses for special school teachers with lesson observations and discussions in addition to seminars, workshops, and experience-sharing sessions on topics related to SEN for teachers and other school personnel on an as needed basis. However, similar to the comments by Ngan-Keung (2008), the effectiveness of these training cannot be determined. Additional training courses are provided by Hong Kong Institute of Education from 2004-2005 onward. A top up program called Bachelor of Education (Special Needs) is offered by The Hong Kong Institute of Education to support teachers who are teaching students with specific educational needs.

2.7.4 School support

In term of principal leadership, Cheng (1991) conducted a study of

leadership styles and school effectiveness in 64 secondary schools in Hong Kong and found that open school climate and positive principal-teacher relationship could enhance students' learning. Cheng (1991) proposed a leadership model in response to the complexity and multiplicity in the educational management. He asserted that principals displaying high task-motivated and relationship motivated leadership were found to be most effective in teacher-principal and teacher-teacher interactions. Researches highlighted the importance of principal's leadership in shaping the school vision and guiding better teaching through allocation of resources to provide better learning environment.

There were no published studies on the effectiveness of the use of whole-school approach to cater for learner diversity e.g., students with dyslexia in the Hong Kong context. There were also no published studies on the effectiveness of school level support in the implementation of intervention programs. There was a gap in the current dyslexia studies in understanding the school support model in supporting students with dyslexia in classroom learning.

2.8 CONCLUSION BASED UPON LITERATURE

Based on the literature review above, an effective intervention program design must include the following:

- Intervention to be conducted in a small group/class (average 1:4) that can be integrated into the school curriculum.
- Intervention must be intensive and of high frequency, e.g., daily intervention sessions for a whole school year.

- Intervention should involve teaching students how to use cognitive and metacognitive strategy learning in problem solving.
- Intervention should involve effective use of direct instruction in intervention domains in English learning (phonologic awareness, phonics, vocabulary, comprehension, spelling and fluency).
- For Chinese learning, the intervention domains should include phonological awareness, rapid naming, orthographic skills and morphological awareness.
- Teachers should be provided with continuous training on teaching strategies and intervention content for dyslexic students.
- Strong school support in providing additional resources and designing and aligning processes to create a positive learning environment that maximizes student learning outcomes.

The present research would address the important gap in the intervention research. There was a lack of outcome study on the effectiveness of intervention programs for secondary students with dyslexia in Hong Kong. This study evaluated the effectiveness of an intervention program for secondary school students with dyslexia within the mainstream school curriculum and addressed the lack of studies on teacher efficacy and students' academic achievement and learning outcomes in dyslexia literatures.

CHAPTER 3 INTERVENTION FRAMEWORK

This chapter presents the intervention framework in this study. The intervention program was implemented in a split-group in- classroom intervention setting within the context of whole-school approach to support secondary school students with dyslexia. In this chapter, the rationale and evidence-base of various components of the intervention program are explained.

3.1 THE INTERVENTION FRAMEWORK

As stated in Chapter 2, the theory of change approach was adopted to guide the design of the intervention framework and evaluation process. The intervention framework (Figure 3) was developed using Hernandez and Hodges's (2001) model linking the target population, intervention program and the intended outcomes (students' academic achievement and learning outcomes).

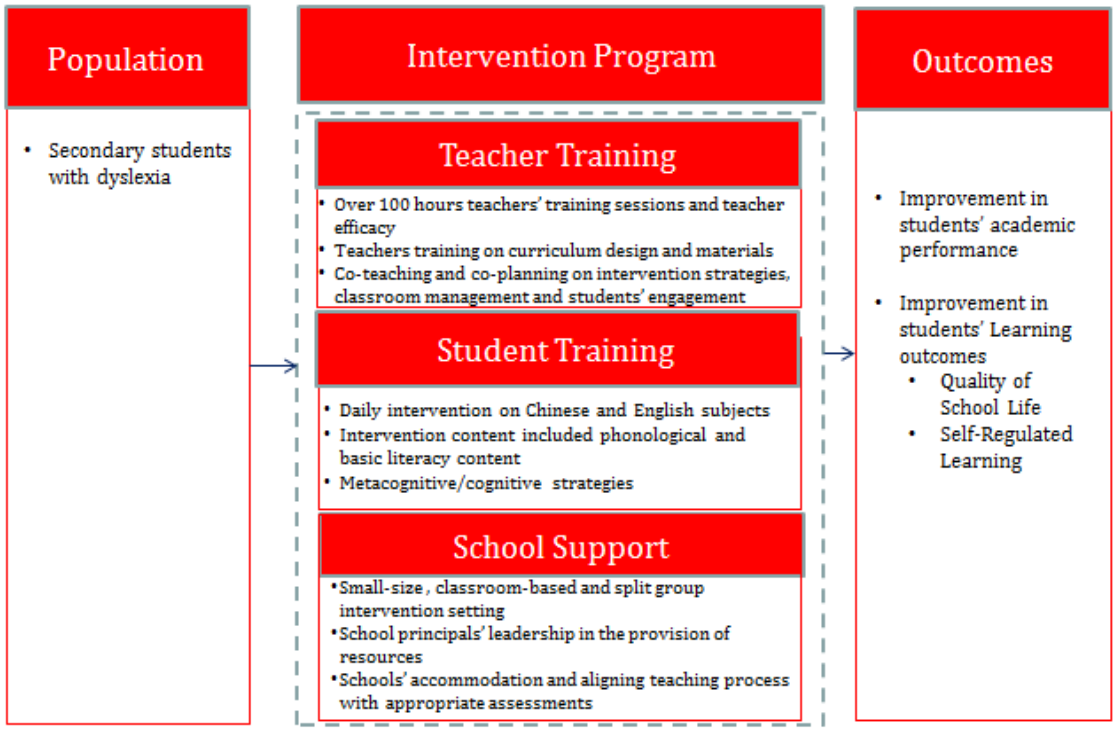


Figure 3 Intervention framework based on Hernandez and Hodges' (2001) theory

of change model

The intervention framework encapsulated three elements including:

- The target population was secondary school students that were diagnosed as dyslexic. They were students under the Tier two or Tier three levels of the Hong Kong Three-Tiered Intervention Model, who had severe difficulties and were in need of intensive support. These target students were selected due to the fact that they had severe difficulties in school learning and there was a lack of intervention programs for secondary school students with dyslexia.
- The intervention program covered three components implemented in the context of school support (i) teacher training by a professional team and teacher efficacy; (ii) student training on Chinese and English subject content, phonological and literacy skills, metacognitive and cognitive strategies in daily intervention lessons; (iii) intervention treatment setting in a regular classroom instruction and in a split-class mode.
- The intended outcomes were improvement in students' academic achievement and learning outcomes.

The implementation of the intervention program was led by a project team with Professional Specialist teachers from a non-profit organization providing educational services for Hong Kong children with specific learning disabilities (SLD) including dyslexia (denoted by ABC in the study). The intervention setting was a small-size, classroom-based and split-group treatment setting in English and Chinese lessons. There would be approximately 10 students with dyslexia in a split-group class. Intervention sessions were conducted daily for the whole school term approximate 160 interventions hours with the intervention content integrated

within the school mainstream curriculum. During the intervention sessions, the secondary school students with dyslexia would be taught by teachers both from their own schools (trained on the teaching strategies) as well as by research project team special language support teachers (Professional Specialist teachers) using instructions, materials and strategies developed by the Professional Specialist teachers.

3.2 TEACHERS TRAINING AND TEACHING EFFICACY

Research showed that effective intervention program required effective training and professional development for teachers and training was a critical factor in shaping teachers' efficacy beliefs (Bruce et at, 2010). Teachers' self-efficacy was found to influence students' learning motivation and academic achievement (Tschannen-Moran & Hoy, 2007). Research indicated that teachers with positive personal teacher efficacy were willing to experiment with various strategies, curriculum ideas and students were observed to demonstrate higher academic achievement (Tschannen-Moran et al., 1998, Gibson and Dembo, 1984). However, there was limited training effectiveness studies investigating the relationship between specialized training required to teach students with disability and teacher efficacy. Many teachers did consider themselves under-trained, or without the right training and had difficulties in managing students in inclusive classrooms (Lyon te al., 1989; Anderson, Klassen, & Georgiou, 2007; Rontou, 2012). So with appropriate and intensive training on intervention strategies, teachers could show higher teacher efficacy in teaching students with dyslexia.

In the current study, intervention school teachers were provided with over 100 hours of continuous training throughout the whole intervention period. The

training was conducted in three stages by a project team of Professional Specialist teachers from an organization specializing in supporting students with dyslexia. The first stage (approximately 30 hours of training) was the design stage that included weekly training to help teachers familiarize with the intervention content. The training was conducted before the start of the school calendar year and before the commencement of student intervention. Teachers were also taught on direct instruction strategies on teaching students task-related skills (such as underlining, note taking, rehearsal, and summarizing). Then, teachers were trained on intervention content and how to integrate the content with teaching curriculum. The training aimed at helping teachers understand the characteristics of the students and introduced direct instruction teaching methods and teaching of cognitive and metacognitive learning strategy.

The second stage (approximately five months) was the development stage where teacher training was conducted monthly. Initially, the teachers were trained on classroom management and activities in engaging students in classroom learning. The Professional Specialist teachers reviewed with the teachers on instruction strategies and support teachers to teach self-management skills (such as planning, implementing, and monitoring one's learning efforts, and conditional knowledge of when, where, why, and how to use particular strategies in their appropriate contexts). Then, Professional Specialist teachers demonstrated the use of intervention strategies and phonology and literacy content and curriculum materials designed by the Professional Specialist teachers. The training aimed at building teachers' confidence and knowledge in using the materials in classroom-based teaching with students with dyslexia.

The third stage (approximately three months) was the internalization stage where

the Professional Specialist teachers continued the training on intervention strategies, reviewed the teachers' sample lessons plans, made recommendations and appropriate modifications. The key emphasis in this stage was to build teachers' confidence in mastering classroom-based intervention and to design lessons materials integrating the intervention materials with the school curriculum. Teachers' professional training was an important factor contributing to higher teacher efficacy (Ross & Bruce, 2007) and the current intervention program emphasized in teacher training aiming at strengthening teachers' knowledge, strategies and delivery of instructions in classroom practices through professional training conducted by Professional Specialist teachers.

3.3 INTERVENTION CURRICULUM

As stated in Chapter 1, the intervention program was designed especially for secondary school students with dyslexia, with a focus on student training on phonics and literacy content and strategies.

3.3.1 Literacy and phonic skills

As discussed in Chapter 2.2, literacy skills were embedded across curriculum in the five components: phonemic awareness, phonics, vocabulary, fluency, and comprehension (USAID, 2014). Literacy skills needed to be integrated with school curriculum and students needed to learn knowledge and skills in language subject content including listening and speaking, reading, writing. Without the necessary literacy skills, students with dyslexia would have difficulties in learning the subject content, completing assignments and preparing for school assessments.

For the current study, the curriculum content was developed by the Professional Specialist teachers and consisted of two components: (a) the phonological and

basic literacy content and (b) the advanced literacy content integrating literacy skills and language curriculum as required by secondary school curriculum.

For English curriculum, the program was developed by adapting Alexander and Slinger-Constant's (2004) six content areas which included the basic and advanced literacy skills shown in **Table 2** and **Table 3**. The phonology and basic literacy included phonemic awareness, phonics/morphology, vocabulary, sentence reading and comprehension, spelling and writing and fluency instruction. The advanced literacy content focused on higher level skills integrating listening, speaking, reading, writing and composition. For Form 1, 80% of the intervention time focused on phonological and basic literacy content while 20% was on advanced literacy content. For Form 2, 50% of the intervention time focused on phonological and basic literacy content while 50% was on advanced literacy content. For Form 3, 75% of the intervention time focused on advanced literacy content while 25% of the time focused on phonological basic literacy content such as phonemic awareness, phonics and vocabulary etc. In higher forms, more emphasis would be on advanced literacy content which builds on the phonological and basic literacy content.

For the Chinese curriculum, the phonological and basic literacy content included six skills related to Chinese reading and writing ability from Tong et al. (2009) and Yeung et al (2011), namely phonological awareness, rapid naming, orthographic skills, morphological awareness, listening comprehension, and syntactic skills which details showed in **Table 2** and **Table 3**. Yeung et al. (2011) found that rapid naming was a significant predictor of Chinese word reading and dictation (i.e., spelling) in the context of orthographic skills and morphological awareness. For Form 1, 50% intervention time focused on phonological and basic literacy content and 50% on advanced literacy content. For Form 2 and 3, 25%

intervention time focused on phonological and basic literacy content and 75% on advanced literacy content which builds on the phonological and basic literacy content. With more emphasis on advanced literacy content for senior Forms, it could better support students to address examination related curriculum.

3.3.2 Cognitive and metacognitive strategies

Research suggested that teaching students metacognition/cognitive strategies was helpful in guiding students' problem-solving and completion of tasks (Woloshyn et al., 2001). Professional Specialist teachers provided training on teaching students metacognitive/cognitive stills, goal setting, time management and problem-solving strategies as well as rewarding students based on successfully setting and meeting challenging goals (Pintrich, 2002). An example of three-step approach of using self-regulation: a) planning a task by allocating time and resources to understand the problem; b) monitoring the progress and self-test and check for understanding; and c) evaluating on completion of tasks and achieved the learning goals.

The Professional Specialist teachers adopted the Orton-Gillingham instructional methods in guiding students' reading and spelling. Multisensory techniques were used to help students remember the mnemonics in spelling and reading. Another focus was teaching students how to use graphical visual organizer to serve as visual cues to understand and organize the materials in classroom learning such as sequential paragraph organizer, compare and contrast organizer, Venn diagrams, descriptive organizer, and cause and effect organizer (Mather, et al., 2009).

It was expected that when the students were trained on metacognitive/cognitive strategies, they would be able to use the learnt tactics in understanding, planning, organizing and completing classroom and homework assignments. Then, students

would have higher interests in attending lessons and be able to achieve better academic achievements in medium and longer term.

Table 2

Phonological and basic literacy content of Intervention program for Chinese and English (Tang & Ting, 2012)

Phonology and basic literacy content	English Curriculum Teaching Focus	Chinese Curriculum Teaching Focus
Phonemic awareness	Develop students' phonemic awareness by auditory and visual discrimination of sounds using flash cards of onset-rime	Key focus on Chinese characters and understanding semantic component (the radical) and a phonological component (the phonetic)(□ □ □ □ □ , □ □ □ □ , □ □ □ □)
Phonics Morphology	Teaching students how to link the sounds of language to print, to recognize words based on recognized patterns, to decode multisyllabic words, and to generalize the learned rules of phonics to new words	Key tasks to help students understand phonics and morpheme and the inflection and derivation of words 先驗知識：「形音義」、部首-部件、聲旁-形旁等概念,教導50個常用部首及拆字法
Vocabulary	Teaching students to recognize the meaning of words and to build an appreciation of new words and their meaning so that learning the meaning of new words is an ongoing process supported by the teacher and through independent activities.	Teaching students in expanding vocabulary through the understanding of the word formation and morphological structural awareness; learn common idioms and thesaurus (默書延展, 擴大心理詞庫; 詞庫擴充版-近義詞、主題詞庫; 認識常用熟語/諺語/成語)
Sentence Reading and Comprehension (foundation skills)	Reading short passages and asking questions about what they read to help them understand while reading.	Reading stories, texts such as narrative, descriptive, and expository and trying to answer questions to test their understanding.(閱讀基本法及閱讀理解應試策略)
Spelling and writing	This is used to support the acquisition of phonics rules and word reading. Mapping sounds to print and teaching students to recognize word patterns (e.g., am, it, ate etc) helps students read words rapidly; learn to use	Key focus on word reading, word dictation and filling in the correct words(聲旁解碼法則, 詞意解難拳, 詞意解難方法)

	sound-spelling relationship in writing letters, sound patterns and words. Adopt Process Writing approach to guide students through the different stages of writing: Think – Draft – Edit – Check.	
Fluency instruction	Develop students' skills of reading aloud in terms of accuracy, clarity and fluency by Teacher Modeling, Echo Reading and Peer Reading. A specific speed and fluency benchmark measurement is provided so as to encourage students to progress.	Develop students' skills of reading aloud and with intonation including story, poem (□ □ ,□ □ □ □ , □ □ □ □ □)

Table 3

Advanced literacy content of intervention program for Chinese and English (Tang & Ting, 2012)

Advanced Literacy content	English Curriculum Teaching Focus	Chinese Curriculum Teaching Focus
High level literacy skills integrating listening, speaking, reading and composition with secondary school curriculum	Integrated secondary school curriculums including listening (listen to texts and story; learn how to answer questions); speaking (oral, fluency and conversation practice and drill); reading (paragraph and story comprehension and strategies in summarizing and answering questions) and writing and composition (strategy in learning grammar; sentence patterns and structures; story and letters writing)	Integrated secondary school curriculums across domain areas including listening (瀏覽試卷策略，聆聽策略), speaking(朗讀技巧, 短講策略(如：脈絡策劃及內容整理、修改及態度訓練); 小組討論策略(包括：題型分析、內容聯想方法、適當用語及對應等), reading (基礎閱讀策略(如：找中心句、閱讀基本法三則、重述法、圖表法等); 按不同文體而相應運用的閱讀策略(如：記敍文法、文章結構、說明方法、論證方法等); 文言文解讀策略--「增刪易改」、「猜情尋」and writing and composition(記敘描寫/抒情文; 說明文練習(配合「基礎學習」中的主謂賓句、複句

	練習);按不同文體而相應運用的寫作策略(配合閱讀策略);實用文寫作學習)
Cognitive and metacognitive strategies	Learn cognitive strategies (e.g., visualization, verbal rehearsal, paraphrasing, summarizing, estimating) and metacognitive strategies (e.g., self-management, self-instruction, self-monitoring, self-evaluation and self-regulatory) in advanced literacy content (integrating listening, speaking, reading and writing based on the phonological and basic literacy skills) and problems solving skills.

3.4 CO-TEACHING TO SUPPORT TEACHERS IN CLASSROOM TEACHING

Co-teaching was implemented by Professional Specialist teachers as a means of improving the teaching instruction in the intervention lesson. The use of co-teaching by professional peers had been advocated as a means to improve academic achievement for students with disabilities (Friend, 2008). The objectives of implementing co-teaching were to enhance the delivery of instruction as the special educator could bring knowledge and skills that could improve educational outcomes of students with disabilities as well as professional growth of school teachers (Friend, 2008). However in practice, Friend (2008) reported some challenges relating to program logistics in classroom teaching; teacher incompatibility and teaching teams struggling to resolve conflict in roles and relationships. Friend and Cook (2007) advocated school leadership to resolve role conflicts among teachers plus implementing co-teaching with continuous professional development and coaching to help school teachers better prepared for lesson planning and delivery of instruction.

The co-teaching included co-planning, co-instructing, and co-assessing between the mainstream school teachers and the Professional Specialist teachers

throughout the intervention period.

The co-planning activities governed the process of lesson planning which was an integral part of any effective teacher's schedule. It included the selection of appropriate instructional techniques to be used in achieving the learning goals pre-set for the lesson, as well as planning for sequencing, timing and completion of activities (Zimmerman & Martinez-pons, 1986). It also included teaching on the use of authentic materials with a structured design and micro-uniting. During co-planning, the professional team of specialists and school teachers discussed the appropriate co-teaching models (Friend and Cook, 2010) to be incorporated into the lesson plans.

Co-instructing activities referred to the actual process of teaching together in the same classroom to the same students at the same time. In the first stage of implementation, "one teach, one observe" and "team teaching" were used to allow more observation and practice by the intervention school teachers. In the second and third stage, " one teach, one assist"; "alternative teaching" and " one teach, one observe" were used to promote school teachers' mastery of the instruction delivery whereas Professional Specialist teachers only observed and provided comments after lessons.

Co-assessing referred to the assessment used by the school teachers and the Professional Specialist teachers to support teachers to evaluate students' achievement of lessons goals. The content of assessment was to (1) observe student behaviors and determine whether targeted learning behavior/outcome had occurred and (2) record the occurrence of observed behavior/outcome of students (Nelson & Hayes, 1981). In order to ensure the quality of co-teaching in the

intervention program, the Professional Specialist teachers developed and used several checklists for co-planning and co-teaching. In the co-assessment evaluation, Professional Specialist teachers could suggest certain changes in instruction, activities or learning materials for the lesson so that teachers could deliver more effective teaching to achieve expected students' outcomes.

3.5 SCHOOL SUPPORT AND INTERVENTION TREATMENT SETTING

Strong school support was deemed a critical element for successful implementation of the intervention program in supporting the students with dyslexia. In this study, the principal's leadership would be the dominant driving force for the implementation of the intervention program. The principal had to make the commitment to set up small-size, classroom-based split-group intervention setting and to work with school teachers to explain to parents to get their support in implementation. Also the principal had to commit to provide support on resources and time for teachers to implement the intervention program; allow teachers to attend professional development; allow curriculum design to be integrated with school curriculum and make appropriate examination accommodation. The principal had to oversee and monitor the intervention program and make provisions in constructing the time-table and the allocation of teaching duties to make the intervention program viable.

3.6 INTERVENTION OUTCOMES

The primary intended outcome of the structured literacy intervention program would be to enhance students' academic achievement. Students' academic

achievement would be measured through the school examination results and the Hong Kong Attainment Tests (for English and Chinese). The secondary outcomes would include improvement in learning behavior (self-regulated learning, and an improvement in the quality of their school life). Details of the measures are described in Chapter 4.

3.7 HYPOTHESIS

Based on the literature review in Chapter 2 and the design of the intervention program in Chapter 3, there were three hypotheses in the present study:

Hypothesis 1: The intervention group students would report improved academic outcomes in terms of academic achievement and learning outcomes at post-intervention than the control group.

Hypothesis 2: The intervention group teachers would report higher teacher efficacy than the teachers in control group at post-intervention.

Hypothesis 3: There would be a positive relationship between teacher efficacy and students' academic achievement and learning outcomes.

CHAPTER 4 METHOD

This Chapter describes the methodology of the study on evaluating the effectiveness of a structured literacy intervention program. The study evaluated the effectiveness of the intervention program by using quasi-experimental design including a pre-test and post-test for both intervention and control groups. Mixed methods were also used.

4.1 MIXED METHOD APPROACH

Mixed methods research design was increasingly being used as an alternative to traditional quantitative or qualitative method especially in applied social research, educational research, and evaluation study (Creswell, 1994; Bazeley 2003; Creswell & Plano Clark, 2007). Denzin (1994) explained that by incorporating the qualitative data in the research in their natural settings, it provided an opportunity for the voice, concerns, and practices of research participants to be heard from. Creswell and Plano Clark (2007) developed four major types of mixed methods design including the triangulation design, the explanatory design, the exploratory design and the embedded design. According to the authors, the triangulation design is used to directly compare and contrast quantitative statistical results with qualitative findings or to validate or expand quantitative results with qualitative data. The explanatory design is used when quantitative data are collected and analyzed first and then the findings drive follow-up qualitative investigation. The third mixed methods design type is the exploratory design which is used when qualitative data are collected and analyze first and then findings direct follow-up quantitative data collection. In embedded design, both qualitative and quantitative data can be collected sequentially, concurrently or both.

Creswell and Plano Clark (2007) claimed that using mixed methods in evaluation studies could lead to insights about possible challenges to implementation as well as the circumstances under which a practice would most likely be successful by adding depth and breadth to the study, rather than just using quantitative design alone.

In educational researches, mixed methods were advocated to be best suited for conducting studies especially in special education involving data collection on culture, language, social interaction, and cognition (Gee, 2001). Raudenbush (2005) argued that mixed methods research could answer questions about why a particular teaching approach worked for some children and not others. The author recommended using mixed methods in educational research so that researcher could

> "seeks to evaluate claims about the causal effects of interventions aimed to improve teaching and learning in the nation's classrooms… Well-designed randomized experiments are, I believe, necessary but not sufficient for determining what works"(Raudebush, 2005, p25).

Meanwhile, Klingner and Edwards (2006) asserted to use mixed methods in educational programs effectiveness in which qualitative research was used to establish the contextual factors influencing the success of the program whereas quasi-experimental and experimental quantitative research was used to evaluate which instructional methods were effective in a general sense. Patton (1997) also suggested to use mixed approach in intervention study which quasi-experimental or experimental approach was used in evaluating effectiveness of the program and qualitative approach was used in assisting decisions on creating desired program changes. Therefore, mixed methods could broaden the depth and breadth in an

intervention study and provide insights about possible challenges during implementation and contextual factors impacting the success of the intervention.

4.2 DESIGN

The current study adopted an embedded design by adding a qualitative data set from focus-group/semi-structured interviews as the supplementary and supportive role in explaining the outcomes of a study in which quantitative data was the primary data set (Creswell et al., 2003). The embedded design (Figure 4) included a quasi-experimental quantitative approach in collecting quantitative measures from the intervention and control group before and after the intervention program and a qualitative approach in collecting data from interviews/focus groups (Teddie, Tasjakkori & Johnson, 2008).

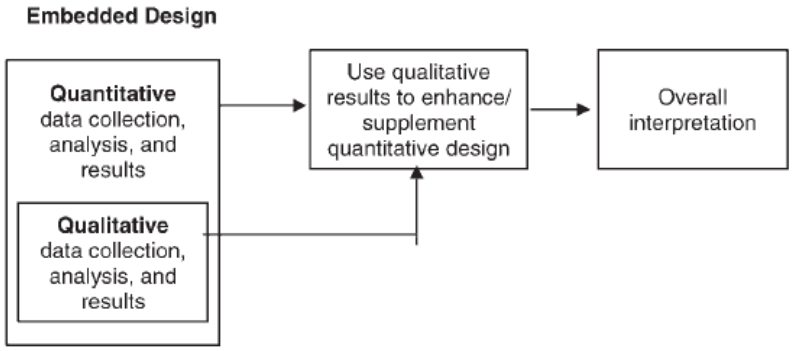


Figure 4 The embedded design of using a quasi-experimental interevention was adopted fromTeddie, Tasjakkori & Johnson (2008, p372)

The quantitative part of the study adopted a quasi-experimental design instead of a Randomised Controlled Trial (RCT). Though RCT is the 'gold standard' in intervention study (Torgerson & Torgerson, 2008), it was difficult to meet the demands of the ideal experimental research design using RCT design in this case, due to the difficulty in persuading schools to accept random allocation in either the intervention or the control group. As such a quasi-experimental design was adopted so that the participating schools could choose to become either an intervention or a control school. By using a quasi-experimental design, with pre and post-tests, some threats to internal validity could be addressed, namely, history, maturation, and testing or practice effect. History and testing/practice effect, maturation would affect both the control group and the intervention group equally. As such, one could attribute the differences between the intervention and control group at post-intervention to the intervention effect. The primary quantitative outcome of the program would be the improvement of students' academic achievement and learning outcomes including self-regulated learning and quality of school life.

For the qualitative part, semi-structured and focus group interviews with school principals, school teachers and Professional Specialist teachers were conducted to explore the processes issues in the intervention program and to identify success factors for future intervention study.

By adopting the embedded quasi-experimental design, the researcher tried to achieve several objectives. First, by comparing the pre-intervention and post-intervention results, the outcomes of changes from the intervention can be examined. The qualitative data from participants' perspective could add insight

into the factors associated with the implementation of the intervention program. The mixed design could provide a more comprehensive understanding of educational phenomena and complexity e.g. potential issuses arising in classrom learning during intervention, in an authentic school's environment (Greene, 2005)

Second, using quantiative measures to collect and analyze data can result in more reliable data analysis in finding the relationship between variables. By combining quanitative and qualitative data set, the researcher could be able to understand the the relationship in more indepth such as what difficulties were encountered by school teachers and what was the impact of interactions between the teachers and students impacting the success of intervention etc. The mixed design could enhance understanding of the quantitative outcomes and strengthen the internal validity of evaluation data, findings and interpretations (Johnson & Onwuegbuzie, 2004).

Third, quantitative data analysis is effectively generating objective outcomes and providing evidence on whether the intervention is successful or not. By adding qualitative semi-structured interviews with the principals, teachers and Professional Specialist teachers, the reseracher could understand contextual factors such as complex relationship within the schools enivornment that influcence the effectiveness of the implementation of the intervention program. The mixed design could not only strengthen the triangulation of the data set, but faciliate comparing and contrasting between the quantitative and qualitative data during interpretation, resulting in better explanation of results of the intervention as well (Creswell & Plano Clark, 2007).

4.3 SCHOOL AND PARTICIPANTS SELECTION

The target was to recruit six secondary schools for the study. Invitation letters were sent to all government and subsidized secondary schools in Hong Kong to invite them to participate in the intervention program. International schools and special schools were excluded. The schools volunteered to join either the intervention group or the control groups and three of them were intervention schools and the other three were control schools. Teacher's training and intervention program were implemented in the three intervention schools. Participating students were secondary school students diagnosed with dyslexia. The target sample size was 100 students from the three intervention schools and 100 students from the control schools. These secondary school students were from Form 1, Form 2, and Form 3.

4.3.1 The intervention schools

In the three intervention schools, students with dyslexia were taught in split-group mode in English and Chinese language subjects respectively. For other subjects, these students followed the mainstream curriculum in their own mainstream classes.

4.3.2 Control schools

For the three controls schools, there were two brief training sessions provided (before and after the intervention program) for the control schools' teachers in order for them to understand some concepts of dyslexia like the definition and identification of dyslexic students and some difficulties encountered by the dyslexic students (e.g., in reading, speaking, spelling and comprehension). The control schools were not offered the intervention program.

4.4 QUANTITATIVE MEASURES

The measures included pre- and post- intervention quantitative measures of academic achievement, quality of school life and self-regulated learning. The students were assessed on the following measures before (baseline) and after program completion:

(1) Academic achievement – This was measured by using the Hong Kong Attainment Test (HKAT) in English and Chinese. For Form 1 students, pre-secondary HKAT were used as baseline measure. The HKAT for Form 2 and Form 3 were used as baseline measures for Form 2 and Form 3 students of the participating schools. The HKAT version for Form 1, Form 2 and Form 3 were used as post-intervention measures. In addition, the end of school year results was also used as a post-intervention measure. The results were transformed into standard scores so that it could be used for comparison across schools.

(2) Checklist based on Pathways Diagnostic Interview – a checklist was developed out of the Pathways Diagnostic Interview, where class teachers were invited to rate students' language skills in English in areas such as speaking and listening, phonemic skills, orthographic knowledge, sight word recognition, oral reading, silent reading, dictation, and writing. The assessment content design was consistent with the Wechsler Individual Achievement Test which covers areas including Oral Reading, Early Reading Skills, Enriched Listening Comprehension, Oral Expression, Written Expression, and Reading Comprehension (Pearson Education, 2010). Some sample assessment items including phonics (Orton-Gillingham phonic system: a e i o u; th ch sh wh ee ea ai ay oa ow oe etc.), blending (/c/- /o/- /d/ etc), letter sound (“f:, “b”;”d”;”p”

etc) , Dolch PP sight words (“can”; “to”; “where” ; “not” etc)

(3) Quality of school life scale (QSL; Mok et al., 2010) – This scale consisted of 7 sub-scales, namely achievement (6 items), experience (5 items), general satisfaction (6 items), negative affect (7 items), opportunity (7 items), social integration (7 items), and teacher-student relationship (7 items). Students rated their degree of agreement with the statements on a 4-point scale from 1 (strongly disagree) to 4 (strongly agree). The reliability estimates (Cronbach’s Alpha) of all sub-scales were above .80 (Mok et al., 2010). The Chinese version was validated by Pang (1999). Permission to use the scale was obtained from the original author of the scale. Sample items included “ I like to go to school every day”; “ I feel happy in school” etc.

(4) Self-regulated learning scale (SRL; Mok, Cheong, Moore & Kennedy, 2006) - The scale consisted of 13 sub-scales (76 items), namely academic motivation (5 items), initiation (5 items), self-monitoring (10 items), self-regulation (5 items), academic self-confidence (5 items), costs of help seeking (5 items), goal setting (6 items), inquisitive mind (5 items), information processing (10 items), strategic help seeking (5 items), management of learning environment (5 items), planning (5 items) and value of schooling (5 items). Students rated their degree of agreement with the statements on a 4-point scale (1: strongly disagree, 2: disagree, 3: agree, 4: strongly agree). The psychometric properties of the scale were established by Mok et al. (2006), with Cronbach’s alpha ranging from 0.75 to 0.87. Permission to use the scale was obtained from the authors. Sample items included “I like to explore new things”; “ I like to actively

participant in discussion" and " I go to school to learn new knowledge" etc.

The teachers in the participating schools were assessed using the short form of the Teachers' Sense of Efficacy Scale (TSES; Kennedy & Hui, 2006) before and after program completion. TSES was developed by Tschannen-Moran and Woolfolk-Hoy (2001) in corresponding to the challenges and tasks that teachers encountered in school environment. The scale consisted of three factors: a) efficacy for instructional strategies; b) efficacy for classroom management; and c) efficacy for student engagement. The current study used the TSES short form consisted of 12 items measuring three components. For each item, the teacher rated on a scale from 1 to 9 the extent that they could demonstrate the capability in relations to teaching secondary students with dyslexia. The overall reliability estimates (Cronbach's Alpha) of the short form TSES in the Kennedy and Hui (2006) study recorded 0.8. Sample items included "How much can you do to control disruptive behavior in the classroom?"; " How much can you do to get children to follow classroom rules?" etc

4.5 QUALITATIVE DATA

Semi-structured interviews with the principals of the intervention schools; focus group interviews with teachers (teachers teaching Chinese curriculum and teachers teaching English curriculum of the intervention schools) and Professional Specialist teachers were conducted. The semi-structured interviews and focus group discussions were conducted by the author. The interviews and focus groups were audio-taped and transcribed verbatim.

4.6 PROCEDURE

Invitation letters were sent to all the secondary schools in Hong Kong, Kowloon, and New Territories districts inviting them to participate in an initial briefing session regarding the intervention program. The letters included the objectives, the school support, intervention split-group setting requirements, resources required, and the expected outcomes for the intervention program. An initial briefing session was conducted to brief the schools about the program and to answer the questions from the schools regarding the intervention program. Schools then submitted their participation form voluntarily.

After the successful recruitment, teachers, students, and parents were required to sign consent forms. Upon signing the consent forms, the students selected would complete the pre-test measures as described in 4.4.

The program included intervention content, teaching training and treatment setting and was implemented in the intervention schools only. The teachers in the control school (comparison group) were offered a brief training session regarding knowledge of dyslexia and the characteristics of dyslexia students. There was no training on teaching strategies and treatment setting.

Focus groups interviews and some individual interviews were conducted with school teachers in the intervention school. Individual interviews with the school principals were conducted within the intervention school. This study was approved by the Human Subjects Ethics Review System of The Hong Kong Polytechnic University.

4.8 DATA ANALYSIS

Ethical approval had been obtained from the University before data collection began. Agreement letters were sent to students and teachers together with th quantitative measures. Data was analyzed using Statistical Package for the Social Sciences (SPSS) The data collected from the three intervention schools and three control schools were analyzed using cluster-level summaries. There were six clusters in the study (three intervention schools and three control schools). According to Hayes and Moulton (2009), school-level comparison using cluster-level summaries methodology was more robust than analysis based on individual-level data when the number of clusters was less than fifteen in each arm. The outcome measures were computed by averaging the scores of each school then comparing the school-level means of the intervention group with the school-level means of the control group using independent t-test.

The focus groups and interview content were transcribed verbatim. The constant comparative analysis method as developed by Glaser and Strauss (1976) was used in the key themes development. The researcher reviewed the field notes and compared the data across interviews with participants. This was an iterative and inductive process of reviewing the themes and codes to search for repetition and conflict, then assigning the data to themes according to the obvious fit. After winnowing the themes of more importance, further review and analysis was conducted to search for evidence of proof. Finally, the themes were confirmed to be used and they were linked with the intervention framework.

CHAPTER 5 QUANTITATIVE RESULTS

This study investigated the effectiveness of a structured literacy intervention program on enhancing the academic achievement and learning outcomes of secondary school students with dyslexia in the Hong Kong context. This study addressed three research questions:

1) Is the intervention program effective in enhancing students' academic achievement and learning outcomes?
2) Is the intervention program effective in enhancing teacher efficacy?
3) Is there any correlation between teacher efficacy and students' academic achievement and learning outcomes?

This chapter consists of five sections. Section one presents the sample and section two discusses the quantitative result of the pre-intervention and post-intervention assessment of students on academic achievement, literacy skills, quality of school life and self-regulated learning. Section three highlights the quantitative results of the pre-intervention and the post- intervention assessment of teacher efficacy as measured on the Teachers' Sense of Efficacy Scale. Section four and section five include the correlation analysis of teachers' Sense of Efficacy Scale and students' academic achievement and learning outcomes using change scores.

5.1 THE SAMPLE

The flow of participants is shown in Figure 5. Six schools were recruited; three subsidized secondary schools were intervention schools and three subsidized secondary schools were control schools. These schools were located in Kowloon and New Territories. Based on 2014 household statistics published by Census and Statistics Department of Hong Kong SAR Government(Census and Statistics

Department, 2014), the intervention schools were in the districts with median monthly household incomes ranging from $20,000 to $26,500 whereas the control schools were in the districts with median monthly household incomes ranging from $21,000 to $26,900. There were a total of 116 students who were diagnosed as dyslexic and were selected to participate in the intervention program in the intervention schools and four students left the school before completion of the program. There were 98 students who were diagnosed as dyslexic in the control group and seven students left the school and did not complete the post intervention questionnaire.

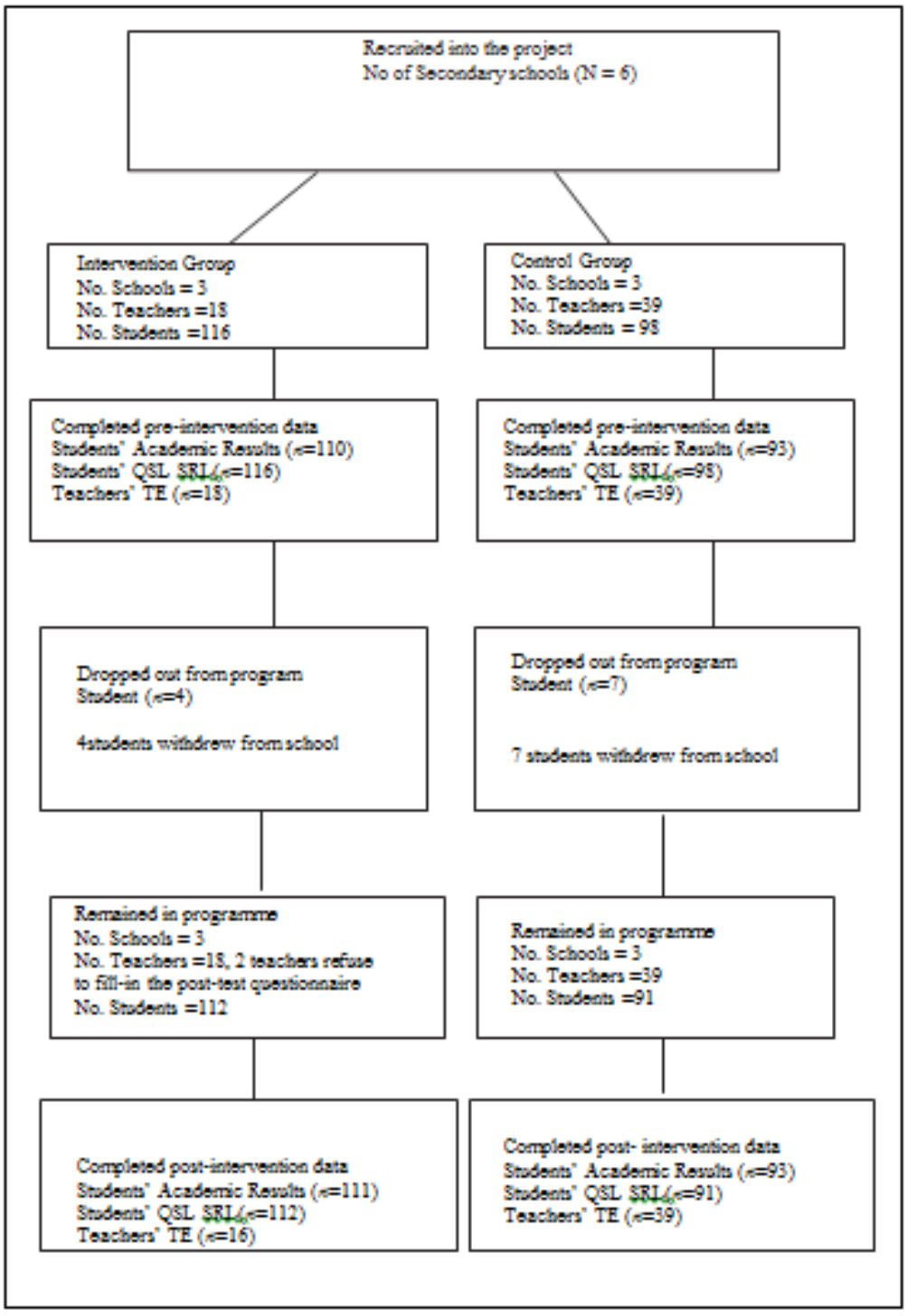


Figure 5 Flow of participants before and after the intervention project.

The demographic characteristics of the participants are shown in Table 5. The students from intervention and control groups were comparable across all the demographic characteristics except for the number of working mothers; there were more working

mothers in the control group as compared to the intervention group. The mother's length of stay in Hong Kong for the intervention group was longer than that of the control group. There were no statistically significant difference in the pre-intervention scores between the intervention group and the control group. There were no statistical difference in demographic characteristics between those who completed the questionnaire and those who did not.

Table 4

Demographic Characteristics of Participating Students

	Total Number	Intervention Group(n=116)	Control Group(n=98)	Significance
Form 1 students	79	41 (35.3%)	38 (38.8%)	
Form 2 Students	68	40 (34.5%)	28 (28.6%)	$\chi 2(2) = 0.86$, p = .651
Form 3 Students	67	35 (30.2%)	32 (32.7%)	
Male Students	214	85 (73.3%)	78 (79.6%)	$\chi 2(1) = 1.17$, p = .280
Students born in Hong Kong	214	92 (79.3%)	86 (87.8%)	$\chi 2(1) = 2.12$, p = .146
Mother employed	162	57 (60.6%)	65 (95.6%)	$\chi 2(1) = 6.40$, p = .011
Father employed	190	102 (100%)	88 (100%)	$\chi 2(1) = 0.19$, p = .667
Mother's education (Form 3 or below)	143	40 (48.2%)	24 (40.0%)	$\chi^2(1) = 0.79$, $p = .375$
Father's education (Form 3 or below)	130	49 (63.6%)	26 (49.1%)	$\chi^2(1) = 2.73$, $p = .098$
Family on CSSA	115	23 (32.4%)	15 (34.1%)	$\chi 2(1) = 0.22$, p = .640
Monthly Income Below HK$20,000	115	51 (71.8%)	31 (70.5%)	$\chi 2(1) = 0.03$, p = .874
Student age	214	13.13 (1.29)	12.93 (1.12)	$t(212) = 1.21$, $p = .229$
Father's age	82	45.78 (7.72)	45.85 (10.72)	$t(80) = 0.03$, $p = .973$
Mother's age	84	41.41 (6.47)	39.54 (4.60)	$t(82) = 1.37$, $p = .175$
Student's length of residence in Hong Kong	181	12.50 (2.53)	12.86 (1.88)	$t(179) = 1.07$, $p = .286$
Father's length of residence in Hong Kong	52	37.47 (16.72)	37.00 (16.32)	$t(50) = 0.08$, $p = .940$
Mother's length of residence in Hong Kong	57	31.50 (14.83)	21.69 (15.56)	$t(55) = 2.07$, $p = .043$
Number of siblings	200	2.23 (1.04)	2.20 (1.03)	$t(198) = 0.17$, $p = .869$

5.2 STUDENTS' ACADEMIC RESULTS

5.2.1 Students' academic achievement results

The school-level analysis of academic results is shown in **Table 5**. The

independent t-test method was used to compare the pre-intervention and post-intervention measures on Chinese and English performance. There was no statistically significant difference in the pre-intervention scores between the intervention and control groups across all three Forms for English and Chinese results. There was also no statistically significant difference in post-intervention academic achievement for secondary school students across Form 2 and Form 3 for all measures of academic achievement. For the post-test of Form 1, only the Form 1 HKAT Chinese test results displayed significant difference between the intervention and the control group with intervention group attaining higher scores at post-intervention than control group. The results indicated that Form 1 students in the intervention schools performed better in Chinese at post-intervention, compared with their control group peers.

Table 5

Means, Standard Deviations and t-Test results for the Intervention and Control Group of Secondary Students' Academic Results

	Intervention Group (k=3) Pretest	Control Group (k=3) Pretest	Significance	Intervention Group (k=3) Posttest	Control Group (k=3) Posttest	Significance
	M (SD)	M (SD)		M (SD)	M (SD)	
Academic Result-Chinese	-0.94 (0.32)	-0.90 (0.22)	$t(4)=-0.18$, $p = .867$	-0.52 (0.15)	-0,59 (0.59)	$t(4)=0.19$, $p = .859$
Academic Result-English	-0.78 (0.15)	-0.6 (0.43)	$t(4)=-0.70$, $p = .521$	-0.60 (0.49)	-0.82 (0.55)	$t(4)=0.50$, $p = .642$
S1 HKAT Chinese Test	-1.13 (0.28)	-1.41 (0.30)	$t(4) = 1.21$, $p = .292$	35.20 (2.97)	19.95 (8.51)	$t(4)=2.93$, $p = .043$
S1 HKAT English Test	-0.66 (0.09)	-0.53 (0.45)	$t(4)=0.50$, $p = .643$	10.68 (3.87)	6.06 (2.07)	$t(4)=1.82$, $p = .142$
S2 HKAT Chinese Test	27.40 (1.94)	25.18 (9.68)	$t(4)=0.38$, $p = .716$	25.69 (7.15)	25.72 (12.75)	$t(4)=0.00$, $p = .998$
S2 HKAT English Test	8.29 (1.34)	11.68 (4.84)	$t(4)=1.17$, $p = .308$	4.23 (1.45)	6.81 (4.84)	$t(4)=0.89$, $p = .459$
S3 HKAT Chinese Test	22.28 (1.45)	22.88 (1.93)	$t(4)=0.43$, $p = .688$	30.45 (3.25)	20.36 (12.29)	$t(4)=1.38$, $p = .241$
S3 HKAT English Test	4.32 (2.60)	3.32 (0.36)	$t(4)=0.66$, $p = .548$	10.72 (1.90)	7.56 (3.07)	$t(4)=1.52$, $p = .204$

5.2.2 Students' Pathways Diagnostic Interview Results

The independent t-test method was used to compare the pre-intervention and post-intervention Pathways Diagnostic Interview results between intervention group and the control group. Details of the Pathways Diagnostic Interview Results are shown in **Table 6**. The reliability estimates of most sub-scales were above .70. There was no statistically significant difference in pre-intervention scores between the intervention and control groups across all Pathways Diagnostic Interview Results. However, after the intervention program, the post-intervention results showed that there was a significant

difference in which the intervention group attained higher scores in letter sounds, sight words, initial sounds; blending phonemes and segmenting words at post-intervention but there was no statistically significant difference between the intervention and control groups for sight words (PP) and writing, oral and English dictation. The results indicated that the intervention school students achieved better results in English language skills at post-intervention, compared with their control group peers.

Table 6

Means, Standard Deviations, Reliability and t-Test Results for the Intervention and Control Group of Secondary Students' Pathways Diagnostic Interview

	Intervention Group (k=3) Pretest	**Control Group (k=3) Pretest**	**Reliability**	**Significance**	**Intervention Group (k=3) Posttest**	**Control Group (k=3) Posttest**	**Reliability**	**Significance**
	M (SD)	M (SD)			M (SD)	M (SD)		
Eng - letter sounds	9.11 (0.65)	11.07 (1.28)	.90	$t(4)=2.36$, $p = .077$	18.55 (1.41)	12.90 (0.87)	.92	$t(4)=5.91$, $p = .004$
Eng-sight words (PP)	7.56 (0.67)	7.19 (1.14)	.87	$t(4)=0.49$, $p = .648$	9.32 (0.21)	8.15 (0.87)	.87	$t(4)=2.29$, $p = .084$
Eng-sight words	9.35 (0.19)	8.17 (0.88)	.95	$t(4)=0.91$, $p = .415$	11.41 (1.59)	8.22 (1.12)	.96	$t(4)=2.84$, $p = .047$
Eng-initial sounds	1.34 (0.30)	1.48 (0.59)	.86	$t(4)=0.37$, $p = .729$	3.30 (0.26)	2.68 (0.05)	.76	$t(4)=4.04$, $p = .016$
Eng-blending phonemes	0.36 (0.12)	0.67 (0.16)	.60	$t(4)=2.64$, $p = .057$	1.56 (0.30)	0.80 (0.22)	.69	$t(4)=3.51$, $p = .025$
Eng-segmenting words	0.29 (0.09)	0.58 (0.41)	.74	$t(4)=1.21$, $p = .293$	1.13 (0.05)	0.47 (0.33)	.68	$t(4)=4.37$, $p = .012$
Eng- writing	9.76 (0.54)	8.96 (1.56)	.92	$t(4)=0.84$, $p = .448$	11.30 (0.73)	10.04 (1.35)	.93	$t(4)=1.42$, $p = .228$
Eng- Oral	2.00 (1.73)	4.00 (1.00)	.78	$t(4)=1.73$, $p = .158$	8.67 (2.31)	5.33 (1.15)	.78	$t(4)=2.24$, $p = .089$
Eng-dictation	0.47 (0.02)	0.45 (0.09)	.92	$t(4)=0.32$, $p = .767$	0.57 (0.02)	0.49 (0.07)	.92	$t(4)=1.85$, $p = .138$

*Eng: English

5.2.3 Students' Quality of School Life Scale

The seven subscales of the Quality of School Life Scale are shown in **Table 7**. The reliability estimates for all these sub-scales were above .70. The

independent t-test method was used to compare the Quality of School Life Scale scores between the intervention group and the control group. There was no statistically significant difference between the intervention group and the control group before the intervention program except for the sub-scale of General Satisfaction. After the intervention program, the post-intervention results showed that there was still no statistically significant difference between the interventional group and the control group except for sub-scale of Experiences (a measure of the sense of enjoyable of school life learning experiences) where the intervention group attained higher scores than the control group. The results indicated that at post-intervention, the intervention group students reported greater enjoyment of school life than their control group peers.

Table 7

Means, Standard Deviations, Reliability and t-Test results for the Intervention and Control Group of Secondary Students' Quality of School Life Scale

	Intervention Group (k=3) Pretest	**Control Group (k=3) Pretest**	**Reliability**	**Significance**	**Intervention Group (k=3) Posttest**	**Control Group (k=3) Posttest**	**Reliability**	**Significance**
	M (SD)	M (SD)			M (SD)	M (SD)		
General Satisfaction	16.23 (0.39)	15.49 (0.62)	.88	$t(4)=3.28$, $p=.030$	15.94 (1.37)	15.16 (0.85)	.88	$t(4)=0.84$, $p=.449$
Negative Affect	12.05 (1.26)	12.76 (0.54)	.94	$t(4)=-0.90$, $p=.418$	12.97 (0.80)	13.25 (0.56)	.93	$t(4)=0.50$, $p=.646$
Teacher-Student relationship	21.62 (0.56)	20.45 (1.01)	.94	$t(4)=1.76$, $p=.154$	21.64 (1.01)	20.14 (1.06)	.94	$t(4)=1.77$, $p=.151$
Social Integration	20.30 (0.76)	20.37 (1.14)	.91	$t(4)=-0.09$, $p=.934$	20.34 (0.74)	19.40 (1.33)	.93	$t(4)=1.06$, $p=.351$
Opportunity	20.41 (0.52)	20.13 (0.14)	.92	$t(4)=0.92$, $p=.410$	20.51 (0.32)	19.30 (0.96)	.93	$t(4)=2.08$, $p=.107$
Achievement	14.52 (1.14)	15.04 (1.51)	.89	$t(4)=-0.47$, $p=.663$	16.03 (1.00)	14.70 (0.60)	.92	$t(4)=1.99$, $p=.118$
Experiences	13.08 (0.89)	13.01 (0.34)	.84	$t(4)=0.13$, $p=.903$	13.53 (0.24)	11.98 (0.61)	.88	$t(4)=4.13$, $p=.014$

5.2.4 Students' Self-regulated Learning Scale

Thirteen subscales were used to assess students' learning strategies and the independent learning capacity and results are shown in **Table 8**. The reliability estimates of all the sub-scales of students' Self-regulated Learning were above .70. There was no statistically significant difference between the intervention group and the control group before the intervention program. After the intervention program, post-intervention results indicated that there were several subscales showing statistically significant difference between the intervention group and the control group which included academic initiation, academic affect, academic monitoring, reading strategy, self-regulation, study environmental control, study plan, and inquisitiveness. The results indicated that at post-intervention, the intervention group students reported higher academic initiation, academic affect, better academic monitoring and improvement in reading strategy, self-regulation, study environmental control, study plan, and inquisitiveness. The result showed evidence that the students of intervention group were able to acquire self-regulatory learning strategies and showed higher academic self-confidence and an inquisitive mind in classroom learning. The improvement in learning outcomes provided evidence of the students became more competent to manage their actions and activities in the school learning process, such as selecting a suitable study environment and making study plans, compared with their control group peers.

Table 8

Means, Standard Deviations, Reliability and t-Test results for the Intervention and Control Group of Secondary Students' Self-regulated Learning Scale

	Intervention Group (k=3) Pretest M (SD)	Control Group (k=3) Pretest M (SD)	Reliability	Significance	Intervention Group (k=3) Posttest M (SD)	Control Group (k=3) Posttest M (SD)	Reliability	Significance
Academic Initiation	13.17 (0.99)	12.96 (0.85)	.87	$t(4)=0.27$, $p = .801$	13.87 (0.26)	12.03 (0.26)	.89	$t(4)=8.75$, $p = .001$
Academic Affect	14.08 (0.61)	13.87 (0.24)	.84	$t(4)=0.49$, $p = .652$	14.54 (0.36)	12.67 (0.31)	.88	$t(4)=4.96$, $p = .008$
Academic Self-Concept	11.88 (0.55)	12.15 (0.85)	.87	$t(4)=0.48$, $p = .659$	12.74 (0.11)	12.23 (0.43)	.88	$t(4)=1.94$, $p = .124$
Academic Monitoring	24.86 (1.77)	25.16 (1.35)	.91	$t(4)=0.23$, $p = .828$	26.80 (0.80)	23.82 (0.28)	.95	$t(4)=6.11$, $p = .004$
Reading Strategy	25.78 (0.89)	26.15 (1.18)	.92	$t(4)=0.44$, $p = .686$	27.87 (0.14)	24.95 (1.06)	.96	$t(4)=4.74$, $p = .009$
Self-Regulation	13.17 (0.59)	13.48 (0.47)	.88	$t(4)=0.69$, $p = .529$	13.79 (0.12)	11.93 (0.31)	.92	$t(4)=9.77$, $p = .001$
Strategic help seeking	14.25 (0.76)	14.02 (0.39)	.90	$t(4)=0.47$, $p = .662$	14.46 (0.18)	13.34 (0.84)	.92	$t(4)=2.26$, $p = .087$
Help-Seeking Costs	10.03 (1.09)	10.14 (0.09)	.88	$t(4)=0.17$, $p = .873$	10.14 (0.28)	10.36 (0.18)	.91	$t(4)=1.16$, $p = .310$
Study Environmental control	12.18 (0.73)	11.96 (1.31)	.88	$t(4)=0.25$, $p = .813$	12.81 (0.29)	11.68 (0.36)	.90	$t(4)=4.20$, $p = .014$
Study Plan	12.30 (0.34)	12.50 (1.10)	.90	$t(4)=0.30$, $p = .779$	13.54 (0.28)	11.61 (0.26)	.92	$t(4)=8.82$, $p =.001$
Inquisitiveness	13.94 (0.61)	13.80 (0.21)	.89	$t(4)=0.38$, $p = .722$	14.68 (0.15)	13.50 (0.49)	.91	$t(4)=3.99$, $p = .016$
Goal Setting	15.41 (0.63)	14.77 (1.17)	.94	$t(4)=0.84$, $p = .448$	15.94 (0.32)	14.32 (0.99)	.96	$t(4)=2.69$, $p = .055$
Value of school work	14.05 (0.62)	14.01 (0.27)	.92	$t(4)=0.13$, $p = .907$	14.80 (0.50)	13.46 (1.01)	.93	$t(4)=2.07$, $p = .107$

5.3 TEACHERS' SENSE OF EFFICACY SCALE

Eighteen teachers from intervention schools and 39 teachers from control schools

participated in the study. However, two teachers from the intervention group had finished the employment contract and refused to complete the post-intervention questionnaires. The demographic characteristics of the participants are shown in **Table 9**. As the table shows, teachers of both groups were comparable across several characteristics, such as percentages of male teachers; number of teachers teaching Chinese and English in the intervention and control schools.

Table 9

Demographic Characteristics of Participating Teachers

	Intervention Group (n=18)	**Control Group (n=39)**	**Significance**
Form 1 Teachers	6 (33.3%)	11 (33.3%)	
Form 2 Teachers	6 (33.3%)	13 (28.2%)	$\chi^2(2) = 1.68$, $p = .431$
Form 3 Teachers	6 (33.3%)	15 (38.5%)	
Male	7 (38.9%)	15 (38.5%)	$\chi^2(1) = 2.96$, $p = .085$
Female	11 (61.1%)	24 (61.5%)	
Chinese Teachers	9 (50%)	19 (48.7%)	$\chi^2(1) = 7.74$, $p = .895$
English Teachers	9 (50%)	20 (51.3%)	
Teaching Experiences > 3 years	17 (94.4%)	9(90%)*	$\chi^2(1) = 4.56$, $p = .951$
Teaching Experiences < 3 years	1(5.6%)	1(10%)*	

*only ten teachers responded on the teaching experiences

Independent *t*-test was used to compare the intervention group and the control group. The results indicated that there was no significant difference in pre- and post-intervention scores on teacher efficacy measures among the intervention and control group teachers. Details are shown in **Table 10**.

Table10

Means, Standard Deviations, Reliability and t-Test results for the Intervention and Control Group of Secondary School Teachers' Sense of Efficacy Scale and Subscales

	Intervention Group (k=3) Pretest	**Control Group (k=3) Pretest**	**Reliability**	**Significance**	**Intervention Group (k=3) Posttest**	**Control Group (k=3) Posttest**	**Reliability**	**Significance**
	M (SD)	M (SD)			M (SD)	M (SD)		
Teachers' Sense of Efficacy Scale	73.11 (8.22)	75.95 (5.04)	.92	$t(4)=-0.51$, $p = .637$	68.11 (14.82)	76.37 (5.28)	.89	$t(4)=-0.91$, $p = .415$
Student Engagement	23.45 (2.98)	24.38 (1.56)	.78	$t(4)=-0.48$, $p = .657$	20.78 (3.91)	23.66 (2.03)	.75	$t(4)=-1.13$, $p = .321$
Instructional Practices	23.89 (2.91)	25.10 (1.76)	.86	$t(4)=-0.62$, $p = .572$	23.00 (5.01)	25.83 (1.83)	.85	$t(4)=-0.92$, $p = .409$
Classroom Management	25.78 (2.34)	26.47 (1.82)	.81	$t(4)=-0.41$, $p = .706$	24.33 (5.96)	26.87 (1.49)	.80	$t(4)=-0.72$, $p = .513$

5.4 CORRELATION BETWEEN TEACHERS' SENSE OF EFFICACY SCALE AND STUDENTS' ACADEMIC ACHIEVEMENT USING CHANGE SCORES

Correlation analysis was conducted by using change scores to evaluate the relationship between changes in teachers' Sense of Efficacy and students' academic achievement and learning outcomes. The individual change scores were computed by using the difference between the post-intervention and the pre-intervention measures, and then the school mean was computed and used for correlation analysis. For Form 1, since there was no recorded pre-intervention academic achievement, the post-intervention academic achievement scores were used in the correlation analysis. The correlations were shown in **Table 11**, **Table 12**, and **Table 13**. As indicated in **Table 11**, there was no statistically significant relationship between changes in teachers' Self-Efficacy Scale and sub-scales and the students' HKAT academic achievement.

Table11

Correlations between Secondary School Teachers' Sense of Efficacy Scale and Subscales with Students' Academic achievement Using Change Scores

Measures	1	2	3	4	5	6	7	8	9
1. Change score Teachers' Sense of Efficacy Scale									
2. Change score Student Engagement	.99**								
3.Change score Instructional Practices	.99**	.98**							
4.Change score Classroom Management	.95*	.90*	.90*						
5.Post-test S1HKAT Chinese Test	.21	.14	.27	.24					
6.Post-test S1HKAT English Test	- .07	-.17	-.07	.10	.54				
7.Change score S2 HKAT Chinese Test	-.17	-.13	-.21	-.17	.18	-.34			
8.Change score S2 HKAT English Test	.19	.15	.03	.41	-.49	.08	-.09		
9.Change score S3 HKAT Chinese Test	.48	.42	.44	.58	.74	.44	.43	.10	
10.Change score S3 HKAT English Test	.14	.13	.14	.14	.50	-.33	.77	-.27	.51

Correlation analysis using change score

** significant at the.01 level (2-tailed).

* significant at the.05 level (2-tailed).

As indicated in **Table 12,** the change in "General Satisfaction" in the sub-scales of Quality of School Life Scale was found to be positively correlated with change in

"Classroom Management" in the TSES. The results indicated that change in teachers' sense of efficacy in the teaching process was positively associated with changes in students' satisfaction with school life.

Table12

Correlations between Secondary School Teachers' Sense of Efficacy Scale and Subscales with Students' Quality of School Life Scale Using Change Scores

Measures	1	2	3	4	5	6	7	8	9	10
1. Change score Teachers' Sense of Efficacy Scale										
2. Change score Student Engagement	.99**									
3.Change score Instructional Practices	.99**	.98**								
4.Change score Classroom Management	.95*	.90*	.90*							
5.Change score General Satisfaction	.66	.60	.54	.84*						
6. Change score Negative Affect	.02	.07	.09	-.13	-.43					
7. Change score Teacher- Student relationship	-.22	-.34	-.32	.07	.47	-.72				
8. Change score Social Integration	.42	.36	.38	.52	.43	.03	.52			
9. Change score Opportunity	.21	.10	.14	.45	.49	.48	.00	.67		
10. Change score Achievement	.46	.35	.44	.62	.44	.33	.02	.64	.88*	
11. Change score Experiences	.20	.08	.14	.42	.42	.49	.02	.68	.93*	.98**

Correlation analysis using change score

** significant at the 0.01 level (2-tailed).

* significant at the 0.05 level (2-tailed).

The results of the correlation analysis between school teacher's sense of efficacy and the student's self-regulated learning using change scores are shown in **Table 13**. In general, there was no statistically significant relationship between changes in self-efficacy of teachers and changes in the self-regulated learning of students.

Table 13

Correlations between Secondary School Teachers' Sense of Efficacy Scale and Subscales with Students' Self-regulated Learning Scale Using Change Scores

Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Change score Teachers' Sense of Efficacy Scale																
2. Change score Student Engagement	.99**															
3.Change score Instructional Practices	.99**	.98**														
4.Change score Classroom Management	.95*	.90*	.90*													
5.Change score Academic Initiation	.12	.00	.07	.36												
6.Change score Academic Affect	.13	.00	.11	.34	.96**											
7.Change score Academic Self-Concept	.48	.39	.43	.65	.92*	.86*										
8.Change score Academic Monitoring	-.01	-.10	-.10	.24	.93**	.79	.83*									
9.Change score Reading Strategy	.02	-.06	-.04	.21	.91*	.80	.86*	.94**								
10.Change score Self- Regulation	.17	.05	.19	.32	.86*	.96**	.78	.61	.67							
11.Change score Strategic help seeking	-.51	-.54	-.63	-.29	.09	.00	-.11	.27	.16	-.17						
12.Change score Help-Seeking Costs	.40	.38	.50	.28	.14	.36	.28	-.18	.08	.57	-.55					
13.Change score Study Environmental control	.41	.35	.31	.60	.54	.38	.59	.63	.39	.20	.03	-.45				
14.Change score Study Plan	.38	.30	.40	.45	.82*	.82*	.97**	.67	.74	.81*	-.49	.43	.43			
15.Change score Inquisitiveness	.32	.21	.35	.41	.73	.88*	.73	.43	.55	.97**	-.27	.74	.07	.76		
16.Change score Goal Setting	.25	.21	.15	.40	.69	.47	.75	.86*	.79	.27	.04	-.31	.76	.62	.13	
17.Change score Value of school work	.20	.11	.21	.30	.88*	.90*	.87*	.73	.85*	.90*	-.29	.48	.26	.95**	.84*	.56

Correlation analysis using change score
** significant at the 0.01 level (2-tailed).
* significant at the 0.05 level (2-tailed).

5.5 CORRELATION BETWEEN STUDENTS' ACADEMIC ACHIEVEMENT AND STUDENTS' LEARNING OUTCOMES USING CHANGE SCORES

In order to investigate the relationship between changes in students' academic achievement and changes in students' learning outcomes, correlations were conducted and results are reported.

5.5.1 Correlation Analysis of Form 1 Students

Presented in **Table 14** is the correlation analysis of Form 1 students'

academic achievement with students' learning outcomes (scores on QSL and SRL). The results showed that post-intervention Chinese HKAT academic achievement had a positive correlation with the changes in "Achievement" subscales of Quality of School Life Scale. In addition, post-intervention Chinese HKAT academic achievement was positively correlated with changes in "Reading Strategies" and "Self-regulation" in the Self–regulated Learning Scale.

Table 14

Correlation between Form 1 Secondary School Students' Academic Results with Subscales of Students' Quality of School Life Scale and Self-regulated Learning Scale Using Change Scores

Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1 Post_S1HKAT_Chin_Total																					
2 Post_S1HKAT_Eng_Total	.24																				
3 F1_Chg_General_Satisfaction	.36	.40																			
4 F1_Chg_Teacher_student_relationship	.31	.67	.86*																		
5 F1_Chg_Negative_Affect	.51	-.19	.05	.00																	
6 F1_Chg_Social_Integration	.73	.72	.70	.76	.39																
7 F1_Chg_Achievement	.86*	.50	.71	.65	.48	.78															
8 F1_Chg_Opportunity	.70	.37	.81	.73	.38	.83*	.93**														
9 F1_Chg_Experience	.60	.36	.89*	.75	.25	.65	.91*	.90*													
10 F1_Chg_Strategic_Help_seeking	.51	.51	.85*	.91*	.37	.80	.84*	.93**	.87*												
11 F1_Chg_Study_Environment_Control	.38	.18	.95**	.67	.15	.61	.68	.79	.88*	.72											
12 F1_Chg_Study_Plan	.80	.10	.50	.28	.58	.47	.89*	.79	.81	.58	0.61										
13 F1_Chg_Inquisitiveness	.68	.41	.65	.69	.70	.89*	.82*	.94**	.70	.88*	.60	.63									
14 F1_Chg_Value_of_School_work	.60	.46	.58	.72	.67	.83*	.78	.89*	.64	.90*	.47	.55	.97**								
15 F1_Chg_Goal_Setting	.67	.19	.46	.49	.74	.56	.86*	.86*	.74	.79	.45	.84*	.87*	.85*							
16 F1_Chg_Academic_Self_concept	.61	.19	.87*	.62	.44	.70	.85*	.92**	.92**	.79	.94**	.81	.78	.65	.69						
17 F1_Chg_Self_Regulation	.89*	.47	.40	.45	.55	.63	.93**	.78	.72	.69	.37	.86*	.72	.73	.89*	.61					
18 F1_Chg_Academic_Monitoring	.77	.70	.78	.84*	.30	.87*	.95**	.90*	.88*	.92*	.67	.70	.83*	.82*	.76	.78	.84*				
19 F1_Chg_reading_strategy	.93**	.46	.48	.48	.63	.73	.96**	.86*	.75	.73	.47	.88*	.81*	.79	.90	.71	.98**	.87*			
20 F1_Chg_Costs_of_help_seeking	.31	.12	.29	.05	.10	.12	.17	.33	.15	.06	.09	.21	.37	.15	.00	.51	.03	.08	.15		
21 F1_Chg_academic_affect	.81	.33	.59	.51	.49	.58	.96**	.85*	.88*	.75	.60	.95**	.70	.68	.90*	.78	.95**	.85*	.94**	.04	
22 F1_Chg_Academic_Initiation	.39	.33	.62	.71	.63	.72	.85*	.92**	.76	.92**	.33	.68	.92**	.96**	.94**	.71	.81	.84*	.83*	.03	.81*

Correlation analysis using change score

** significant at the 0.01 level (2-tailed)

* significant at the 0.05 level (2-tailed)

5.5.2 Correlations analysis of Form 2 Students

Correlations analysis was conducted to evaluate the relationship of Form 2 students' change in academic achievement with students' change in learning outcomes. The results were showed in **Table15**. The results showed that

change in English HKAT academic achievement was positively correlated with change in “General Satisfaction”, a sub-scale of 219

QSL. The results explained the importance of academic achievement to students which was a mean of general satisfaction of students’ school life.

Table 15

Correlations between Form 2 Secondary School Students’ Academic Results with Subscales of Students’ Quality of School Life Scale and Self-regulated Learning Scale Using Change Scores

Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1 Chg_S2HKAT_Chin_Total																					
2 Chg_S2HKAT_Eng_Total	-.09																				
3 F2_Chg_General_Satisfaction	-.18	.90*																			
4 F2_Chg_Teacher_student_relationship	-.13	.55	.70																		
5 F2_Chg_Negative_Affect	.55	-.25	-.19	-.11																	
6 F2_Chg_Social_Integration	.54	.27	.50	.45	.55																
7 F2_Chg_Achievement	.16	.23	.59	.61	.23	.88*															
8 F2_Chg_Opportunity	.60	.45	.56	.66	.27	.86*	.74														
9 F2_Chg_Experience	.36	.38	.61	.79	.19	.86*	.89*	.94**													
10 F2_Chg_Strategic_Help_seeking	.33	.76	.76	.80	.09	.63	.53	.87*	.80												
11 F2_Chg_Study_Environment_Control	.39	.35	.60	.72	.26	.91*	.93**	.94**	.99**	.76											
12 F2_Chg_Study_Plan	.10	-.03	.38	.38	.30	.80	.95**	.53	.72	.23	.78										
13 F2_Chg_Inquisitiveness	.30	-.40	-.02	.15	.55	.72	.77	.42	.57	.02	.63	.90*									
14 F2_Chg_Value_of_School_work	.35	-.44	-.09	.13	.63	.71	.72	.41	.54	.01	.60	.85*	.99**								
15 F2_Chg_Goal_Setting	.58	.17	.43	.43	.43	.97**	.9*	.88*	.89*	.58	.93**	.82*	.76	.74							
16 F2_Chg_Academic_Self_concept	.28	.29	.58	.70	.42	.93**	.95**	.83*	.93**	.67	.96**	.85*	.73	.71	.90*						
17 F2_Chg_Self_Regulation	.07	.37	.69	.81*	.20	.84*	.95**	.78	.93**	.68	.94**	.83*	.63	.60	.81	.97**					
18 F2_Chg_Academic_Monitoring	.32	.68	.74	.84	-.04	.66	.64	.92**	.89*	.96**	.85*	.36	.13	.11	.67	.72	.76				
19 F2_Chg_reading_strategy	.26	.80	.87*	.79	.07	.72	.66	.88*	.84*	.97**	.82*	.40	.13	.10	.67	.76	.78	.95**			
20 F2_Chg_Costs_of_help_seeking	-.08	.03	.41	.31	.46	.71	.82*	.33	.53	.15	.60	.91*	.81	.77	.65	.77	.75	.18	.33		
21 F2_Chg_academic_affect	.08	.39	.69	.78	.32	.85*	.93**	.76	.89*	.68	.91*	.82*	.64	.61	.80	.98**	.99**	.71	.78	.80	
22 F2_Chg_Academic_Initiation	.16	.40	.71	.74	.25	.89*	.97**	.81*	.93**	.69	.95**	.86*	.66	.61	.87*	.98**	.99**	.76	.80	.77	.98**

Correlation analysis using change score

** significant at the 0.01 level (2-tailed).

* significant at the 0.05 level (2-tailed).

5.5.3 Correlations analysis of Form 3 Students

Based on the results of the correlation analysis for Form 3 students, there was no statistically significant relationship between Form 3 students’ change in English HKAT performance and change in quality of school life. However, the change in Chinese HKAT academic achievement was found to be positively correlated to change in the “Study Plan”, “Academic Self-Concept”, and “Academic Initiation” sub-scales of SRL. The results indicated that the students were capable of his or her academic ability in

classroom learning and able to take the initiative in using the learned strategies in their own study and changes in academic achievement. The results were showed in **Table 16**.

Table 16

Correlations between Form 3 Secondary school students' academic results with Subscales of students' Quality of School Life Scale and Self-regulated Learning Scale using change scores

Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1 Chg_S3HKAT_Chin_Total																					
2 Chg_S3HKAT_Eng_Total	.51																				
3 F3_Chg_General_Satisfaction	.52	-.12																			
4 F3_Chg_Teacher_student_relationship	.35	-.16	.73																		
5 F3_Chg_Negative_Affect	.67	-.07	.68	.47																	
6 F3_Chg_Social_Integration	.38	-.28	.88*	.94**	.67																
7 F3_Chg_Achievement	.70	.24	.55	.65	.84*	.69															
8 F3_Chg_Opportunity	.10	-.59	.58	.74	.69	.84*	.63														
9 F3_Chg_Experience	.79	.06	.93**	.64	.77	.77	.65	.46													
10 F3_Chg_Strategic_Help_seeking	-.34	-.60	-.40	-.01	-.31	-.15	-.36	.13	-.36												
11 F3_Chg_Study_Environment_Control	.26	-.16	.67	.94**	.56	.92**	.75	.83*	.55	-.15											
12 F3_Chg_Study_Plan	.82*	.01	.87*	.64	.78	.75	.66	.49	.98**	-.20	.52										
13 F3_Chg_Inquisitiveness	.60	-.14	.59	.32	.98**	.56	.76	.65	.69	-.27	.43	.71									
14 F3_Chg_Value_of_School_work	.78	.05	.79	.50	.97**	.69	.81	.57	.90*	-.41	.53	.89*	.93**								
15 F3_Chg_Goal_Setting	.52	-.02	.84*	.87*	.37	.83*	.45	.44	.81	-.10	.69	.80	.23	.52							
16 F3_Chg_Academic_Self_concept	.92**	.41	.64	.63	.55	.58	.68	.21	.84*	-.22	.47	.86*	.43	.70	.78						
17 F3_Chg_Self_Regulation	.64	-.11	.69	.19	.89*	.48	.53	.43	.79	-.33	.22	.79	.91*	.91*	.31	.47					
18 F3_Chg_Academic_Monitoring	.20	-.19	.25	.58	-.13	.38	.00	.17	.30	.57	.30	.39	-.23	-.03	.70	.51	-.17				
19 F3_Chg_reading_strategy	.24	-.10	.35	.62	-.14	.42	.00	.12	.37	.42	.32	.43	-.25	.00	.78	.56	-.15	.98**			
20 F3_Chg_Costs_of_help_seeking	.30	-.33	.77	.29	.80	.61	.44	.59	.69	-.42	.39	.63	.82*	.80	.31	.21	.88*	-.29	-.24		
21 F3_Chg_academic_affect	.72	-.12	.79	.80	.72	.83*	.69	.63	.89*	.05	.67	.94**	.62	.78	.84*	.85*	.61	.59	.59	.47	
22 F3_Chg_Academic_Initiation	.81*	-.04	.61	.56	.87*	.65	.79	.60	.81	.02	.51	.89*	.83*	.88*	.55	.78	.76	.31	.27	.52	.91*

Correlation analysis using change score

** significant at the 0.01 level (2-tailed).

* significant at the 0.05 level (2-tailed).

CHAPTER 6 QUALITATIVE RESULTS

The qualitative data analysis is reported in this section; this includes key themes identified by analyzing qualitative data from semi-structured interviews with principals and teachers of the intervention schools and the Professional Specialist teachers.

6.1 QUALITATIVE RESULTS FROM INTERVIEW WITH PRINCIPALS

The interviews were conducted with the principals of the intervention schools and the sample of semi-structured interviews questions was shown in appendix A. Below were some key highlights from interviews with the intervention schools' principals:

6.1.1 Content and pedagogy must integrate with school form-based curriculum framework and include both Chinese and English

Intervention Content. The school principals stressed that they wanted an intervention program that included the English and Chinese curriculum which they perceived as the key prerequisite for the successful implementation of the intervention program. The following are some typical examples of the principals' views.

> [We have been looking for an [intervention] program with Chinese and English lessons ……(P3:4)]

> [We participated in this research program because the school did not have an English program. For Chinese, the school has been using XXXX

for many years…(P1:2)]

The principals further remarked that most existing intervention programs focused on reading and comprehension but they were not very related to school curriculum. A principal conveyed the unsuccessful experiences in the implementation of intervention programs where the intervention content was neither integrated within the school curriculum nor linked to the daily form-based curriculum or form assessments, which were not accepted by students as the content taught could not help students in examination.

> [My school had purchased [external] services and provided remedial teaching within the school. Purchasing services was very difficult e.g., XXXX, through the professional assistance from social workers, focusing on students with dyslexia, I observed that the students were very happy when attending the classes. There were eight people in the small group. The students would automatically attend the [intervention] lessons after school. The most difficult issue was that the students felt that they were unable to generalize what they had learnt [in the intervention lessons] to daily classroom learning. The students learnt some strategies from the social worker but these strategies could not be used in the classroom and they were not covered in the examination system. Therefore, it was not useful because the student could not use them [the strategies]. There was no obvious outcome. (P3:2)]

Curriculum Integration. The principal's comment revealed the need of the school in finding an intervention program that could fit into the school curriculum. It was consistent with Mackay's (2005) highlights on curriculum adaption to suit the learning needs of the dyslexic students. The principals also

stressed that the intervention program with content and pedagogy integrated into the form-based curriculum framework could help students to use the acquired techniques and strategies in school examination.

> [The biggest advantage of ABC[1]'s intervention program was that the teaching content was built into the school curriculum. This program used our text books as the basis, and then made some modification. Also, they [Professional Specialist teachers] met with our teachers to discuss class design, together with appropriate teaching method and strategies, to support these students. [The Professional Specialist teachers] also co-teach with the teachers. The outcome was quite good. (P3:4)]

> [Compared with XXXX, (which) was a pull-out design (2 classes), there could be a strong labelling effect. It was alright to use XXXX in Form 1 and Form 2, but in Form 3, the students found that what was taught was not what was required for the subject, and it was a separate curriculum, which was not very useful to their examination. However, for ABC's Chinese intervention program, the students only felt that school teachers used different teaching methods. What they learnt was the same as other classes so they were interested in attending class. (P1:4)]

Phonological Content and Phonics. While the principals were satisfied with the Chinese content of the intervention program (both in phonological processing and advanced literacy) for Form 1 to Form 3, they pointed out that the English phonological content was not appropriate for the senior forms. The

1 ABC denoted the name of the organization through which the intervention was provided

senior Form students commented that learning phonics/morphology and phonemic awareness could not support their advanced literacy needs such as reading comprehension and writing in school examinations and assessments. The principal suggested re-designing the English content in order to better suit the school's assessment and curriculum. Below was the comment from one principal:

> [There was higher acceptance of Chinese lessons [in the intervention program]. It was because the students thought that [the intervention] content was more or less the same as the examination content. The Chinese teachers reflected that the ABC's Chinese lessons could integrate with school curriculum. This was very important. (P1:5)]

> [Form 1 and Form 2 (students) were alright with the phonics lesson but Form 3 (students) hated the phonics lessons very much. ….. Moreover, they felt that [the phonics lessons] could not help them in school examination at all. Basically, [the students] had no interest in learning phonics. It was the same students, (but) their attitudes were completely different when attending Chinese and English lessons. (P1:9)]

The principals agreed phonics was important as the foundation of learning higher levels of literacy content. The principals recommended making improvement to teaching materials. .

> [Although I understood that the students must learn phonics before learning words and sentence structure, the students could not do it. The students were very negative, especially when the whole school term was on learning phonics. (P1:10)]

> [I felt that the teaching materials of the English lessons needed to be improved so as to make the students feel that the curriculum is useful. (P1:13)]

The possible reason for the senior Forms students' perception of the uselessness of learning phonics could be due to the lack of confidence in the past and the lack of techniques/skills in learning English. Below was a comment from principal's observation:

> [Everyday at school, I observed the students' English examination and heard teachers' comments on the students' significant improvement, with much value added. The effectiveness was especially obvious for Form 1 and Form 2 students. However, it was weaker for Form 3 students. Probably, (there were) established bad habits and so it was difficult to improve quickly. (P3:6)]

From the observed improvement in student' school results, a principal also suggested including Mathematics in the intervention program for the dyslexic students.

> [There was no Mathematics curriculum for class S. I think ABC should consider establishing a Mathematics program. ⋯ (P1:21)]

There was a strong desire from schools for a comprehensive intervention program integrated within school curriculum for the secondary school student with dyslexia.

6.1.2 The importance of continuous enhancement of teaching effectiveness through teachers' professional development

Importance of Teaching Training. Intervention delivered by well-trained teachers was believed to be the success factor for the implementation of intervention program. Thus, teachers' training on the intervention strategies was the critical element of the current study. Teachers had undergone over 100 hours of training on using the intervention materials and cognitive and metacognitive strategies to teach the students. The principals agreed with the importance of training on intervention strategies. During the implementation of intervention program, a principal observed that the teachers' training had increased their confidence in teaching the students. Also, the teachers were able to use cognitive and metacognitive strategies to help students learn better. The teaching training could stimulate the teachers' motivation and enhance their teaching efficacy.

> [I observed that the colleagues [school teachers] were very proactive. They were very busy but it was worthwhile. The teachers had a sense of achievement after teachers' training. They would actively continue the efforts in the coming year. I felt very happy. (P3:8)]

> [In order for this project to succeed, apart from school support and resources support, I think the most important factor is that after teachers' training, [the teachers] are able to use the strategies specifically targeting dyslexic students, so as to make the students motivated to learn and have a sense of achievement to continue to learn. (P3:23)]

Usefulness of Co-teaching Model. The principals agreed that the co-teaching model could be one of the key success factors in the intervention program. The principals endorsed the usefulness of co-teaching and observed that teachers had learned through co-teaching sessions which connected theory with actual

classroom practices. The principals supported co-teaching sessions in the intervention as an essential channel to train up the teachers how to use the intervention strategies and skills to meet the needs of diverse student population. The use of co-teaching served as a mean of dealing with the complexity of the problems encountered in the inclusive classroom environment. Teachers could observe the teaching demonstration in the early stage, and then co-teach with the Professional Specialist teachers at a later stage. After several co-teaching practices, school teachers would be able to deliver the lessons by themselves. A principal commented on the co-teaching practice:

> [In fact, in order to support the school, the [intervention] program must be tailored made, and this could really help the teachers. In fact the school teachers really wanted to help the students, but the teachers did not have (effective) methods. They loved their students but his could not help the students. Apart from loving the students, which is important, the teachers need to learn and master teaching skills, and more importantly, (know) how to use the method and strategies. ABC focused on these [intervention] strategies and techniques, in line with the needs of the school-based curriculum, and the use of appropriate teaching methods. [The Professional Specialist teachers] prepared the lessons and taught the students together with school teachers. This was the main difference between this program and other previous programs. The ABC's [intervention] program was really tailor made. (P3:5)]
>
> [I thought the ABC's Professional Specialist teachers worked very hard and were very professional. In the past, teachers attended training, but [they] did not know how to teach the students after the training and

> lectures. However, ABC's Professional Specialist teachers entered the classroom to co-teach, and demonstrate teaching. Teachers thought that this really [helped them] to learn the [intervention] strategies and how to use real life examples in classroom teaching. (P2:10)]

Improvement in Teacher Confidence. The principals reported that after the teachers' training, the teachers had shown higher confidence levels and a stronger drive to teach dyslexic students in the intervention lessons. Both the school teachers and the students were observed to be motivated in the intervention lessons. Comments from principals demonstrated that the intervention program had generated positive outcomes for both the school teachers and the students:

> [During Chinese lessons, there was a good atmosphere and involvement. The school teachers also felt comfortable with classroom observation [from external teachers]. During lesson, [the teachers] were confident in classroom management and deploying strategies. (P1:14)]

> [There were no major problems with Chinese lessons. The school teachers and students only felt that different teaching methods were used. The students' academic results had shown obvious improvement. [The students] showed obvious interests in classroom learning. The teachers showed more care towards the students, probably because of the small class size. Also, teachers had more confidence in teaching after attending training. Students had relatively less difficulties in classroom learning. (P2:5)]

Need for Continuous Professional Development. The principals stressed the

continuous professional development was important to help teachers build up effective knowledge, skills, and strategies for enhancing effective classroom learning. The comments from the principals were consistent with Wanzek and Vaughn's (2007) study that effective (multiple-tiers) interventions required ongoing professional development for teachers so that they could better support the students in achieving better learning outcomes.

> [For longer term support, it is hoped that the seed teachers [who had been trained in the program] could transfer what they have learnt to other teachers [who had not participated in the program]. Though teachers continuous professional development, [the teachers] can use these strategies to teach students in all classes. (P2:7)]

> [The most important is continuous professional development for teachers, so the intervention program could be sustained. (P3:24)]

6.1.3 The importance of Principals' leadership in the implementation of the intervention program

School Support. School support was another important element in the intervention framework. MacKay's (2005) advocacy of a "dyslexia friendly school environment" emphasized sufficient teaching resources as an important factor for effective intervention program. Principals exemplified the sufficient resource support was critical for the successful implementation of the program. The comments from principals also provided evidence to demonstrate the leadership role of principals was not only providing resource support, but personal involvement in reviewing the progress of the program and making appropriate accommodation when and as required.

> [At the administrative level, the school had specially employed an assistant to support six teachers. Also, [the school] renovated a classroom especially for students of class S [the classroom for the intervention program]. The students liked using the blackboard. Thus the school wanted the classroom to be used for interactive teaching to stimulate students' interests in lessons. (P1:17)]

Interviews reviewed that principals' leadership was critical in workload and administrative arrangement to allow sufficient time for teachers' lessons planning.

> [At the administrative level, the school allocated three extra lessons for teachers for lesson preparation and teaching training. [The school] had arranged small-class teaching to implement split-group teaching. (P1:18)]

> [For other administrative aspects, [the teachers] had less teaching lessons. The school had released some limits e.g., allow more teaching materials to be printed and extra teaching materials. (P2:8)]

Provision of Sufficient Resources. The principals also played a major role in ensuring sufficient resources to support high quality learning and instruction in the implementation.

> [At the administrative level, the school would provide more support to students, more resources [to the teachers and the students]. I had regular meetings with teachers to see what improvements were needed. (P3:20)]

Appropriate Examination Accommodation. One principal also made appropriate examination accommodations to link the curriculum content with

appropriate assessments. This suggested that the school support should include alignment of examination system and teaching curriculum in the implementation process other than just provision of sufficient resources.

> […… During examination, the school allowed examination papers with flexible arrangement of examinations, including examination of core lessons which were taught by all teachers only, and excluding non-core lessons. For Form 2 and Form 3, [the ratio was] 70% and 30% [core and non-core lessons]. Our school has always provided flexible arrangement to dyslexic students. For students of higher capability, the 30% [examination] questions were tougher. For weaker students, the [examination] questions were easier. That is, [all students] listened to the same passage, but some would need to provide the whole word, while the easier ones (required) circling the answer. (P2:13)]

Small Size Intervention Setting. Principals agreed the intervention worked better in a small class intervention setting.

> [I think small class is very important; and it is not a problem. It is necessary to group the students together and then use appropriate teaching method. (P3:4)]

Though the principals recognized the importance of small-size class, they also mentioned the challenges of addressing complex and varied intricacies of dealing with administrative constraints arising from small-size class with split-group intervention setting at school management level. In fact, there were several major challenges in obtaining support from parents in the beginning of implementation. Detailed below were some of the comments from principals:

> [At the administrative level, [the school] had to do a lot of persuasion and arrangement. [This was] because there were lots of difficulties in arrangement in order to implement small class teaching and taking only dyslexic students. There were few issues in the beginning, but after a while, other teachers were not happy because there were too many students in the other classes. (P1:1)]
>
> [I think it is important to set up the split class structure. [The school] encountered a lot of difficulties in the beginning. First, we had to communicate with our teachers so that they could understand the arrangement and [I] answered their queries (from the teachers). Then there were problems with the students. The students did not understand why [they] should select this class. I especially spoke to the parents of Form I class about this [split class] arrangement. I encountered parents who refused to [let their children] join this class [participate into the program]. I had to explain carefully as I did not want to create a labelling effect [on students]. (P3:24)]

These quotes suggested that the principals played an important leadership role in convincing parents and teachers to accept the small-size class and split-group structure in order that parents and teachers would support this new model of classroom learning for the students.

6.1.4 Intervention should start early and longer intervention sessions could lead to greater gains

One principal affirmed that interventions should start in the lower forms in

order to see better results.

> [We saw that there was more improvement among lower Form students, especially Chinese subject. I felt that with early intervention, the outcome was more obvious. (P1:19)]

Another principal also expressed that the longer the intervention, the better the potential gains.

> [This year, I could see the seed had germinated. However, I know that to get the seed to flower and to bear fruit, it will take lots of efforts and watering, and the most important is that it is sustainable. (P3:10)]

6.1.5 Key concerns on project sustainability

The principals recounted that teaching resource was the biggest constraint encountered. The principals also indicated that there was a lack of teaching resource support from the Hong Kong Education Bureau and so the schools were not able to sustain the small class split- group intervention. A principal's comment is shown below:

> [Though the students and the school teachers had no comments on the small class arrangement, there were certain difficulties from the administrative perspective. This was because we needed two more teachers in small class teaching, which was more than the Education Bureau's ratio of 1 to 1.7. It was alright this year until 2016 as the school was undergoing an enhancement process. Although Education Bureau allowed a small percentage of increase in number of teachers, after that phase, [EDB] would not allow two additional teachers for the school.

(P2:6)]

While the intervention school principals aimed to continue the intervention program, however, without continuous professional training and development from the Professional Specialist teachers, it posed an imminent threat on the future sustainability. This implied that intervention program required a lot of teaching resources and continuous professional development to enhance teaching practices.

> [Now, ABC's Professional Specialist teachers accompanied the school teachers to teach in class; and helped teachers grow and continue to pass onto others. This was very important for sustainability. ABC had a bigger objective. On the other hand, [I] was a bit worried that without ABC's continuous professional development for teachers, what will be the effectiveness of the program? (P3:18)]

In summary, in order to sustain the intervention program, the principals highlighted the resource constraints was an obstacle. The principals also reflected the importance of enhancing teaching effectiveness through professional development for teachers to use the intervention curriculum and materials so as to tailor intervention for the students with dyslexia.

6.2 QUALITATIVE RESULTS FROM INTERVIEW WITH PROFESSIONAL SPECIALIST TEACHERS

Three focus group discussions were conducted with the team of four Professional Specialist teachers (two English and two Chinese Professional Specialist teachers). One focus group discussion was conducted before the

completion of the project focusing on teachers' mission on the intervention program. The second focus group discussion was conducted after the completion of the program to review program effectiveness. The last one served as a follow-up focus group discussion focusing on the intervention strategies.

6.2.1 Observation of changes in school teachers

Lack Knowledge about Dyslexic Students. The Professional Specialist teachers observed that in the beginning, the school teachers did not understand the learning needs of dyslexic students and were reluctant to try new strategies. This was in line with Sharma, Forlin, and Loreman's (2007) finding that school teachers lacked knowledge regarding dyslexic students' learning problems and needs.

> [….. The teachers felt that the students were somewhat special, but [they] had no firm contacts [with students with dyslexia] in the past, and were not sure what was special about them. [The teachers] were worried that they had no contact [with the students], and were very puzzled a lot of the time, and so [the teachers] were unwilling to try something new. (11)]

The Professional Specialist teachers reflected that the school teachers lacked the confidence in using the new strategies even after the initial teacher training workshop. In fact, the intervention strategies caused much resistance among the teachers and they expressed confusion and stress about integrating the intervention content into school curriculum. It highlighted the need for time in practice and review before teachers became confident in using new strategies in new programs.

> [Initially, they were very afraid. The teachers attended the [training] workshop before teaching. Wow, everything was very new; phonics strategy was very new. Why use these strategies? They were very worried, very confused. They were worried that they did not know how to teach. [They were] also worried whether they could match [the intervention content] with school curriculum…… (12)]
>
> [In fact, [the reasons why] teachers faced the problems, as said by XXXX, [was because] they did not know the needs of students with dyslexia. Second, now they had to change from the effective teaching method they used in the past, and the change was great. Thus, their reaction was big. Apart from environmental factors, [the teachers] themselves needed to change themselves, [and this was] also very difficult..... (16)]

Teachers needed Co-teaching Support. The Professional Specialist teachers believed that they not only support teachers in term of teaching, but also provided emotional support to teachers.

> […. Like teachers said [the Professional Specialist teachers] were like an additional pair of hands…. Maybe we were there to give teachers teaching and emotional support. (19)]

Through co-teaching and observational learning, the Professional Specialist teachers found that the school teachers started to appreciate their work better and regarded them as role models.

> [Because there was co-teaching in English lessons, as well as observational learning, school teachers regarded us [Professional

> Specialist teachers] as role models, because we were very patient to the students, [and] praised the students often. During self-evaluation, we reminded the teachers about the need to specially handle the attitude towards these students. (23)]

The Professional Specialist teachers reported that the school teachers became more confident after actual practice in using the intervention strategies in classroom teaching.

> [……they (the school teachers) found that the strategies were helpful, and then they developed to have their own ideas [in teaching]. They started to build up confidence. They told us they were very happy. We were also very delighted as the teachers became mature. The teachers also taught us. In our relationship, we learnt from each other. (12)]

This increase in confidence was attributed to the experience of co-planning sessions where the Professional Specialist teachers could discuss pedagogical practices and help school teachers put theory into practice.

> [Providing more resources to teachers in classroom teaching, co-planning or co-teaching are important elements. (20)]
>
> [We and the teachers had used a lot of time to amend the teaching plan and worksheets. After lessons, we exchanged views, about the use of strategies and teaching skills used. In this year, I saw that the teachers' effectiveness in class was good…… (19)]

6.2.2 Observation of students' learning outcome

Variable Learning Outcomes. In terms of student learning outcomes, the Professional Specialist teachers observed that learning outcomes were variable. Professional Specialist teachers observed that lower Form students showed more significant academic improvement. Their observation was in alignment with the quantitative results of academic outcomes where Form 1 students' Chinese results showed significant improvement.

> [There was obvious improvement in Chinese class work in most students, especially lower Forms students. (19)]
>
> [Yes, the English class work and examination [results] of lower Forms [students] were better than higher Forms [students]…… (20)]

The Professional Specialist teachers claimed that teachers reported that students were motivated to learn and students were observed to become more proactive in learning.

> […. Teachers said the students were good and eager to learn. Teachers said that students really wanted to learn. (15)]
>
> […. I could see that the students were proactive in class….(19)]

6.2.3 The role of the intervention school teachers as change agents

Teachers were trained to be Change Agent. The Professional Specialist teachers emphasized that the most important element of the intervention program was training the intervention school teachers to become effective change agents as shown below:

> […The most important element of the intervention program is to train teachers to become change agent, and help teachers become an effective

change agent…… (1)]

To be a successful change agent, the Professional Specialist teachers emphasized that the school teachers needed to be committed and proficient in using metacognitive and cognitive techniques (such as analyzing the situation and building scaffolding structures in capturing knowledge) to motivate students to learn.

[….We hope teachers themselves can become change agents to change students…..Can make students know how to use cogitative strategy, [and] strengthen their motivation to learn. In particular, during classroom implementation such as Chinese composition, teachers could use life examples, clear instruction and metacognition (experiential learning, small units, scaffolding, multi-sensory etc.) in order to achieve their own teaching objectives …… (13)]

[….we emphasize the strategic use of the self-regulated learning model in teachers and students, so as to increase the motivation of teachers and students…… (14)]

This emphasis by Professional Specialist teachers reinforced the concept of a change agent as an emerging theme in recent studies to promote teachers as knowledgeable agents of change in inclusive education (Frankel & McKay, 1997; McKay, Carrington & Iyer, 2014).

6.2.4 Role of the Professional Specialist teachers as Bridges

The role as "Bridge". The Professional Specialist teachers perceived themselves as "the bridge" facilitating the intervention schools' teachers'

transformation into change agents; while bridging the gaps between school teachers and students where school teachers could understand the students' leaning needs. The Professional Specialist teachers believed that they were "the bridge" between the school teachers and school principals channeling the needs and issues to the school principals so that the school could understand the problems encountered, as well as supporting the teachers in the intervention process.

> [….I feel that our role is like a bridge. They said that, before our arrival, there were some difficulties in progress and teaching. Even [in terms of] trying to help teachers to understand students' learning difficulties, there was a lack of understanding. Our role was to meet some of their needs, so we are an important bridge. We can find some ways, to let teachers understand students' difficulties. Because we are the bridge, [we] helped teachers in the frontline, as a connection in their negotiation with the school where there were difficulties in implementation. Our role was the linking part in the middle…… (10)]
>
> [….As XXXX said, [we need to] help teachers understand the needs of students with dyslexia. They did not know the needs of students with dyslexia. , In fact, our role was a bridge, to tell teacher the needs of students with dyslexia …… (16)]

6.2.5 Professional Specialist teachers had built good relationship with teachers and students

Good Teacher-Student Relationship. The Professional Specialist teachers built a good relationship with school teachers and students. The positive relationship was believed in promoting teachers' confidence in teaching. The

positive relationship with students enabled students to feel safe and secure in classroom learning.

> […We have always had good relationship with school, good relationship with teachers, good relationship with students….. Because of these good relationships, we were able to enter into the classroom and school successfully ……(17)]
>
> […I feel we had good relationship with teachers, good relationship with students. ….. the students and teachers wanted to see me… Every week, students wanted us to come; teachers wanted us to come. They (teachers) felt more confident in my presence.(15)]

The remark from Professional Specialist teachers recognized the importance of student-teachers relationship could drive greater degree of interactions and build trust, caring and confidence in the classroom learning (Downey, 2008).

6.2.6 The importance of whole school approach in an integrated education environment

Importance of the Whole School Envirnment. The Professional Specialist teachers also stressed that the whole school approach in an integrated education environment was the overall success factor of the intervention program.

First, the Professional Specialist teachers' asserted the importance of school culture and vision to endorse the intervention framework and to promote integrated education.

> […The school's culture and vision are very important, it is the most

critical success factor of the intervention program. (3)]

The importance of whole school involvement was highlighted as the success factor in kicking-off the intervention program. Below are the quotes from the Professional Specialist teachers depicting this claim:

> [This study is different from the pre-pilot. It [the present intervention] required whole school participation, including the principal, the subject panel, examination panel, and every level needed to participate, though there were differences in some schools. Like in the successful schools, the co-ordination of time and space was important. (4)]

> [XX just asserted the whole school approach in inclusive education. I agree with xxx that the critical success factors for this intervention program is not just the principals' directives, but the whole school participation model is the first step to kick off the program. We talked about the teaching method and teaching strategy; they are important. However, to be able to successfully kick-off the program, the positive participation of the whole school approach is the first step prerequisite. (5)]

> […… The whole theoretical framework, need to be implemented, from content selection, curriculum design, student cognitive strategy, learning motivation and examination framework. [We are talking about] overall co-ordination in inclusive education within a whole school participation environment. …… (24)]

Second, the Professional Specialist teachers highlighted the importance of school-based curriculum development and integration with school curriculum

as key priorities.

> […… In fact, many schools are working on [curriculum development]; we need to incorporate the special teaching strategies for dyslexic students into the school-based [curriculum]. (21)]
>
> […… I agree with XXX and XXX opinions. Now the schools emphasized the linkage between school-based development and curriculum content development. Then this could create the positive environment to match the [learning] needs of students with dyslexia. (25)]

In fact, the curriculum integration represented a key characteristic that differentiated the intervention program from other existing programs in which the intervention content, especially for the English language subject, was continuously enhanced and modified in order to suit the progress of the secondary school students.

> […… Ours [intervention program] was different from xxxx programs. Their [program] focused on words, phrases and sentences. The focus of the teaching content in our program targeted the deficits in phonics and phonological memory among students with dyslexia, and developed targeted teaching content integrated into the school curriculum. The content included listening, speaking, reading and writing, all integrated together, as well as word, phrases, dictation, grammar etc. (7)]
>
> […… Because English was second language, so the focus was on basic training in words, phrases, phonics, and sight words. Then [we] moved to higher level abilities including fluency, comprehension and listening. Of

course, our [program] needed to be integrated with school curriculum requirements. (8)]

[…… Especially for English, because it was second language, and they [the students] had difficulties with basic phonemes and phonics, so the curriculum design had to integrate with the school curriculum, and be matched with appropriate teaching strategies, to help students move from F1 to F3, rather than jumping 3 grades F3….(18)]

However, the Professional Specialist teachers unanimously agreed that school teachers faced tremendous difficulties in designing a curriculum that would meet the needs of students as well as being integrated with the core school curriculum.

[…… In fact, we needed to understand teachers' teaching difficulties and needs. Therefore, during the implementation, [we] needed to integrate with school's curriculum. Within their school culture, whether the [intervention] strategies could help student's examination was most important.(21)]

The Professional Specialist teachers said that the school teachers needed to use their knowledge and expertise to develop school-based curricula and learning outcomes in order to sustain the future substantiality of the intervention program.

[……during teachers' training, [we] shared with teachers the teaching list [teaching content]. In fact, the essence of this classroom support program was to emphasize the importance of school-based curriculum

development. This was because the seed teachers could use the knowledge and experiences learnt to support the school in the development of appropriate enrichment program for students with dyslexia, so as to enhance the student' literacy learning. This could also enable the school-based classroom support program to sustain. (9)]

Third, the Professional Specialist teachers pointed out that the school level support such as logistics, small size intervention setting, teaching and resources support, and continuous professional development were important. These, however, required the support and the leadership of the school principal.

[… The principal's leadership was important to drive the implementation of the program, such as small size split group, training for teachers and helping them solve problems.(4)]

[… The principal was very supportive to teachers. (The principal) gave them time for lesson preparation, and conducted classroom observation to provide comments. It would be best if they could continue to support the teachers…… (17)]

[…… At a macro level, the principal's support was really important. The principal's leadership was needed to kick-off and to drive the project. (2)]

Fourth, the Professional Specialist teachers remarked that necessary assessment and accommodation were needed and these also required school level support.

[…… For assessment, we had made a lot of suggestions to the schools, from examination venue arrangement, examination paper design, the size of fonts, to marking and checking answers etc. In addition to the principal's leadership and resources support, it was important to allow

> time for teachers to practice the [intervention] strategies. It was also necessary to relax the examination framework, to meet the difficulties of students in terms of their phonological deficit and short memory issues. We emphasized the joining of time and space [environment], matching of curriculum design, teaching methods and assessments. It was not about asking students to get 5** [in DSE examination], but to understand the needs of the students. (18)]

In summary, the Professional Specialist teachers emphasized that, at the school level, school culture and vision in fostering integrated education, curriculum integration, allocating sufficient resources, appropriate assessment and accommodation are needed to cater for the learning needs of students with dyslexia.

6.3 QUALITATIVE RESULTS FROM INTERVIEW WITH SCHOOL TEACHERS

Semi-structured interviews were conducted in the three intervention schools with 14 school teachers (seven English and seven Chinese intervention school teachers) and one teaching assistant. One focus group interview was conducted with six teachers of one intervention school and nine individual interviews were conducted in two intervention schools with teachers and the teaching assistant. A sample of interview questions was shown in appendix B.

6.3.1 Observations on Student Behavior and Academic Outcomes

Academic Performance. After the intervention program, most of the

intervention school teachers reported that there was significant improvement in students' academic performance in test and examination results.

> [For [students'] academic results, there was improvement in students over the two school terms. The S class [in-classroom split-groups] had the highest passing rates. Some students were even promoted to the high ability class. For Chinese language results, there were benefits. (S1.2.6)]
>
> [There was an improvement in academic results. The students have become familiar with the teaching models. Some students' English result was zero. However now I could see that they were really making efforts to revise. [The students] used the method in dictation and they could get good marks. (S3.2.4)]
>
> [(We) can see improvement in academic results. (S3.3.3)]
>
> [Most of the students have made improvement in tests and examination. Because of the sense of success, [the students] had more confidence to try .(S3.4.4)]

Diverse learning abilities. Though there was improvement observed, school teachers also noticed individual differences in learning abilities and motivation to learn among the students in the class. School teachers observed that some students had very low abilities which required teachers' special attention. Teachers also observed that some students' motivation was very low. It had impacted the overall teaching progress. Teachers needed to prepare materials to cater for the diverse abilities of the students.

> [These students had different problems. Some had low abilities; some were lazy. However, the program was not for the lazy students. (We)

needed to use some strategies to motivate the lazy students to get involved in the lessons. (We) need to think..... (S1.3.8)]

[Students had diverse capabilities. Some students had very low abilities. For example, some students only knew P for Pizza. When you talked to them about “Pen”, they could only remember Pizza ….. (S2.11)]

[Some students were often absent from school. They were not attending classes; they just came back to school to sit through the lessons. (S3.2.6)]

[In the class, some students had high abilities, and some had low abilities. Sometimes, this would delay other students’ progress and might influence their emotion. Some students would do their own work after completing the task while some needed individual help. Some students would talk and become very noisy. When the students were too excited in playing, it was difficult for them to attend lesson. Thus, we needed to cater for their needs. In the lesson plan, [I] prepared some difficult questions for students with higher abilities. [I] did not require them to put in writing and it was acceptable to explain the concept verbally. For students with higher abilities, I asked them to express in writing. (S1.2.16)]

[But some [students] had low abilities, their academic results were poor. (3.4.3)]

Adjustment to the new learning methods. Teachers reported that senior Forms students had resistance and needed some time to become familiar with the new teaching methods.

[Students’ academic results were diverse. Because they were senior Form students, they needed time to adapt to the new teaching methods. Some

students had low motivation, and so their academic results were bad. (S3.4.1)]

Nevertheless, a teacher believed that the weaker students could gain better academic results in the long term through the use of the strategies taught in the intervention program.

[However, students' abilities were low. I think if students continue to use these learning models [learnt in the intervention lessons], there will be much room for improvement in the future. (S3.4.4)]

Furthermore, a teacher also commented that students might not achieve good results in a short period of time since the students needed a longer period of time to learn and adapt to the strategies taught in the intervention program.

[There were difficulties. They were all dyslexic students. We needed to give them time to adjust to the demands. I reminded myself not be too demanding with them. (I) needed to give them some time. Although they learned some strategies, they could not get good results immediately and become a normal person. They need time to adapt to these methods in order to master the methods. Without these methods, their results could be worse. (S3.1.16)]

Student Engagement. The teachers reported that students generally exhibited positive engagement as they displayed more interest and participated more in their studies.

[Most students are very involved, very proactive, and there was a marked improvement in learning motivation. [I] could see that the students were

very happy in class.…… (S3.4.3)]

[There were more interests in the lessons. [The students] would say that they knew the stuff. In fact, there were specific methods for speaking, reading, and listening. With confidence, [the students] were able to apply. (S3.3.5)]

[Overall, there was higher motivation. [The students] were willing to do homework, with better performance in tests. I was very pleased. [The students were] willing to do homework. The atmosphere in class was better though there were sometimes some fluctuations. Most of the time was good. The students knew they had to attend lessons to learn. However, there were some students who were sleepy, and more motivation was needed. When attending lessons, they knew they had to be attentive, to learn and to do work. (S3.1.3)]

[Chinese language lessons, [students] were proactive in class. I could see that they were active…… (S1.2.6)]

Some teachers indicated that lower Form students were more energetic and had a higher motivation level than higher form students.

[Lower Form students were relatively more energetic…… (S1.1.9)]

[(I) taught Form 3 which was a small class of fourteen students. Their levels were weak and the motivation was generally very low. (S1.4.1)]

[The students' motivation was mostly very week. Of course, they were improving. They would be promoted to Form four. (S1.3.9)]

Teachers commented that the students' experiences of success provided encouragement to drive them forward. When the students became accustomed

to the intervention setting and the teachers' new teaching methods, they were more willing to try out the strategies and became more motivated in classroom learning. Teachers observed that students built up confidence based on successful experiences.

> [Starting from phonics was very new for Form three students. When they were accustomed to it, even those students who usually had bad results in English tests were able to grasp some phonemes and spelling. One success experience was great encouragement for the students. For a few students, you could see that they progressed from 0 mark to 1 mark. [I] grasped the opportunity to praise them, and this was encouraging…… (S2.4)]
>
> [When students became more confident, they established a regular practice. [The students] noticed that they could do it, and had a sense of fulfillment.……(S3.3.3)]
>
> [Students felt a sense of success. For example, there was one student who had very low marks in Form 1 and Form 2, with no motivation, and never handed homework at all. This year, this student used ABC's English and Chinese program. I observed that she passed both Chinese dictation and English test. I saw her in the Facebook and she was really happy. May be it was nothing for others, but for her, she had a great sense of success. (S1.3.3)]

At the beginning of the program, the teachers observed that students were quite reluctant and passive. However, when the students began to understand the opportunity given to them, they actively participated in classroom learning.

> [In the beginning, the students are not familiar with the small size class

model, and some felt that S (class) was being labelled as negative. Thus, initially, the students were very passive. [The students] did not treasure the benefits of small teachers to student ratio. Afterwards, [I] built very good relationship [with the students], and they knew they had more opportunities to ask, to catch up the progress, and they have confidence in involving in class. The students could not choose to sit passively. Every lesson, they had to answer, and had the opportunity to write on the blackboard. ……(S2.2)]

[My class was Form one. As they were like a blank white paper, they did not object to learning phonics. There were major changes from the time they were promoted from primary six, to the time when they completed the Form one curriculum. In the first months or two, some students were reluctant to even open the month to read and they avoided looking at me. After they learnt the methods, [they] continued to try, to improve. By the end of the school term, a few students had higher confidence than before. Whether they knew or not, they would try. This was better than before. (S2.5)]

Students' learning needs. The teachers reported that the tailor-made intervention program addressed the students' learning needs.

[Because we were Band-three school, the students did not have high motivation. From my contact with them in Form one and Form two, their learning interest was higher now, as the whole program was dedicated to cater for their [the dyslexic students] needs. In the past, for relatively difficult learning points, [they] would skip them. This year, the curriculum was tailored made, and the students felt that they knew, so

they were more careful, more involved. In the past, they would not listen when they could not understand. (S1.3.2)]

Students were mostly concerned about examination. The teachers emphasized the importance of teaching students metacognitive and cognitive techniques so that they knew the strategies to deal with examinations. This was in line with Zimmerman's (2000) assertion that by teaching students metacognitive and cognitive techniques, students' task performance in classroom-learning attempts was enhanced and the students showed higher motivation in learning.

[In the face of problems, such as a passage, the students did not know how to comprehend. We taught the students "6 Ws". After learning, (they) could write using "6 Ws". The "6Ws"method became like a key. With this key, the students had a method, whether in reading and writing. [I] cannot say they could do very well with the key, but at least there was a method, unlike before. (S1.1.4)]

[They felt that the skills learnt could help them gain marks; this was important. (S3.1.2)]

[….In fact, though teaching them learning and problem-solving was important, helping them with examination and tests, and getting a pass mark were more important. (S3.4.2)]

An English teacher highlighted that the senior Form students had shown a big reluctance in learning phonics.

[Because they were Form three students, unlike Chinese language, their motivation to learn English language was very weak. There was low and weak motivation in class. The students had no interest to learn from the

beginning. As English language emphasized phonics, starting from A-Z, they feel this was childish, like going back to kindergarten. The motivation was even lower. (S1.4.3)]

Though the intervention was designed to target the needs of students with dyslexia, it was important that students could see the relevance of the techniques taught; otherwise they would not be motivated to practice these techniques. This was most obvious in English lessons when students could not see the value of learning phonics and its relevance to examination, hence they had low motivation in attending English phonics lessons.

[Phonics lessons, [the students] were very unhappy and felt bored. Normal English lesson, they would listen to know whether it was related to examination or not. As [the students] could not see the benefits of learning phonics, and now they had to start from the beginning, they were less motivated (than before). They would not listen or write. They felt that phonics was not related to examination and it was useless to learn. (S1.4.4)]

Building good relationship. Teaches agreed with the smaller class size, students could have a closer relationship with the teachers and the teachers were also very caring about the students.

[Because of small size class, and the students were very dependent on me, (my) relationship with students was very good. (S2.1)]

[In fact, smaller size class was important. Apart from teaching them knowledge, we needed to understand their difficulties in learning. They felt that teachers understood them and cared more about them. During

break time, [I] tried to understand their learning attitudes, family influence, and this made my relationship with students better, and deeper. ……(S2.6)]

Teachers reported that they built trusting relationships with the students and because of this good relationship, this promoted a sense of cohesiveness and sense of belonging so that the teachers could better influence the students' attitudes and motivate them in improving their classroom engagement and performance. This was consistent with research finding that strong teacher-students relationships could lead to high and realistic expectations for success (Downey, 2008).

[I saw the students daily, and the relationship could influence their learning attitude. They felt that there was someone to walk with them together. This was very important. (S2.6)]

[As [I] built good relationship, [and the students] accepted my teaching methods. Although, sometimes, I scolded them, the teaching was effective because of the good relationship. They would listen to me. This made a big difference. (S1.1.10)]

[Some students had improvement, because they were willing to try. I built very good relationship with them so they listened to me. (S3.2.8)]

During the program, some teachers said that students trusted the teachers and had confidence in the strategies these teachers implemented. This would, in turn, facilitate their learning in higher forms.

[I had confidence in the students, I knew they had confidence in me;

> [they] had confidence in the teaching method. This was a big encouragement. (S1.1.17)]

Student need for sense of security. Teachers also revealed that students became accustomed to the teaching strategy and the small class intervention setting since it gave them a sense of security so much so that they preferred to stay in the small class intervention setting.

> [Some students had good academic results, and they could go to the high ability class, though subject to their parents' decision. In the end, for promotion from Form two to Form three, three students decided to go to the high ability class. For promotion from Form one to Form two, only one student decided to go to high ability class. All others students remained in S class. Though the teachers were different, I guessed they were familiar with the small-size setting and two Chinese and English teachers in the small class. Maybe they felt that this was less stormy. They felt safe. I had asked the students who went to the high ability class, and they all wanted to remain in the small size class. (S2.8)]

This was consistent with another teacher's comment that students needed a sense of security:

> [With a basic method, methods that they were familiar with, this gave them a sense of security. (S1.1.3)]

6.3.2 Teachers perception of their teaching efficacy

Perceived understanding about dyslexic students' characteristics and learning needs. The teachers agreed that they had learnt a lot more about the

characteristics and learning needs of students with dyslexia after their participation in the intervention program.

> [[I] had an in-depth understanding [about the dyslexic students], Oh, they were like that, so that's why they encountered many problems. …… (S1.4.2)]

> [Through participating in the program, [I] gained a lot myself. Previously, I did not understand how dyslexic students understand the word, the sound, sentence and its formation. After collaborating with ABCs, I understand more, and so I could plan my teaching from their perspective. (S1.4.1)]

Teachers remarked that their awareness about students' difficulties had increased and they had tried their very best to help the students.

> [I have learnt a lot, especially decoding, I have higher awareness about phonics, more empathy and understanding about their difficulties. They were like this and that's why they encountered so many problems; there's more understanding. Then I kept thinking of methods to help them. (S3.1.1)]

Learning new teaching strategies. The teachers expressed that they learned the intervention teaching strategies for teaching students with dyslexia. When participating in the intervention program, they learned about the unique characteristics about the students and how to use new instructions strategies in teaching.

> [I feel I am clearer with the use of strategies to teach students with dyslexia. I could understand their needs. With the strategies learnt, and

from ABC's materials, (I know) which methods to use. I can grasp the use of materials. I have a clearer sense how to use the materials more. (S1.1.1)]

[[My] strategies and skills were expanded, and my thinking and vision have broadened. (S3.1.1)]

Teachers asserted that they gained more insight on strategies to target the learning needs of students:

[I learnt a lot myself, especially on monitoring the progress of students, targeting the difficulties and poor motivation of students. With an understanding of the students' characteristics, (I) taught them examination skills. ……(S3.4.1)]

Some teachers, after attending the teachers' training conducted by the Professional Specialist teachers, were able to adopt more interactive methods in their day-to-day teaching process. Students also enjoyed the more interactive methods in classroom learning.

[In the beginning of the school semester, ABCs suggested motivation, activities to stimulate. With a good beginning, with motivation (activities) in the beginning, they felt that Chinese was not so boring. Chinese involved writing, sentences, questions and answers, reciting passages. Maybe it was the use of new (activities) in the beginning, it was not so boring. (S1.1.8)]

The teachers also reported that students welcomed the visual tools, multisensory techniques, and direct instruction to help the students understand

and memorize the lessons.

> [Materials and worksheet needed special tactics to prepare. And the students required more visual aids to stimulate their thinking. Then [the diagram] would translate into words and expression. This was the way to teach dyslexic students]. (S1.1.2)]
>
> [Using sign pen 1234 and circles, it was easy to remember. It was also effective using ladder format to teach complex sentences. They were very good in using pictures. Language was also science. With much use of pictures and imagination. Scientific pictures were quite good and could help them solve problems. (S1.2.19)]

Teacher used direct instruction, step by step approach, together with multi-sensory techniques to teach students.

> [Therefore my instruction would be more detailed, more step by step, and simpler. (I) would not give many tasks to them [the students] all at once, and (I) used more multi-sensory skills. I did not use these [techniques] much before. (S1.4.2)]

Most teachers commented that participating in the intervention served as a learning opportunity.

> [This is a rare opportunity to get funding. It is a good opportunity to learn……(S2.9)]
>
> [I agree with XX, using an attitude of learning to equip myself…… (S2.10)]

Feelings of stress. However, some teachers reported feeling confused,

pressured, and distressed especially in the initial stage of the implementation.

> [Initially, I was worried because [I] did not know these students' Chinese language ability, and how much they could understand abstract concepts such as language. It was an unstable factor, so I was relatively worried (S1.2.1)]

Teachers had to spend time in lesson planning and designing the lessons. At the same time, teaching content needed to be aligned with school curriculum. As the workload increased, stress also increased.

> [I would describe this year as busy and hectic. One lesson after another, every lesson was new to me, with lesson preparation for every lesson. (I) had to prepare worksheets suitable for them, which was hard work. Also, the examination paper had to align with the core content and the content of the reader. Some were taught, and some were not taught. And [I] didn't know whether I should include [in the examination] or not. I struggled for a long time, which led to a delay in setting the examination paper. This was the difficult part. ……. (S2.14)]

Teachers, especially English teachers, reported that they needed to tackle their own resistance when using the new techniques.

> [I faced many difficulties. I was a new learner myself. Teachers needed to absorb this phonics program before we could teach the program. With the old method, (I) needed to renew my thinking. I myself used a lot of time to learn how to adapt and apply. (S1.4.8)]
>
> [Although I learned a lot, I myself needed to change my thinking. Sometimes it was quite difficult. ……(S3.4.5)]

A teacher also reported feeling very distressed and frustrated when the students showed no interest in learning.

> [When I integrated the program into the teaching content, the students were not listening. They thought that it was very boring. I felt very depressed. This was because [I] wasted a lot of time to research, and to plan activities, but they were not interested and felt that it was not important, useless. I know English is second language. Their acceptance was rather low. Despite there were some good responses from some students, as a whole, it was bad. English was relatively weak. Their reaction made me feel defeated. [I] used a lot of time, but they did not appreciate. (S1.4.9)]

Other teachers also expressed their difficulties in managing students with diverse abilities in an integrated classroom environment.

> [Because this program went back to basics, there were one or two bright students who found it difficult to accept [the phonic lessons]. They found it boring. [The students] thought that they knew [the lessons], (and did not understand) why they had to go back (to basics). Although they did not (really) know (the program content), they objected to learning this phonics system. They had this feeling for the whole year. I wanted to give them some challenging task, but I could not manage both. (S2.3)].

Sense of inadequacy and lack of confidence. Though teachers had been practicing the intervention strategies after their training by the professional specialist teachers, most of the teachers said they were not proficient enough

and there were still a lot of techniques to be learned and practiced.

> [Talking about completely grasping the strategies, I think I have not [grasped the strategies]. However, there were some directions, more ideas for me. When I needed to prepare worksheets or lesson arrangement, I understood how I could meet the students' needs. Now I am very clear, though I still feel that there are a lot of things to be learnt. (S1.3.7)]

> [Strategies, I know how to use them, but not proficiently. (S2.12)]

Classroom Management. School teachers of senior forms did report that they spent much time in tackling classroom management issues and the students were very easily distracted

> [The students' classroom behavior was very bad. ……(S1.4.3)]

> [(I) used a lot of time on classroom management, in the classroom. Most of the time [the classroom behavior] was quite good. The students knew that had to learn in class. However, [the students] were easily influenced by many things, so [the students'] emotion was difficult to control. (S3.2.7)]

However, this was not an issue for lower form students such as Form 1 students.

> [There were no problems regarding classroom behavior in learning because they were Form one students. (They were just) promoted to Form one from Primary Six. I could mold them easily. They were very happy in primary school. Now in Form one, no matter what I asked them to do, they would perform. This is the advantage of teaching Form one.

(S1.1.7)]

A teacher highlighted the need for flexible lesson planning to address potential issues arising in classroom teaching.

> [I have to say the lesson plan cannot be unchanged. Self-reaction is important. When [I] found that their conditions [were negative], [I] had to make immediate modification. (S.1.2.7)]

Professional Specialist teachers as critical resources. The school teachers expressed the importance of having Professional Specialist teachers as critical resources in supporting pre-lesson preparations, classroom teaching, and post-lesson review and evaluation.

> [With XX's support, during lesson planning or when coming across good materials, (or) when I was not sure how to teach, e.g., grammar, breaking down to small units, or preparing how to teach, XX would give me suggestions how to teach each part, did planning with me, and gave me more advice. (S1.4.11)]
>
> [With XX, there was really sufficient support. XX was really helpful. [XX] was really able to help me on lesson preparation and after class evaluation. ……(S2.9)]
>
> [XX came to class observation and gave me a lot of suggestions. I thought the ABC Professional teaching team's school support model was very professional, so that I could share with XX about students' problems in classroom learning. With them [ABC Professional teaching team], they helped me to continue to teach students effectively. (S3.4.10)]

A teacher recognized that he relied very much on the Professional Specialist

teachers' expertise in providing guidance, problem solving, and bringing about best practices in classroom teaching. Many school teachers participating in the program hoped to have this critical resource continually to support their teaching process.

> [I am really thankful about this program. It allowed me to learn a lot. XX, gave me a lot of suggestions every week. If this school support program could continue, and [the Professional Specialist teachers] could come every week to follow up my teaching process, it could drive me forward. (S1.1.20)]

> [I really felt that I needed XX and XX. Without XX leading me the whole year, giving me a lot suggestion, I would have no idea where to start. This year, I needed to change every teaching unit. For the first one and two units, I could not follow, I didn't know what to do. However, later on, gradually, I could achieve what they [Professional Specialist teachers] expected. This was mainly because XX led me. Without her, I could not do it. With their support, more work could be done with less effort. (S1.3.6)]

Teachers hoped that the professional specialist teachers could continue to be a resource to support them in future.

> [I hope XX [the Professional Specialist teachers] could come more. (S3.1.7)]
>
> [I hope that school-based support model can sustain. (S1.1.22)]

Teacher as Change Agent. One of the Professional Specialist teachers strongly

advocated that the intervention schools' teachers should be the change agent in the sense that school teachers should make changes in classroom environment, curriculum and pedagogical methods to cater for the needs of students with disability (Fullan, 1993). However, this concept of change agent was not evident among the intervention school teachers. Only one teacher mentioned that she had to change herself first, before she could change students, but she did not actually describe herself as a change agent, and it was not clear whether she had changed as a result of participation in the intervention program.

> [I feel it is important to change myself before changing them [the students]. (S3.3.2)]

6.3.3 School support system and whole-school approach in intervention

Importance of split group and small class size intervention setting. The teachers said that the split group and small size intervention setting was very critical in the intervention program. The small size enabled the teachers to cater to the needs of students with dyslexia.

> [Class size is important. Some students were weak [in learning]. Providing special care (to them) could impact other students. It's better to group them separately. (S3.2.9)]

> [Small class is good. However, sometimes it was not possible to take care of students. I feel that more teaching resources are needed in teaching them [dyslexic students]. Small size has great advantage. (S3.4.9)]

The teachers were, however, worried that without sufficient resources and support from the project, the current intervention program of small class intervention setting was not sustainable.

> [Many objective factors could influence the [intervention] program. This year was the second year with small size classes, but would [we] continue to have small size classes next year? In this year for Form one, all of us taught Form one together, without small size classes, teaching 30 students. (S2.15)]

Principal's leadership. The teachers expressed that the principals' were all very supportive in providing support in terms of resources and accommodations to students. Principal's leadership was the driving force of school support on the intervention implementation by providing sufficient teaching resources, resolving any problems about staffing, intervention setting arrangement and examination accommodation.

> [The school principal was flexible in terms of administration [The school principal] had meetings [with us], so the administrative support was quite OK. The assistant principal always observed our lessons weekly, and consulted about Chinese and English language subjects, asking us whether we had any difficulties, or the support needed. I felt that school administration was OK. (S1.2.3)]
>
> [The school principal has given us additional free lessons for lesson planning, and an assistant to help us. (S1.3.5)]
>
> [The school has increased the time for examination and rearranged the classroom.…… (S3.3.7)]

Importance of whole school approach in implementation of intervention. As advocated in integrated education, teachers agreed and asserted that it was important to include all the teachers in the intervention program. Teachers

recommended sharing the skills and techniques with other non-intervention teachers as it could benefit other subjects. Also, the whole school approach could mobilize and align the school resources towards the goal of successful implementation of the intervention program.

> [It is best to start the project with some announcement by the school principal, so more colleagues know, or other teachers can learn, and to share the strategies with other teachers. This is because the strategies can be used in other subjects. This would be more effective. (S3.3.7)]

> [I think that the school can involve all junior Forms teachers. Now, for Chinese subjects, only three teachers knew, and the other teachers did not understand our program. They [other teachers] sort of knew, but did not really understand what we were doing. It was only during examination period when we needed to know the progress of students to prepare examination paper did [we] discuss. As we needed to make adjustment, we could make use of the time to discuss. Our Form did not have meetings to share work sheets or teaching plan, so it was weaker. Sharing would be better. (S1.2.14)]

Teachers also commented that the intervention needed comprehensive planning and a support structure which required school level planning in order to sustain the intervention program.

> [In fact, the school wanted to use another method to sustain the program. There were a number of meetings [with the principal and teachers] with a lot of suggestions to sustain the program. However the timetable, and the room (for change) was not big. However, it was necessary to have lesson

observations. The school could not rely on us trained teachers. It's not workable. In fact, (we) needed to have continuous training this year. Last year, it was by trial and error. We managed some tasks but not others. We might forget all the strategies. Therefore the school's overall planning and time arrangement are important. (S2.17)]

Curriculum integration. Teachers also emphasized the importance of curriculum integration. The teachers affirmed the need to integrate the phonetics and phonological contents into everyday learning lessons so that students could apply them in their learning. This would also enable students to understand the importance of learning phonics. This was consistent with the interview results from school principals.

> [[Phonics] needed to be integrated with daily [English] lessons, so that [the students] would not find it childish. There would not be a special phonics lesson. Classroom learning would be interactive, with more multi-sensory [tasks], rather than just sitting there. [The students] would learn through listening, doing some work, and pasting something. (S1.4.10)]
>
> [The most important is school-based curriculum development. ABC's teachers were very good. They gave us a list of teaching content. However, we needed to integrate the teaching content with school-based needs, and to align with the requirement of school-based curriculum. I encountered a lot of problems myself. I hope ABC can give us some advice. (S3.4.8)]

Insufficient time to prepare the lesson plans. There was a unanimous

agreement among the teachers on the issue of insufficient time for preparation of lesson plans and materials.

> [The school principal had given me additional free class for lesson planning, and an assistant to support us. More [resource] is better. In fact, the additional free class is not sufficient. As a lot of time was needed for preparation of lesson materials required by ABC, [I] needed to do it at home. In the past, the worksheets could be prepared in one go. Now, I needed to change them six to seven times, amended and amended; many amendments. (S1.3.5)]
>
> [The school's attitude was very positive. but I was really very busy, as there was lesson preparation, evaluation after teaching, and changes to be made for the next round. This required a lot of additional time. In fact, there was no reduction in teaching load so it was really tough. It's not about whether it was worth [the effort] or not. It was very hard on us. It was even more confusing this new school year. We added three new teachers to teach together, but there was no reduction in teaching load. (S2.10)]

Teachers also commented on the heavy burden of administrative work.

> [In addition, administrative work was very heavy. This year was good as ABC's teachers gave us a lot of materials. ABC's teaching materials were very good, but now we had to develop school materials ourselves. We needed space to design. As it was school based. [I] needed to target the needs of the students and to integrate into school curriculum. I knew ABC had requested the school to release some [teaching] lessons; but [the school] did not. (S3.2.10)]

Time demand. Teachers highlighted a challenge associated with the time needed in finishing the assigned curriculum to prepare students for school-based examinations. Time demands was a critical issue as school teachers needed to complete the curriculum in alignment with the school timetable.

> [Regarding curriculum, we taught by unit, one lesson one task. [I] needed to work according to the actual [classroom] situation. Even with good planning, [I] still could not finish the teaching. Due to time demand, "one lesson one task" was a big pressure to teachers. There was the need to catch up with the [teaching] progress. This would affect the students' examination. (S1.2.20)]

More teaching resources to support intervention program. Teachers highlighted the issue of insufficient teachers as they needed to spend a lot of time to design materials and content suitable for dyslexic students. A teacher recommended having more teaching resources in order to sustain intervention.

> [If the program was to sustain, there were two critical elements…. Second, [the principal] needed to arrange more teachers. We were always short of staff, not just in classroom [teaching], in fact, more importantly, helping students after class. (S3.4.11)]

Examination constraints. One of the teachers highlighted the issue of examination constraints in the sense that the school was unable to allow special examination papers for students with dyslexia. The teacher's comment was consistent with the sentiments of the Professional Specialist teachers that

appropriate assessment and accommodation were also needed. This reflected the importance of school support in making examination accommodation to cater for students with dyslexia.

> [However, to be fair to the students, though some units of school curriculum had not been taught, every student had to attend the same examination. The knowledge [of the Forms curriculum] learnt had to be the same, to be fair. However, there was one thing that could not be done. It was the examination paper. Examination arrangements might exceed their ability. However, there was a blind spot that could not cater for them. For examination, I could not prepare two examination papers; one for the normal students and one for them (students with dyslexia). Surely, tests can be adjusted, but examination marks counted more. (S1.1.13)]

Since examinations had to be aligned with the mainstream class, school teachers explained that the students might not achieve better results despite their best efforts.

> [Once they became familiar [with the intervention program], they were really very involved. There was a definite change in attitudes. Unfortunately, the examination paper design had to follow the Form curriculum plan. It might not be the same as their lesson pattern. They worked very hard to write [in the examination], but the result might not be as good as expected. (S2.2)]

Continuous Professional Development. The need to achieve teaching proficiency implies a need to undertake continuous professional education and on-the-job training. School support should allow teachers' continuous professional development as teachers required continuous training to enhance

their instruction strategies and teaching effectiveness.

> [Last year, ABC conducted three training sessions. I thought that was really useful. Every time I could learn something. If there is sufficient funding, [I] hope that this [training] could continue to help us improve our teaching strategies. (S3.4.7)]

A teacher said that lack of training would threaten the sustainability of the program.

> [For those teachers who did not attend training, they could not manage. .If the school was to continue the program, they had to plan early. We explored for a few months before knowing what to do. We also attended training. We attended training during summer holidays. Now the teachers only attended the sharing sessions conducted by us, so, [the implementation] could only start in second semester. By the time they started, it was almost the end of the term. The whole year was wasted. …… (S2.19)]

New teachers who did not attend the training might not know how to use the strategies, nor design curriculum and content materials especially suited to the needs of the dyslexic students. It posted difficulties in sustaining the intervention program.

> [Sustaining [the program] is difficult. For other teachers who did not attend training, I could not help them. I gave them all work sheets for them to try. Previously, [Professional Specialist teacher] helped me to prepare lesson beforehand, but now there was no one to help them [the other teachers]. I felt we could still manage to function, but the new

> teachers could not. I gave them the materials, but they could not pick up. Also, there were difficulties with teaching timetables. I did not know how to help them. I could give them the whole teaching plan. Previously, [Professional Specialist teacher] helped me, but I could not help them. I had many lessons and I could hardly cope myself. I think they didn't know what to do; maybe just more materials and powerpoint. (S2.16)]

It reinforced the need for school teachers' continuous professional development and training on the teaching strategies in order to learn best practices to deliver effective teaching in inclusive/integrated school environment.

In summary, the school teachers remarked that the intervention program was effective in changing students' behaviors, although, an improvement in the students' academic performance would require a longer period of intervention. School teachers clearly indicated their inadequacy in dealing with students with dyslexia and lack of confidence in using the instructional strategies. The school teachers expressed their concerns on the heavy workload, lack of teaching resources, insufficient time in lesson preparation, and lack of professional training. These were the critical success factors in sustaining the intervention program. Another key comment from school teachers was the need to implement a whole school approach in addressing the diverse needs of the students with dyslexia. This reinforced the importance of principal's leadership and school support in providing sufficient resources, professional development opportunities, and leading the whole school involvement in supporting school teachers and students in an inclusive education environment.

CHAPTER 7 DISCUSSION

The final chapter is divided into six sections: The first section is a brief comment of the use of the intervention framework. The second section is a discussion of outcomes in relation to the research hypotheses. The third section discusses the evaluation of the effectiveness of the implementation of the intervention program. The fourth section highlights the implication on education practices. The concluding two sections outline the limitations, suggestions for future study and the conclusions generated.

7.1 INTERVENTION FRAMEWORK

Hermandez and Hodges's (2001) theory of change model was useful in guiding the development of an intervention program, the implementation of the program and the evaluation of the program.

The objective of this study was to evaluate the effectiveness of the intervention program. The intervention program was one of the very first studies using small-size, classroom-based and split-group intervention setting in the Hong Kong context. The target population was secondary school students with dyslexia. The intervention program strategies included the training of teachers and the intervention program for students. Teacher training included over 100 hours of training on curriculum planning and intervention strategies conducted by the Professional Specialist teachers, and co-planning and co-teaching with school teachers. Students attended daily intervention lessons for both Chinese and English language including both phonological and literacy content in a small-size, classroom-based and split-group intervention setting. Intervention

sessions were conducted daily for the whole school term with a total of approximately 160 interventions hours. The intervention content was designed to be fully integrated within the school mainstream curriculum. The intervention school principals committed to provide support for the program which included small-size and spilt-group intervention setting, adequate resources to support teachers, and appropriate changes in teaching curriculum and necessary accommodation for the students with disabilities.

The expected outcomes of the intervention program included improvement in students' academic achievement and students' Quality of School Life and Students' Self-Regulated Learning.

7.2 ACHIEVEMENT OF OUTCOMES

7.2.1 Students' academic achievement and learning outcomes

The first research hypothesis stated that there would be a statistically significant difference in academic achievement and learning outcomes in the intervention group compared to the control group after the intervention. The first hypothesis was partially supported. The results of the study showed that there was indeed a significant improvement in Form 1 Chinese Test results in the intervention group as compared to the control group. The quantitative data on academic achievement was consistent with qualitative data. Teachers observed that lower Form students had achieved academic improvement and displayed higher motivation levels in classroom learning. The school principals also observed that there was greater improvement in lower Forms, especially

Chinese tests and examination results, and one principal suggested that intervention might need to start in lower Forms to achieve better results. The findings provided support that intervention should start early which aligning with the principal's comment that early intervention could lead to greater gains. Meanwhile, the results of students' Pathways Diagnostic Interview results indicated that there was significant improvement in English letter sounds, sight words, initial sounds, blending, and segmenting words in the intervention group, compared to the control group across all Forms.

For students' learning outcomes, there was a statistically significant difference between the intervention and control groups in the Experience sub-scale of the Quality of School Life Scale with intervention group students showing greater improvement compared to the control group students at post-intervention across all Forms. School teachers reported that the students were rather passive in the beginning of the intervention lessons. However, when the students understood that they could learn better in a small-size, classroom-based and split-group classroom environment, they showed higher levels of motivation and engagement. After the intervention, both school teachers and Professional Specialist teachers had observed improvement in students' learning attitudes and student engagement. This might reflect that the students in the intervention group enjoyed their schooling experiences more than control group students during the intervention period.

The school teachers remarked that they built a trust relationship with the students. Because of the good relationship, teachers were able to influence

students' attitudes and motivate students in classroom learning. Positive student-teacher interactions strengthened the acceptance of teaching instructions and could make a difference to students who were at the risk of academic failure (Downey, 2008). It was also consistent with Furrer and Skinner's (2003) finding that strong student-teacher relationship could optimize students' classroom engagement and performance.

In terms of the Self-Regulated Learning Scale, the results indicated that students had significant improvement in the intervention group versus that in the control group on academic initiation, academic affect, academic monitoring, self-regulation, study environmental control, study planning, and inquisitiveness at post-intervention across all Forms. This improvement in learning outcomes was consistent with the teachers' observation where students had learned the metacognitive and cognitive strategies and were able to use them in school tests and examinations. Teachers asserted that the experiences of success provided encouragement to the students who were willing to continuously try the strategies and became motivated in classroom learning. The qualitative interview with Professional Specialist teachers also revealed that students from lower Forms had higher levels of confidence in using reading strategies and study planning. They were found to be more proactive in learning and applying the metacognitive/cognitive skills. With a more interactive small-group learning environment, students were able to acquire study planning and reading strategies easier and become more proactive in using self-monitoring activities. Zimmerman (2000) stressed self-regulated learning was an important factor in students' academic achievement. Zimmerman (2008) and Martinez-Pons (1986) found that

learners' attitudes, including goal-setting, planning, self-regulation etc., had a pivotal impact on students' academic achievement. After intervention lessons, students were able to learn the techniques in self-regulating their academic learning including study plan; reading strategies and inquisitiveness etc. which may have motivated them to achieve better academic achievement.

To summarize, based on the quantitative and qualitative data, it was found that there were positive changes in students' learning outcomes and some limited improvement in their academic achievement. Positive changes were observed in students' classroom learning including behavioral (e.g., attendance, participation) and cognitive (e.g., self-regulation) aspects. The improvement in self-regulated learning and school life experience were likely to be conducive to their future academic learning.

7.2.2 Teachers' teaching efficacy

The second research hypothesis stated that there would be a statistically significant difference in teacher efficacy in the intervention group compared to the control group at post-intervention. However, the results did not show any statistically significant difference in teacher efficacy between the intervention and control group at post-intervention. This hypothesis was, therefore, not supported.

The qualitative data provided some possible explanations for the insignificant results. First, the school teachers reported that they did not understand the learning needs of dyslexic students before the intervention program. School teachers reported feeling stressed and frustrated when

the students showed no interest in learning. Although the Professional Specialist teachers had provided continuous training and support to the teachers through co-teaching, the school teachers were still experiencing some difficulties in on-going student engagement especially in their English lessons where students did not understand the value of leaning phonetics and phonics in relation to reading, comprehension, and writing.

Second, school teachers reported that they had difficulties in managing student behaviors and classroom management. Teachers remarked that they spent a lot of time in managing difficult student behaviors. Yeung and Watkins (2000) highlighted that teachers' individual capability and confidence in managing instructions and classroom management were linked to teachers' self-efficacy.

Third, even with continuous encouragement by the Professional Specialist teachers to use metacognitive and cognitive techniques to teach students, school teachers explicitly remarked that they felt a sense of inadequacy and lack of confidence in teaching the students on their own. Several teachers struggled with the use of these strategies to accommodate the learning needs of students. English teachers also remarked that they had to tackle their own resistances in teaching phonics.

Fourth, the school teachers also encountered difficulties in integrating the intervention content into the school curriculum. Professional Specialist teachers observed the school teachers' resistance, confusion, distress, and stress when integrating the intervention content into the school curriculum. The problem of curriculum integration was also highlighted

in many other researches (Lam, 1996; Yeung & Lam, 2007).

Fifth, school teachers remarked that they had heavy teaching duties in addition to school administrative workload. To implement the intervention program, they took extra time in the preparation of teaching materials, classroom exercises, test and examination materials. The time demand led to higher levels of anxiety and stress in addition to teaching.

Sixth, because of the diverse abilities of students, school teachers encountered difficulties in catering for the individual needs of the students. Several senior Forms teachers reported issues of classroom management and insufficient training and resources to tackle the diverse needs of dyslexic learners as some students were not interested in learning.

Seventh, due to the time demand and diverse abilities of students who required more time to practice the techniques, school teachers reported that they could not finish teaching the curriculum in time for mid-term and end-of-term examination. Not being able to finish the teaching curriculum exerted considerable pressure and stress on the school teachers. The stress and anxiety might have influenced their self-efficacy beliefs.

Finally, school teachers reported that they were not fully confident in teaching students with disabilities and needed continuous professional development. The teachers' remarks were consistent with the remarks of the school principals and the Professional Specialist teachers on the importance of continuous professional development in strengthening

school teachers' professional knowledge and teaching strategies. Burke and Sutherland (2004) also advocated continued professional development to enhance teaching practices and teacher efficacy.

In summary, the qualitative interview data indicated that, school teachers encountered many difficulties and were stressed and anxious during the implementation of intervention program. This might explain the lack of significant difference in teacher efficacy between intervention and control group at post-intervention.

7.2.3Relationship between teacher efficacy and students' academic achievement and learning outcomes

The third research hypothesis stated that there would be a positive relationship between teacher efficacy and students' academic achievement and learning outcomes. Correlation analysis was conducted by using change scores of the teachers' Sense of Efficacy scores, students' academic achievement and learning outcomes. The third hypothesis was partially supported. There was no statistically significant relationship between the changes in teachers' Self-Efficacy scores and the changes in students' academic achievement. There was, however, a positive correlation between the change in "general satisfaction" from the Students' Quality of School Life Scale and the change in "Classroom Management" sub-scale from the Teachers' Sense of Efficacy Scale. This positive correlation suggested that improvement in teacher efficacy in classroom management was associated with an improvement in satisfaction with school life among students.

Based on the literature review, teachers' sense of efficacy has been found to be significantly related to students' academic achievement and motivation to study (Gibson & Dembo, 1984, Anderson et al., 1998; Ross, 1992). The current results provided limited support for the association between teacher efficacy and student satisfaction with school life. With continuous training and support, one might expect a positive change in teacher's efficacy in the future and this change could lead to improvement in students' classroom experience. The finding pointed to the importance of enhancing teacher efficacy.

Overall the results of the study were encouraging. The quantitative results showed that students from the intervention schools had some improvement in academic achievement, especially the lower Forms, as well as significant improvement in learning outcomes which were believed to drive academic achievement in the future. The qualitative interviews with principals, teachers, and Professional Specialist teachers provided triangulation evidence that the intervention program was effective in generating positive students' learning outcomes.

7.3 THE IMPLEMENTATION OF INTERVENTION PROGRAM

Based on the quantitative findings, it was concluded that there was improvement in academic achievement in lower Forms and a positive change in learning outcomes across all Forms. Throughout the study, the school teachers reported that the intervention program was effective in changing students' behaviors across all Forms. In evaluating the implementation of the

intervention program, the following key questions were addressed.

7.3.1 What percent of students were reached?

In the three intervention schools, there were a total of 116 secondary school students with dyslexia who participated in the intervention program. There were no refusals in the intervention schools. Seven of the students left the school before completion of the intervention program. The completion rate was 94%.

7.3.2 How were these interventions being implemented?

Implementing intervention program needed considerable teaching resources and investment in time and effort in order to be effective in improving the academic outcomes for students with disabilities. The current intervention was implemented with extensive support for teachers. The intervention included teacher's training on intervention strategies, curriculum design, and the 163-hour intervention (40 minutes for 7 lessons a week for 35 weeks) for both Chinese and English language in a small-size, classroom-based and split-group setting with school resources that enabled the program to be delivered according to the plan.

Teachers' training and classroom teaching

School teachers attended over 100 hours of teacher training and they reported the benefits of teacher training which helped them to better understand students' learning needs, teach students how to use metacognitive and cognitive strategies in daily lessons and school assessment, and integrate phonological content into the Form curriculum.

Teachers observed the diverse abilities of students and spent time in classroom management and taking care of students' individual needs. Though school teachers understood the importance of teaching students phonics, they had their own resistance in learning the techniques and they were not confident in delivering the lessons on their own. School teachers recognized the need for continuous professional development to enhance their teaching strategies to better support students with dyslexia. Despite conducting pre-lesson planning, school teachers mentioned that the lesson plans had to be flexible to cater for variable situations, e.g., negative behavior of students in class.

Co-teaching model

Professional Specialist teachers had provided training on cognitive and metacognitive skills, and examinations strategies to cater for the learning needs of the students. The Professional Specialist teachers also implemented co-teaching to train school teachers on using intervention strategies in actual classroom practice. In English intervention lesson, "one teach, one observe" and "one teach one assist" co-teaching models were used mostly. At the early stage, Professional Specialist teachers demonstrated how to use teaching strategies while the school teachers observed. At a later stage, the Professional Specialist teachers assisted the school teachers who delivered instructions to the students. The Professional Specialist teachers also support some students who needed additional help in the lesson.

In Chinese intervention lesson, "team teaching" and "one teach, one

observe” co-teaching model were mostly used in the intervention lessons. At the early stage, Professional Specialist teachers demonstrated how to use teaching strategies while the school teachers observed. At a later stage, both Professional Specialist teachers and school teachers provided instruction to the students usually in groups. In some lessons which the school teachers were very confident in teaching, Professional Specialist teachers only observed and provided opinions after the lessons.

When the school teachers were asked about the usefulness of co-teaching sessions, they all agreed that Professional Specialist teachers were critical resources in supporting them in delivering the intervention program. The school teachers asserted that they needed sufficient resources in delivering instructions and in managing students’ classroom behaviors effectively.

Intervention content and curriculum integration

The intervention content included both English and Chinese phonological and literacy components which were welcomed by the school principals. The school principals endorsed a comprehensive program that included Chinese and English curricula that could be integrated with the school curriculum. The principals were satisfied with the Chinese intervention content which integrated vocabulary, words, sentences, comprehension, writing, listening, and speaking into the school curriculum. The Professional Specialist teachers had provided lots of materials to school teachers who could customize these materials based on a student’s ability and school curriculum.

The intervention program had both phonological content and literacy content for both Chinese and English lessons. For lower Forms, intervention focused on foundation skills that emphasized phonemic and morphemic instruction, phonics, word formation, spelling rules, and sight words. The content was accepted by students of lower Forms. The school teachers agreed that phonological content should start in lower Forms as lower Forms students did not object to the learning of phonemes and phonics.

For higher Form students, more emphasis should be on literacy content integrating four key components including listening, speaking, reading and writing as higher Form students wanted more guidance and skills to help them succeed in examination instead of learning phonics. In order to tackle the resistance from students of higher forms, Professional Specialist teachers supported school teachers in designing lessons by integrating phonological content into school curriculum to integrate the phonological content into literacy content such as comprehension, grammar, vocabulary and fluency practices in daily intervention lessons. The Professional Specialist teachers highlighted the importance of aligning teaching curriculum with appropriate accommodation for the students with dyslexia. Although, the school teachers had identified certain constraints where they could not have different examination papers for mainstream students and students with dyslexia, the school teachers had to design appropriate curriculum for both mainstream and SEN students to be used in examination.

School teachers also highlighted the importance of integrating phonological content into everyday lessons. The intervention content should integrate with Forms curriculum so that skills and knowledge learnt by students could be able to support their examination.

School support

School support was an integral part of the intervention program. In kicking off the intervention program, the principals of the intervention schools played an important role in making arrangement to implement small-size, classroom-based and split-group intervention setting and to explain the school's decision and the objectives of implementing the intervention program to parents and teachers.

Both school teachers and the Professional Specialist teachers agreed that the school principal's leadership was really important in providing sufficient teaching resources and allowing continuous professional development to enhance teachers' teaching practice. Consistent with Mackay's (2005) assertion, the school principals' leadership was found to be the dominant driving force in the implementation of an inclusive program. The principals' leadership was found to be very critical in addressing complex issues such as school governance, pedagogy, teaching resource allocation, curriculum development and examination accommodation. The principals of the intervention schools were also committed to allowing teachers to attend training, ensuring adequate resources, and providing support to teachers.

7.3.3 What are the contextual factors that may influence long term adoption?

Quantitative results showed improvement in students' learning outcomes and more importantly, the school principals and teachers welcomed the intervention program. Despite the challenges caused by the lack of resources support, time demand and the need for more training on intervention strategies, the principals and teachers expected to continue the program to support students with dyslexia. Both school teachers and school principals emphasized the importance of teachers' training and professional development in order to sustain the intervention program.

The effectiveness of intervention program relied on the teachers' capability to deliver the intervention program to students. However, school teachers faced a lot of barriers including lack of knowledge and skills in using the intervention content and curriculum, lack of strategies in student engagement and classroom management and heavy school administrative tasks. Further, teachers were also faced with difficulties in teaching big classes of students with diverse capabilities and family backgrounds and inadequate supports to manage students with special learning needs. There were several measures suggested by principals and Professional Specialist teachers to remove these barriers. School principals suggested providing sufficient teaching resources and continuous professional training for teachers as the key factors to sustain the intervention efforts. The Professional Specialist teachers suggested whole school approach with school support in the provision of sufficient resources, continuous professional development for teachers and appropriate assessment and accommodation to sustain the intervention

program. The school teachers agreed with the importance of the principal's support and the need for having Professional Specialist teachers as critical resources in supporting intervention lessons and curriculum integration as key factors to intervention program sustainability. Based on the voices of teachers and principals, key factors influencing future intervention sustainability were:

a) support for teachers in terms of teaching resources, training on strategies and knowledge in managing classroom behavior and teaching students before and during the intervention program to enhance teaching efficacy,

b) whole school support and principal's leadership in fostering the vision of integrated education, school level support system in small size class, pedagogy, quality teaching, releasing administrative demands and allowing teachers ongoing training on intervention strategies and best practices, and

c) integrating intervention content into school curriculum and providing appropriate examination accommodation.

To summarize, the issues of lack of knowledge and skills for implementation of intervention program, lack of training on intervention strategies, resource constraints and time demands were found to be impeding program sustainability. Consistent with the finding in Sharma et al.'s (2013) study, the current study accentuated the phenomenon of lack of specialized teachers and the need for providing training to teachers to support students with disabilities. Though intervention required significant funding, with increased funding support from EDB to

subsidize school's intervention efforts, schools could purchase services from specialized resources to support school teachers and provide continuous training on intervention strategies. School principals might also contract specialized resources to provide continuous training on metacognitive and cognitive strategies to all Forms teachers to aid the implementation of the intervention program.

7.4 IMPLICATION ON EDUCATIONAL PRACTICE

The study highlighted the importance of evidence-based practice and it demonstrated that intervention can be effective in a small-size, classroom-based and split-group intervention setting. The findings of this study added to the growing body of evidence on school-based intervention program to enhance students' academic achievement and learning outcomes.

First, the program was welcomed by the principals and school teachers. The principals clearly indicated that they wanted an intervention program with Chinese and English content integrated with school curriculum. This provided support for intervention programs to include both Chinese and English intervention materials fully integrated into the mainstream curriculum.

Second, the study also provided encouraging evidence on the effectiveness of small-size, classroom-based and split-group daily intervention setting in enhancing students' academic achievement. This suggests that small-size classroom-based and split-group interventions could be an effective strategy to support students with dyslexia.

Third, students received daily intervention for 40 minutes for 7 lessons a week for 35 weeks, with a total of 163 hours. The study finding indicated that intervention had to be frequent and intensive in order to produce gains students with special education needs. Schools and policy makers would need to be prepared to invest adequate resources to provide sufficient dosage to support students.

Fourth, the study also highlighted that school teachers faced a lot of challenges in understanding the characteristics of students with dyslexia and their learning patterns, coping with students' diverse capabilities, learning new strategies in delivering effective instructions in classroom, and managing students' behaviors. Also, the finding highlighted that school teachers did not have sufficient training to understand the students' learning needs and they lacked confidence in providing quality instructions to teach students with dyslexia. This suggested an imminent need to equip teachers with strategies, knowledge and quality instructions through continuous professional development to enhance the delivery of instructions, classroom management and students' engagement. With sufficient training, intervention could be conducted effectively by trained mainstream teachers.

Fifth, the co-teaching model of pre-lessons preparation, monitoring progress of lessons, dealing with students' classroom behaviors, on-going problem solving was very welcome by school teachers. Professional Specialist teachers were seen as a critical resource to support them in actual practices. The finding reinforced that on-site professional support was important in an inclusive education environment which not only could reduce teachers' stress but enhance teaching and provide better support to students with dyslexia.

Sixth, this study demonstrated the importance of the principals' leadership in the implementation and sustainability of the intervention program. The principal assumed a prominent role in managing complex administrative conflicts among teachers and staff as well as committing to provide sufficient resources; allowing teachers to have time off for training and sufficient time for lesson preparation. However, there were differences in the expectations among principals and school teachers in terms of school support. On the one hand, the principals claimed to provide full support in terms of resources and making positive changes in implementing the intervention program. On the other hand, school teachers reported inadequacies in terms of communication among other teachers in the school and insufficient resources support and high administrative demand which added considerable pressure on school teachers who had to implement the intervention program. This implied that there might be a need to reduce teachers' administrative workload in order for them to focus on delivering teaching instruction.

Seventh, the study demonstrated the implementation of intervention program could only be successful with sufficient teaching resources. School principals asserted that the intervention required a lot of teaching resources and support to the school teachers. With increasing funding from EDB to support students with disabilities, the school could link up with expert resources in the community to alleviate the resources problems and incorporate high quality practices into classroom teaching.

Finally, the Professional Specialist teachers developed Chinese and English intervention content materials that were integrated into the school curriculum.

School teachers remarked that the intervention program could potentially be adapted for use in mainstream classrooms. This provided support for the use of the intervention materials as universal teaching materials for school enrichment program.

7.5 LIMITATION AND FUTURE STUDIES

7.5.1 Limitations

First, this study was not a randomized controlled trial study as it was difficult to persuade schools to accept random assignment into intervention or control schools. The results could be due to systematic differences in schools opting to be intervention or control schools. The number of schools was small and might result in an insufficient sample size.

Second, the present results only included students with complete pre-intervention and post-intervention data. The results could be due to selection bias. However, the number of students who dropped out in both arms was small and there was no significant difference in the number of students with complete and incomplete data between the intervention and control groups. There was no significant difference in demographic characteristics and pre-intervention measures between participants with complete and incomplete data.

Third, qualitative interviews with intervention schools' students were not conducted. The project implementation team was dismissed soon after completion of the project and it was not possible to schedule students' interview to strengthen the outcomes through triangulation of data. It is

suggested that student interviews be conducted for future study.

Fourth, due to limited funding and timelines for the current study, no follow up data was collected from the intervention schools. It is suggested to conduct further data collection one year after the intervention program to evaluate whether the students' improvement could be sustained.

Fifth, there was no quantitative measure of improvement in teaching process and positive improvement in teaching. Teachers also highlighted that student-teacher interactions were critical to influence the classroom learning. However, quantitative measures were not used to evaluate students-teacher interactions and student classroom learning behaviors.

Sixth, school teachers and professional specialist teachers agreed that school support was pivotal to the success of intervention program. There were, however, no quantitative measures to measure school support and the readiness of the school environment in the implementation of the intervention program.

Finally, the study did not interview the parents who could have provided more insights on the learning behaviors of students at home which could have provided more information outside of the students' classroom-based learning.

7.5.2 Future research

Although the program had certain positive outcomes, several caveats were

noted that should be addressed in future studies. First, it is suggested to conduct a randomized control trial to evaluate the effectiveness of the program. This is the gold standard for determining the cause-effect relationship between intervention and outcomes as well as for assessing the efficacy of a treatment (Vader, 1998).

Second, quantitative outcomes only showed that Form 1 students displayed significant improvement in academic achievement. Research showed that more frequent and longer intervention produced greater gains (Alexander et al, 2004; Swanson, 1999; Vadasy, Sanders & Abbott, 2008). It is, therefore, suggested to conduct further studies in early intervention with daily intervention for a period of two to three academic school years to understand the effectiveness of more frequent and longer interventions. These interventions might deliver more significant improvements in students' academic results.

Third, further studies replicating the same intervention program in more secondary schools are needed to strengthen the evidence supporting the assertion that the intervention program is effective in generating student improvement in academic achievement and learning outcomes.

Fourth, in addition to the quantitative data, future research should also obtain qualitative data from the students to understand their perception and understanding of the intervention. This would further strengthen the data triangulation in enhancing the validity of results.

Fifth, in this study, Professional Specialist teachers and school teachers remarked that the whole school approach was a significant factor in the implementation of intervention program in an inclusive environment. The whole school approach is being advocated by the EDB to place students with special education needs in regular classes. The inclusion policy requires school support systems including culture, policy, resources support; curriculum, pedagogy, and quality teaching to cater for the needs of all learners including students with special education needs (Forlin, 2010). Future study would need to include quantitative measures on the adoption of the whole school approach in supporting students with special education needs.

Sixth, the intervention program required expensive Professional Specialist teaching resources to train up the school teachers. In order to be more cost effective, school principals planned to encourage those teachers who had participated in the intervention program to train up other teachers who had not participated in the intervention program. Further research should be conducted to evaluate this new teacher training model in term of its cost efficiency, both short-term and long-term.

Finally, school teachers stressed that the student-teacher relationship was critical in influencing students' classroom learning. Research on developmental theory suggested that positive teacher-student interactions could support students' social and emotional functioning (Hamre & Pianta, 2001, Crosnoe, Johnson & Elder, 2004). Future studies may consider evaluating the student-teacher relationship and its impact on the

improvement of students' learning outcomes such as self-regulation, academic initiation, etc., as well as the enhancement of teachers' teaching efficacy. Perhaps these factors could provide more insights to enhance intervention outcomes.

7.6 CONCLUSION

The study evaluated the implementation of a small-size, classroom-based and split-group intervention program in Hong Kong secondary schools. Conducting school-based research is seen as major endeavor for researches, teachers, professionals and service providers. This study was one of the very first intervention program with English and Chinese intervention content (phonological and literacy content) integrated with school curriculum.

In conclusion, the study provided positive evidence demonstrating that small-size, classroom-based and split-group intervention was effective in enhancing students' academic achievement in lower Forms. Both principals and intervention school teachers endorsed the effectiveness of small-size, classroom-based and split-group intervention setting. There was also significant improvement in students' learning outcomes which could positively influence their future academic learning.

Qualitative findings indicated that intervention with both Chinese and English content integrated into the school curriculum was welcomed by the school and both school principals and teachers. The study suggested that intensive and continuous teacher training on intervention strategies and sufficient resources were critical for successful implementation. Teachers reported to have better understanding of dyslexic students' learning needs after training. They had

learnt new teaching strategies but they unanimously expressed the need for training and continuous professional development to enhance their teaching practices to confidently use the intervention strategies in classroom practices. This reiterated the importance of training teachers to acquire the skills, strategies and knowledge for implementing the intervention.

Another critical factor was the role of principals' leadership in tackling complex and diverse issues such as school governance, pedagogy, small-size, classroom-based and split-group intervention setting, resources allocation allowing teaching training, and examination accommodation to align the teaching content with school tests and examinations. Findings also reinforced the importance of the whole school approach where the involvement of all teachers and changes at systems level to support students with diverse learning needs were fundamental to inclusive education.

APPENDIX A - INTERVIEW QUESTIONS FOR PRINCIPALS

1. Would you share your opinions how the intervention setting contribute to the success of the invention program for the students? The intervention setting are:
    a. Small size daily intervention
    b. Split-group mode
    c. Teaching materials and strategies eg lesson planning and organization; teaching content; teaching skills; class management and interaction
    d. teaching contents - phonemes, semantics, syntax and advanced literacy contents
2. How do you feel before and after the intervention program? How do you fell about the following:
    a. Students' learning and motivation
    b. resources in supporting teachers to teach the students
    c. types of administrative support required
    d. change in classroom atmosphere or school environment
3. From school administrative perspective, how would you identify key areas in term of school support which is very critical to the success of the intervention program?
4. What are other key success factors for the implementation of the intervention program?
5. What is the key improvement areas needed for the program?
6. What do you think that can be done differently in future?
7. Do you encounter any difficulties during the implementation of the program? In your opinions, how to prevent these issues from happening?

APPENDIX B- INTERVIEW QUESTIONS FOR TEACHERS

1. How do you feel before and after the intervention program? (in terms of teaching, understanding the needs of students, etc)
2. How do you find the students before and after the intervention in terms of
    a. learning and motivation
    b. interest in study,
    c. classroom atmosphere and dynamics,
    d. teacher-student relationship
3. How do you find the support from school principals or other colleagues in your teaching?
4. How well are you able to use the teaching strategies in class?
5. Do you encounter any difficulties during the implementation of the program?
6. What is the key improvement areas needed for the program?

APPENDIX C – QUOTES FROM QUALITATIVE INTERVEIWS

Below were the quotes from principals, professional teachers and school teachers in Chapter 6.

6.1.1 Content and pedagogy must integrate with school form-based curriculum framework and include both Chinese and English

[我地一直都想搵一個有中文又有英文嘅課程……(P3:4)]

[學校參加呢個研究課程, 就喺因為學校冇英文科嘅課程。而中文科呢，學校已經用咗 xxxx 好多年…….(P1:2)]

[我校一直都有買服務，同埋喺校內做輔導嘅教學。買服務好難。例如 xxxx，透過社工專業嘅協助, 針對嗰啲有讀寫障礙嘅學生。我睇到佢地上課喺非常愉快嘅。小組有八個人，放咗學之後，同學會自動自覺去上堂。最大嘅難處喺，佢地覺得上堂之後，佢地學到啲嘢，方法 generalize 到日常嘅課堂裡面。學生跟社工導師學一啲策略，但喺課堂裡面就用唔翻，同埋考試制度又唔喺考嗰啲嘢，所以冇幫助，因為學生用唔翻，成效就唔顯著。(P3:2)]

[而 ABC 嘅研究計劃最大嘅好處，就喺教嘅內容喺 Build in 喺校本喺課程。佢地用我校嘅教科書，作為基礎，然後做一啲modification，同埋老師開會傾課堂嘅設計，配合適當教學法同埋策略，去支援呢啲同學。更同老師一齊教學，成效相當好。(P3:4)

[比較 xxxx; 因為喺抽離式(兩堂); 會有好強嘅 labeling effect。xxxx 喺中一中二還好, 去到中三, 同學覺得所教嘅唔喺學科須要, 喺另外一套課程; 對佢地嘅考試冇乜大嘅幫助。而 ABC 嘅中文課程，同學只嘅覺得老師嘅教法唔同，所學啲嘢同其他班一樣。同學上課有興趣。(P1:4)]

[….. 中文科嘅接受程度高，喺因為啲同學覺得學啲內容同考試啲內容差唔多。中文科老師反映 ABC 嘅中文課程, 能夠融入學校嘅課程，呢個喺重要好嘅。(P1:5)]

[中一中二還可以; 但喺中三上 phonics, 中三同學非常憎恨 phonics。……而且佢地覺得對考試完全冇幫助; 基本上喺完全冇興趣去學 phonics。其實喺同一班同學; 佢地上中文科同上英文科嘅態度完全不同。(P1:9)]

[雖然我明白到同學要從 phonics 學到 words 及 sentence structure. 但是佢地真喺做不到。尤其是一整個學期都喺學 phonics, 同學好反感。(P1:10)]

[我覺得英文科啲材料內容要作出改善。以便令到啲同學覺得課程有用。(P1:13)]

[我日日喺學校，我睇倒英文科啲學生嘅考試同聽到老師啲評語，同學有明顯嘅進步，增值好大。尤其是 F1 同 F2 成效好顯著。但喺 F3 比較弱啲，可能喺建立咗啲壞習慣，喺好難好快嘅有所改善。(P3:6)]

[佢地欠缺咗數學科啲課程給比 S 班, 我覺得 ABC 應該考慮設立數學科嘅課程… (P1:21)]

6.1.2 The importance of continuous enhancement of teaching effectiveness through teachers' professional development

[我睇到啲同事好積極嘅，佢地好忙碌，但喺忙得嚟覺得值得。老師受訓之後, 佢地好有成功感，會繼續好積極地嚟做緊呢一年。我都好開心(P3:8)]

[其實要嗰研究計劃成功嘅話，除咗校方嘅支持同埋 resources Support，我覺得最重要喺老師要喺 training 之後，可以運用嗰啲針對學障學生嘅策略，從而令到同學佢地有學習嘅動機同埋有成功感繼續學到嘢。(P3:23)]

[實際上，要幫到學校，課程一定要好貼身。先喺真正幫到啲老師。其實老師都好想教好啲同學，但喺佢地冇方法。佢地只喺有愛心，咁樣喺幫唔到啲同學嘅。除咗要愛佢地，固然重要，但老師須要學習同掌握教學嘅技巧。更重要係方法同策略嘅運用。ABC 就特別針對呢啲策略同埋技巧, 配合校本同課程嘅須要,運用適當嘅教學法，重同老師一齊備課同上堂去教學生。呢啲同我地以往推行嘅計劃唔同嘅地方, ABC 嘅課程好貼身。(P3:5)]

[我覺得 ABC 嘅老師團隊好努力，亦非常之專業，亦好貼身。老師以前都去上堂，受訓返嚟同聽完講座之後，都唔識得點樣教同學。但喺 ABC 老師團隊會進入課堂 co-teach， 同示範教學，老師覺得呢啲先喺學到策略同埋點樣用生活化嘅取材，可以運用到課堂嘅教學上。(P2:10)]

[中文科嘅上堂氣氛好好同好投入。而且老師對觀課已經習慣; 對於上課時嘅課堂管理同策略運用都應付自如。(P1:14)]

[中文科方面，冇乜大嘅問題，老師同同學只喺覺得教學方法不同，而同學嘅成績也有明顯嘅進步，對於課堂嘅學習，有明顯嘅興趣。可能因為人數小，對同學比較關顧。加上老師上完堂之後有信心去教，同學學習嘅困難相對比較小。(P2:5)]

[但長遠嘅支援，就喺希望種籽老師可以將所學到嘅嘢移轉到其他啲老師，同通過教師嘅專業持續嘅培訓發展，可以運用呢套策略去教

所有啲班級嘅同學。(P2:7)]

[….所以最重要喺啲老師要有持續專業發展，咁樣呢個計劃先至可以繼續落去嘅。(P3:24)]

6.1.3 The importance of Principals' leadership in the implementation of the intervention program

[喺行政嘅層面,學校亦特別請咗個助理去 support 六個老師; 同埋特別裝飾一個班房比個啲 S 班嘅同學上課。佢地最鍾意用黑板。所以學校希望呢個班房嚟做互動教學，令同學有興趣啲上堂。(P1:17)]

[喺行政嘅層面，學校亦都安排咗每星期額外三堂嘅課堂比老師作為備課同培訓之用。同埋亦都安排咗小班教學嚟推行分組上課嘅模式。(P1:18)]

[喺其他行政嘅層面，教少咗一啲堂，校方亦放寬咗啲限制，例如複製多咗啲教案同埋額外嘅教材。(P2:8)]

[喺行政啲層面, 學校會為同學作出多啲支援, 多啲 resources。我會定期同老師開會，睇下有乜嘢可以改善。(P3:20)]

[……喺考試時候，學校有允許靈活調整考試嘅考卷，包括只喺考核心嘅課文，所有老師都會教嘅，有啲非核心嘅課文方考。中二中三就七成三成，我校一向都有對讀障嘅學生作出有彈性嘅安排。對於個啲叻嘅同學，個三成就問得深啲。對個啲弱啲嘅同學，就間得淺啲，即係聽嘅課文就一樣，但係有啲要答全個字，淺啲個啲就圈答案。(P2:13)]

[我覺得小班好重要, 都唔喺問題，喺有呢個必要將學生集中埋一齊，

然後運用適當嘅教學法。(P3:4)]

[喺行政嘅層面都要好多遊說嘅工夫同安排，因為須要小班教學同埋只喺要收讀寫障礙嘅學生；安排上都遇到好多啲困難，最初就冇乜問題，但到咗中期，因為其他啲班嘅人數太多，令到其他嘅老師好不滿。(P1:1)]

[我覺得最重要喺分班,初期都遇到啲困難。首先就要同啲同事傾下，等佢地明白一下啲安排，同埋解答佢地啲疑問。啲同學又有問題。佢地唔知點解要揀呢班。我地特別同中一啲家長解釋呢個計劃同編班嘅安排。我都有遇過啲家長唔願意入呢個班。當我解釋嘅時候，都要好小心，我唔想制造一啲 labelling 嘅 effect。(P3:24)]

6.1.4 Intervention should start early and longer intervention sessions could lead to greater gains

[我地睇到低年班嘅進步比較大，尤其喺中文科。我覺得早啲介入，成效就比較顯著。 (P1:19)]

[但喺呢一年，我睇得到啲種子發芽，但我喺和道要種子開花結果，真喺要好多啲努力同灌溉，又要 sustain 得到先喺最重要。(P3:10)]

6.1.5 Key concerns on project sustainability

[雖然同學同老師對校方小班嘅安排冇乜評論，但係行政嘅層面，都有一定嘅難度。因為要多兩個老師去推行小班教學模式，比教署所定嘅 1:1.7 重要多。而家都重可以，直到 2016 因為學校正喺進行校本嘅優化過程。雖然教署允許零點幾嘅老師，但係過咗呢嗰位，就冇呢個人力，佢地唔會比兩個老師比學校。(P2:6)]

[而家 ABCs 嘅專業老師陪住老師上堂，又幫老師成長，同埋承存落去，呢嗰先喺最重要，喺能夠 sustain 到落去。ABCs 嘅目標比較遠大。但喺另一個方面又有啲擔心冇 ABCs 繼續培訓啲老師，嗰計劃嘅成效會點呢 。(P3:18)]

6.2.1 Observation of changes in school teachers

[……老師心裡好覺得啲學生有啲特別，過程上面未有肯定嘅接觸，但喺唔知有咩嘅特別，特別担心喺因為自己未去接觸，好多時都覺得好迷糊，就唔敢去試一啲新嘢。(11)]

[佢地初初好驚，老師嚟咗嗰 workshop，喺開始教之前，Wow, 好多嘢都喺好新，phonic 啲策略好新，乜用啲咁嘅策略, 佢地好担心，覺得好混亂。又好担心自己識唔識得教， 又擔心自己唔知可唔可以 match 倒學校學校課程……(12)]

[其實老師遇倒嘅問題喺, XXXX 剛剛講嘅，佢地唔知道讀寫障礙嘅學生須要啲乜嘢；第二樣嘢，佢哋以前用僅行之有效嘅教學法，而家要改嘢，要佢哋改動好大，所以個反響好大。除咗環境因素以外，要郁到自己，都喺好難。….(16)]

[……好似老師話多雙手。……可能我哋喺度比倒老師喺教學上，同精神上嘅支持。(19)]

[因為英文科有 co-teaching 好，有 observational learning, 老師話我地喺 role model。因為我哋對啲學生好有耐性，時時讚啲學生喎。我哋喺 self-evaluation 提醒老師，對呢班學生的態度，都要啲特別處理。(23)]

[….佢地覺得啲策略真喺幫倒佢地, 之後發展到有自己嘅意見, 開

始 建立咗信心，佢地同我講, 佢地好開心，我哋都好開心，老師都成長咗，佢地又教到我嘢。我哋之間的關係之中，我哋之間相互學習。(12)]

[在課堂嘅教學上，比多啲 resources 比老師，同埋同佢哋 co-plan 或者 co-teach 喺好重要嘅原素。(20)]

[…..我同老師都用咗多嘅時間去改啲教案同工作紙，喺課後，我同老師一齊交流心德，講翻啲策略同教學技巧運用。呢一年嚟，我見倒老師喺課堂上嘅成效好好……(19)]

6.2.2. Observation of students' learning outcome

[……喺中文嘅課堂習集作，大部份嘅同學，尤其嘅低年班嘅同學，都有顯著嘅進步。(19)]

[喺呀，喺低年班嘅英文課堂習作同考試，都比高年班嘅好。…..(20)]

[….老師話學生好乖好肯學， 老師話其實學生好想學嘢。…….(15)]

[……我哋睇倒啲同學在課堂，都好積極。……(19)]

6.2.3 The role of the intervention school teachers as change agents

[整個計劃最重要嘅元素之一喺將老師變成 change agent, 幫助老師成為 effective change agent。(1)]

[我地希望老師自己能夠成為改變學生嘅 Change Agent, ….能夠令到學生識得用認知策略，加強佢地嘅學習動機。特別喺課堂嘅演繹好似中作咁，老師會用上生活化嘅題材，用清晰嘅指令同元認知(親歷學習，小單位，鷹架，多感官等等)，從而達到自定嘅教學目

標。……(13)]

[……我地都喺強調策略運用同老師同同學嘅自我調控學習模式。咁樣就提升老師同同學嘅 motivation…….。14)]

6.2.4 Role of the Professional Specialist teachers as Bridges

[我覺得我哋嘅角色就好似一個橋樑角色，同老師同學校有一啲位，喺我地未去之前，佢地都表達喺進展上, 同教學都有一啲難度。甚至令到老師去認識學生嘅困難，都欠缺一啲理解，我地嘅角色喺好似去保足佢哋需要嘅一啲嘢，所以我哋係一個好重要嘅橋樑。 我地可以搵到一啲方法，令到老師了解同學嘅困難。而且正因為我地嘅角色係一條橋樑，令到老師操作前線， 同學校佢哋爭咗啲乜嘢嘅聯系，而有啲嘢推行唔倒呢？我地嘅角色做咗中間連接嘅部分。(10)]

[….好似 XXX 提到，要讓老師知道讀寫障礙嘅學生須要啲乜嘢，佢哋唔知道讀寫障礙嘅學生須要啲乜嘢,其實我哋嘅角喺色一條橋樑，去話比老師知道，讀寫障礙嘅學生須要啲乜嘢。……(16)]

6.2.5 Professional Specialist teachers had built good relationship with teachers and students

[我哋一直同學校關係喺好好嘅，同老師嘅關係喺好好嘅, 同同學嘅關係都喺好嘅。….. 就喺呢啲好嘅關係，我地成功敢入倒課室，入倒學校。(17)]

[我覺得我哋同老師嘅關係好好，同學生嘅關係好好，同學同老師好想我嚟，…每個禮拜，同學又好想見到我；老師好想見到我嚟，佢覺得我係倒，佢哋嘅自信心都會大啲。(15)]

6.2.6 *The importance of whole school approach in an integrated education environment*

[…..學校嘅 culture and vision 好重要，喺整個計劃嘅成功與否的關鍵。(3)]

[今次同上次 pre-pilot xxxx 唔同，喺須要全校參與，由校長，到科目老師，考試 panel, 每一層都要參與。雖然有一啲學校有唔同。好似成功嗰啲學校，時間同空間嘅配合好重要。……(4)]

[後先 XX 提出個全校參與啲模式啲融合教學，我好同意 XX 話呢嗰喺成功與否嘅重要關鍵，唔丹指喺校長嘅推動，但係 kickoff 個計劃嘅第一點,就係要全校參與啲模式。 我地講緊嘅教學法同埋策略，梗喺重要啦。但係要成功地去展開，就係要全校參與 positively, 喺 prerequisite 同第一步 。(5)]

[……整個 theoretical framework，喺要喺實踐裡面，由課程內容選取, 到教學編排, 再到教學方法，喺學生認知策略上面，學習動機，同考試嘅框架同 XXXX 講嘅全校參與啲融合教學環境，作出整體嘅配合。……(24)]

[……其實好多學校都講緊校本嗰樣嘢。我哋要做到將讀寫障礙嘅獨特嘅教學策略，同校本扣上關係。(21)]

[….我好同意 XXX 同 XXX 嘅講法，而家學校好重視校本嘅發展得以同教學課程接軌，咁樣先至可以製造倒正面嘅環境嚟配合學習障礙嘅學生嘅需要。(25)]

[我地同 xxxx 嘅課程唔一樣。佢地主要喺字、詞同句子。我地嘅計劃主要嘅教學內容喺針對讀寫障礙嘅學生對語音缺損同埋語音記憶嘅部分，製訂針對性嘅教學內容，融入學校嘅常規課程。所以內容

喺包括咗聽說讀寫四個部分互相串連埋一齊。加埋字詞符號認讀，默寫、詞彙知識同修辭等等……(7)]

[因為英文喺 Second language，所以著重咗字同詞, Phonics, sight words 嘅基礎訓練，然之後先至到高能力嘅 fluency, comprehension 同 listening！當然我哋喺要用融入學校嘅課程要求啦….(8)]

[由其喺英文，因為喺 second language, 而且佢地喺對基礎嘅形音有困難。所以課程嘅設計，要函接校本嘅課程 ，先至配合適當嘅教學法呢將同學由 F1 拉到去 F3，唔喺要三級跳。……(18)]

[其實我哋喺好須要理解老師嘅教學困難同需要。咁樣嘅推嘅過程中，要同學校嘅核心課程接軌。喺佢哋學校嘅文化，啲策略幫唔幫倒學生考試，喺好重要。……。(21)]

[……喺老師訓練嗰時，同老師分享過教學清單。其實喺強調校本課程發展嘅重要性，呢個喺整個課堂支援計劃嘅精緒。因為種籽老師，可以利用學咗嘅專業知識同經驗，為學校建立適合讀障學生嘅增潤課程，從而可以優化學生嘅語文學習，亦都可以令呢個到校課堂支援計劃繼續推動落去。(9)]

[……校長嘅領導去推動呢個計劃，好似小組教學， 提供訓練比老師，同佢地解決問題呀，固然重要……(4)]

[……校長好支持啲老師，比時間佢地備課，又去觀課比意見。最好佢地能夠繼續支持啲老師….。(17)]

[……喺 macro level，校長嘅 Support 梗喺好重要，成個 project 嘅 kick-off 喺須要校長嘅推動嘅。(2)]

[……喺評估方面，我地有同學校提出好多嘅建議：由試場嘅安排到

出卷形式，由字體嘅大細，由評分到對答案等等。除咗校長嘅領導同資源配合之外，重要喺比時間啲老師去運用倒策略，重要放開考試嘅框架，針對同學嘅語音缺損同記憶嘅問題。我地喺要强調喺時間同空間嘅接合, 配合嗰課程設計，教學法同埋平估。唔喺要啲學生去囉 5**，而喺要了解啲同學嘅須要……（18）]

6.3.1 Observations on Student Behavior and Academic Outcomes

[成績方面，兩個學期，啲學生有進步，S 班合格率係最高，有幾個同學已經入咗精英班。中文科嘅成績，係有 benefit。……(S1.2.6)]

[成績真喺有進步，佢地熟習咗上堂嘅教學模式，有啲學生啲英文喺 0 啦，而家見到學生有心去溫書。用咗啲方法去默書又囉倒幾好嘅成績。(S3.2.4)]

[……成績見倒有進步。(S3.3.3)]

[大部份嘅同學喺測考，都有進步。因為有成功嘅經驗，令佢地多咗啲信心去試。(S3.4.4)]

[呢啲同學有唔同嘅問題，有能力低嘅，有啲係懶散，但係個課程唔係比懶散嘅。要用啲咩嘅策略比呢啲懶散嘅學生去投入個課程，喺要唸嘅。.....(S1.3.8)

[….其實啲學生有好大嘅差異，有啲學生弱到呢，例如 P 佢地淨係識 Pizza, 同佢地講 Pen，佢地都係記得 Pizza…..(S2.11)]

[亦有幾個學生徑常都唔返學，都唔喺上堂啦，返學都喺是坐度。(S3.2.6)]

[係班裡面，啲同學有能力高，有能力低，有時會拖慢其它同學嘅進度，影響其它同學嘅情緒，有啲做完會做自己嘢，有啲要個別去幫佢地，其他啲同學會傾偈，就好嘈，玩得太利害，要返翻課堂，又

係好難。所以我覺得要照顧埋佢地須要。喺 plan 嗰時，就要準備有啲難啲題目，比解難競啲學生。其實我唔會要求用文字表達比我聽，用口語表達倒個 concept 就得。叻啲學生我就要求文字。(S1.2.16)]

[……但係有啲能力都係好低。佢地嘅學習成績都係好低。(3.4.3)]

[But some [students] had low abilities; their academic results were poor. (3.4.3)]

[學生啲成績有參差,因為佢地係高年班,要啲時間去適應呢套方法。有個別同學嘅動機好弱，成績就梗係差啲。(S3.4.1)]

[……但係佢地嘅能力低，我估啲同學繼續用呢個學習模式，進步嘅空間就好大啦。(S3.4.4)]

[困難係有困難嘅，對佢地全部都係讀寫障礙嘅學生，對佢地啲要求要啲時間去調節。唔可以對佢地好苛刻我會提返自己。要比佢地一啲時間。雖然佢地學咗啲策略，佢地未必即時考試做到好成績，變返正常人。要佢起掌握倒呢套方法,佢地要啲時間去適應呢套方法。如果冇呢在套方法，佢地出嚟成績重差。(S3.1.16)]

[大部份啲學生好投入，好積極，學習動機有明顯著嘅提升。上堂嗰時，見倒佢地好開心。……(S3.4.3)]

[上堂多咗興趣。佢地話呢啲我識喎，其實說話，閱讀，聆聽，都有特定方法，基於啲信心，佢地應用出嚟。(S3.3.5)]

[整體嘅 Motivation 高咗好多; 功課又肯做; 做卷好咗，我都好開心。功課肯做。上堂嘅氣氛好咗，當然有時有飄忽。…; 大部份時間都幾好，佢地知道上堂喺要學野。但喺有啲同學眼瞓啲，就要多啲 motivation. 整體上，上堂佢地知道要專心，要學嘢，要做嘢。(S3.1.3)]

[….中文科，上堂好積極，我見倒好 active……(S1.2.6)]

[初中嘅學生比較活潑，……(S1.1.9)]

[教中三一班細班 14 人，佢地程度較弱一般動機發好低。(S1.4.1)]

[啲學生嘅學習動機多數喺偏弱，當然又係喺改善中。佢地升中四啦…(S1.3.9)]

[…..由 phonics 入手，對於中三啲學生係好新嘅嘢。但係佢地習慣咗，就算平時英文成績好差嘅同學，佢地都可以掌握倒一啲音，串倒啲字呀，只要有一次成功嘅就經驗，對同學嘅鼓勵係好大。某一兩個同學，你會見倒佢地由零到一分，找緊呢個機會去讚佢地，都有鼓勵作用。….(S2.4)]

[….同學有信心咗，建立咗一啲常規。睇倒自己做倒，有滿足感。……(S3.3.3)]

[學生有成功感。例如其中有一個學生。喺過去 F1, F2，差得好緊要，動機係無嘅，功課完全唔交喎。今年中文同英文都係 ABC，我見到佢喺中文默書，英文小測，都合格喎，我喺 Facebook, 見倒佢，佢都表現得好開心。可能對人哋無乜嘢，但係對佢，覺得好有成功感。(S1.3.3)]

[.....咁初期，學生好唔習慣呢組細班嘅模式，怎至覺得比人標籤咗 s 代表咗負面嘅詞語，所以初時佢地好被動，唔識得珍惜師生比例少咗嘅好處。咁之後建立咗好嘅關係，佢地就知道多咗好多機會去問，去追返啲進度，佢地就有信心投入課堂。佢地無得揀坐係度被動，每個 Lesson, 佢地一定要作答，同出去黑板寫嘢嘅機會。…..(S2.2)]

[我嗰班係中一，因為佢地係張白紙嚟，唔喺好抗拒 phonics, 由小六上嚟，到佢地完成 Form 1 嘅課程，係改變好大。最開頭過一兩個月，有幾個同學，由開頭唔肯開口讀，唔敢開口讀，上堂嗰時，最好啲眼神都被開我，到後嚟有咗呢套方法，不斷咁嘗試、不斷改進，到學期尾，有三四個同學，比以前，信心大咗好多。無論佢識唔識，

佢地都咁試。咁樣比開頭諍好遠。(S2.5)]

[…因為我地話哂係 Band three 學校，佢地嘅動機都唔係好高嘅。以我喺中一、二接觸佢地，而家佢地嘅興趣係大咗。因為成套計劃係好設合佢地須要。以前比較難明小小啲學習重點，就會跳過去。今年啲課程係 tailor-make, 佢地覺得自己又識喎，所以佢地就上心小小，在意小小。我都唔識嘅，就唔聽，以前就喺咁架。(S1.3.2)]

[面對啲問題，例如一篇文章，佢地唔知點樣理解，我地教佢地六何法，佢地學咗之後，寫出嚟，用翻六何法，六何法變咗條鎖匙。有咗呢條鎖匙，佢地有個方法，無論喺讀嘅寫嘅時候，唔能夠話佢有咗條鎖匙，會做得好好。但喜馬有呢個方法。唔會好似以前。(S1.1.4)]

[…..佢地覺得學倒啲 skills, 幫佢地攞倒啲分，呢個好重要。(S3.1.2)]

[……其實教佢地啲學習、解難技巧固然重要，但係幫倒測考，攞倒分合格先至喺最重要。(S3.4.2)]

[……，因為佢地係中三，唔同中文，喺英文科嘅動機好弱，上堂嘅, motivation 好低好弱，佢地無興趣由頭學過。因為英文好著重啲音，由 A-Z 開始，佢地覺得好幼稚，好似學返幼稚園嘅野。啲 motivation 更低。(S1.4.3)]

[學 phonics 嘅堂，上堂係唔開心嘅，覺得好悶。平時啲英文堂，佢地都聽下，關唔關考試事。因為 phonic 唔見倒啲好處住，而家要由頭學起，更加無心機，book 低唔聽，唔寫。因為佢地學得唔關於考試, 學嚟無乜用。(S1.4.4)]

[……因為班嘅人少嗎，加上佢地幾依賴我，同同學之間嘅關係喺好

好。(S2.1)]

[其實小班教學係好重要嘅。除咗同佢地講知識嘅傳授，我地要了解佢地學習困難喺邊呢。佢地覺得老師了解佢地，關心佢地多啲。有時 break 嘅時間，了解下佢地學習嘅就態度，家庭嘅影響，令到我同同學嘅關係好咗，深化咗。……(S2.6)]

[……我地日日都會見，關係會影響緊佢地嘅學習態度，佢地覺得有人同佢地同行。呢個其實係好重要嘅。(S2.6)]

[所以關係建立得好，接受我嘅教學嘅方法。雖然有時我都鬧得好應呀。因為關係好，教學方面，就會事半功倍，佢地肯聽我講。呢個差好遠。(S1.1.10)]

[但部份同學都有進步到，因為佢地肯嘗試多咗。我同佢地都建立咗好好嘅關係，所以好聽我講。(S3.2.8)]

[我會對佢地有信心，我睇倒佢地對我有信心，信任呢套方法。已經係一個好大嘅鼓舞。(S1.1.17)]

[有啲同學嘅成績好啲，佢地可以入拔尖班，留返個選擇權比家長。……結果出到嚟，中二升中三，有三個同學選擇去咗拔尖班。中一升中二，得一個揀咗去，其他都留返係 S 班。雖然老師唔同咗。我估佢地都慣咗嗰個 setting，小班，中英文有兩個老師，可能佢地覺得風浪細啲，同埋有安全感。其實我問返去咗精英班啲同學，其實都想留翻喺 S 班……(S2.8)]

[要有一啲基本方法，比佢地用慣用熟嘅方法，比倒啲安全感。(S1.1.3)]

6.3.2 Teachers perception of their teaching efficacy

[我會有深入嘅認識，原來佢地喺咁喎，所以佢地遇到咁嘅問題。…..(S1.4.2)]

[…..。開始咗呢個 program 嘅介入，其實對於我自己有得著，我以前唔清楚讀寫障礙學生點樣去理解，啲字，啲音，句子嘅組成。同 ABC 合作咗之後，我明白多咗，所以喺教學嘅預備，多啲從佢地嘅角度出發。(S1.4.1)]

[自己學多咗好多，尤其喺 decoding, 讀音我自己嘅 awareness 高咗, 體諒同學佢地多咗，了解多咗，原來佢地嘅咁，所以佢地遇到咁嘅問題，會多咗了解。然後就不停喺度唸有啲乜嘢嘅方法去幫佢地。(S3.1.1)]

[我會覺得自己嘅係教讀寫障礙嘅學生嘅意識同技巧運用喺清晰咗，我會明白咗佢地須要，咁學咗啲策略，從 ABC 嘅材料知道，應該用啲咩方法，技巧我掌握倒同材料運用啲。更加多啲去運用呢啲材料嘅意識明確咗。(S1.1.1)]

[策略同技巧真係開拓咗嘅，同埋擴闊咗眼界同一路嘅思維……(S3.1.1)]

[自己學倒好多，尤其喺課堂監控學生啲進度，針對同學弱嘅學習動機同困難，掌握呢啲學生嘅特點，教佢地考試啲技巧。…..(S3.4.1)]

[學期初開始時，ABC 見議話比啲 motivation，刺激動機活動，一開始開始開得好，一開始做啲 motivation，佢地覺得中文都唔喺咁悶. 中文都係 ，寫生字，句子，做下問答，背下課文，可能一開始開就新穎小小，唔會好悶。(S1.1.8)]

[教材，工作紙，須要特別啲策略去鋪排，同埋佢地要比較多啲用圖像，激發佢地嘅思考，然後先至化成文字嚟表達，咁至教倒讀寫障礙嘅學生啲方法。(S1.1.2)]

[用 Sign pen 1234 加圓圈，又容易記入腦啲。教佢地復句用樓梯模式，又得喎. 佢地用圖像好得。語文都喺科學，用圖象，imagination 好多，科學類圖象又可以嘅好，又幫佢地解決倒啲問題。(S1.2.19)]

[……所以喺我嘅教學 instruction 會再指細啲，會 step by step 多啲, 簡單啲，唔會一次比咁多啲 task 比佢地做。同埋要多啲 multi-sensory 嘅技巧。我以前呢方面唔喺咁多。(S1.4.2)]

[……呢個係好難得嘅 funding, 係一個學習機會。……(S2.9)]

[我贊 XX 嘅講法，當學習心態，去裝備自己。……(S2.10)]

[喺最初頭，我係有憂慮，原因係唔知呢班學生對中文科嘅能力，對語文呢總比較抽象概念接收倒幾多，呢啲係 unstable factor，所以我比較擔心。(S1.2.1)]

[我今年覺得，我用忙亂去講，一堂跟住一堂，堂堂都係新嘢，堂堂都要備課。又要出一啲啱佢地 worksheet. 呢樣好辛苦。加埋係出卷又要配合返啲 core 啲內容，又要配合返 Reader 嘅內容，有啲又有教，有啲又無教，真係唔知出好定唔出好。Struggle 咗好內，攪到出卷遲哂。難處係呢度。…….(S2.14)]

[…..我都遇到好多困難。自己都係新嘅 learner，老師都要吸收咗呢套 phonics，然後先至教倒佢地，舊有啲方法，要更新過啲思想，自己都要好多時間學習點樣適應同運。(S1.4.8)]

[…..雖然呢一年我學咗好多，我自己都要改變自己嘅思維，有時真係難架。……(S3.4.5)]

[當我將呢套融入喺教學，啲學生又唔聽，佢地覺得好無聊，我覺得好沮喪，因為哂好多時間去研究，唸下啲活動，佢地又唔投入，覺得無關重要，呢啲嘢有咩用呀！我知道係英文係 second language，佢地接受程度比較低。雖然都有個別同學有好嘅反應，但係整體都

係差。英文都喺比較差。佢地嘅反應，會令我有錯敗感，用咗好多時間，佢地都唔 appreciate。(S1.4.9)]

[因為呢個 program 係返返去 basic ，有一兩個叻啲嘅同學喺接受唔倒，佢地會覺得好悶嘅。我明明識架，點解要返返轉頭。雖然佢都係唔識嘅，但係佢地有啲抗拒學嗰套 phonics 。佢地成年都有呢個感覺嘅。我想比啲 challenging 啲嘅 task，自己又兼顧唔倒。(S2.3)]

[講到喺唔喺完全掌握,我覺得又未有,但係有啲方向,多咗好多 idea 比 我，當我要出一個功作紙或者一個課堂嘅安排，我明白點樣至明白到 仍合啲學生嘅須要，我而家喺好清楚嘅，當然我覺得仍然有好多嘢學嘅。(S1.3.7)]

[…啲策略，我會懂得運用，但係重未自如攞。(S2.12)]

[佢地 Classroom behavior 好差…. (S1.4.3)

[用咗好多時間去做 classroom management; 喺課堂; 大部份時間都幾好，佢地知道上堂喺要學野。但係會受好多野影響，所以 emotion 喺難控制啲。(S3.2.7)]

[上堂嘅學習 classroom behavior, 無乜問題，因為佢地喺中一嘅學生，小學升上嚟，我點樣去 mold 佢地，佢地喺小學係開心嘅。上到嚟,任我點要求,佢地都會做,呢啲喺教中一有優勢。(S1.1.7)]

[我可以話個 Lesson plan 唔可以唔改。Self- reaction 佢緊要，見倒咁嘅 conditions, 立即要作出調整。(S.1.2.7)]

[重有，有 XX 係度，喺 Planning 或者遇到啲好題材，我又唔喺清楚點樣教，例如 grammar，要拆到好細。或者 預先應該點教，XX 會比見議比我每一 part 要點樣教，同我做 planning ，比多啲 advice。(S1.4.11)]

[…XX 真係有好充足嘅支援，呀 XX 好幫手，係備課同課後嘅檢討好幫倒我…..(S2.9)]

[XX 嚟觀課,比倒好多啲見議。我覺 ABC 團隊到校支援嘅模式好專業，等我可以同 XX 分享啲學生喺課堂嘅問題。有佢地，幫倒我繼續有效咁去教啲學生。(S3.4.10)]

[我好多謝呢個計劃，比我學倒好多野，呀 XX 每個禮拜比倒我好多見議。呢個到校嘅支援模式可以繼續落去，每個禮拜嚟到，都跟進我嘅進度，會鞭策倒我進度。(S1.1.20)]

[我絕對覺得須要呀 XX 同 XX, 如果唔係呢一年 XX lead 住我，比我好多意見呢，我簡直都無從入手。我今年續個單元，都要改動呀，開頭嗰一兩個單元，我係跟唔倒，唔知要點架，但係慢慢到後期，我自己已經做倒佢地要求嘅嘢啦。完全係呀 XX lead 住我做，無佢我係做唔倒，有佢地嘅 Support, 一定要會事半功倍。(S1.3.6)]

[我希望 XX 佢地要嚟多啲, (S3.1.7)]

[希望用而家嘅到校嘅支援模式，最好能夠繼續落去。(S1.1.22)]

[我覺得最重要，喺改變自己先至可以改變佢地。(S3.3.2)]

6.3.3 School support system and whole-school approach in intervention

[Class size 好重要，…….，個別啲弱嘅學生，要為特別照顧，會影響其他嘅學生。分開啲好弱嘅學生喺好。(S3.2.9)]

[…..其實細班喺好啲，但喺有時都照顧唔倒啲學生。我覺得教佢地係要多啲 teaching resources. 細班係有優勢嘅。(S3.4.9)]

[……好多客觀嘅因素影響倒個 program,今年係第二年可以有小班，

但係再下年可唔可以繼續有個小班呢。所以今年中一，我地幾位老師落哂中一一齊教。就無小班，教返三十個學生。(S2.15)]

[校長行政上，比較 flexible，會開會，所以行政上嘅支援係好 ok，副校長每個星期，always 都觀課，諮詢中英文科，問我地有無困難，須要啲咩野嘅支援呀。行政上我覺得好 ok。(S1.2.3)]

[校長，有額外嘅堂比我哋備課，又有 Assistant 幫我地(S1.3.5)]

[學校喺考試有加長咗，同調動啲課室，……(S3.3.7)]

[…..最好喺 project 開始嗰時，校長做啲宣傳，比多啲同事知，或者比其他老師可以學習，同其他老師分享啲策略，因為啲策略其實喺可以用喺其他科，咁樣會有效率啲。(S3.3.7)]

[…..我覺得學校可以 involve 全部初中啲老師架。而家，喺中文科，只有三個老師知曉，其他啲老師就唔明白我地嘅 program。佢地喺知道，但係唔係好明白我地做緊啲嘢。淨係喺測考嗰時，因為要出卷，要知道個進度，先至坐埋傾。因為要調適返，我地啲仝工就喺呢啲時間傾，我地級就無一啲會嚟 share 啲工作紙同教案，所以弱啲，share 會好啲。(S1.2.14)]

[其實校方想用另一個方法，嚟繼續呢個計劃。開會都講咗好多見議，講話去承傳。但係個時間表，個空間真係唔係好大。……但係堂都要睇，校方唔可以淨係靠我地受訓嘅老師，係唔得架。其實今年都要繼續 Training, 舊年我地係摸石過河，執得呢件，嗰件又跌咗落河，又可能都會唔記得哂啲招式。所以校方係整體規劃同時間嘅安排係好重要。(S2.17)]

[要透過平日嘅課堂滲入，等佢地唔覺得無咁幼稚。唔會特別有一

堂上 phonics。課堂會盡量都 interactive 啲，多啲 multi-sensory，唔會就咁坐喺度，聽下嘢，做下嘢，貼下嘢嚟學習。(S1.4.10)]

[最重要喺校對本課程嘅發展。ABC 啲老師好好，比咗一份設計教學清單比我。但係我地喺要跟據校本嘅須要去整合啲教學清單，重要配合校本課程嘅須要。我自己都遇倒唔小嘅問題，希望 ABC 比啲見議比我。(S3.4.8)]

[校長，有額外嘅堂比我哋備課，又有 Assistant 幫我地。多啲梗係好啲，其實佢比我啲堂係唔夠。因為 ABC 要預備教材啲時間都幾多，要喺屋企做嘅。以前工作紙係一轉，在而家係要出六七轉，修定又修定改動好多。(S1.3.5)]

[……學校嘅態度好正面，但係確實好忙。因為之前會備課，之後又會講返啲得失，有咩下次要改。用啲時間幾多，但係其實我地係無減到堂，所以係辛苦嘅。唔係值唔值得嘅問題，對於我地真係好辛苦嘅。今年新學年，重會混亂啲，我地加咗三個新嘅老師一齊教，但係啲堂又無減到。(S2.10)]

[另外，行政工作好重。今年好好，因為 ABCs 啲老師比我地好多 materials。ABC 比我地啲教案好好，但喺嚟緊我地要自己 develop 學校啲 materials，我地要有空間去設計，因為喺 school based, 要事乎學生嘅須要，嚟融入學校嘅課程。我知道 ABC 有要求學校 release 啲課堂。但係喺無囉。(S3.2.10)]

[課程嗰度，我地單元教學，one lesson one task，要好睇實際啲情況去做，planning 有幾好，但喺教唔哂。因為時間需要。one lesson one task 對老師喺好大嘅壓力。要追趕進度。會影響倒學生嘅考試。(S1.2.20)]

[個計劃繼續落去，有兩樣嘢要做好啲…,第二同埋安排多啲教師人手。我哋成日都唔夠人手，唔丹指喺課堂裡面，其實重要喺課後幫啲學生。(S3.4.11)]

[但係要啲對學生公平，雖然未必教哂所嘢，但係大家面對考試，所識嘅嘢要一樣，要公平。有一樣嘢未做倒，喺考試嘅試卷，校試嘅安排，都可能超越咗佢地嘅能力，但係有盲點，都照顧唔倒佢地，喺考試，我唔可以及做兩份卷，一份比正常學生，一份比佢地。當然測驗係可以調教，但係計分最多係考試。(S1.1.13)]

[…..之後佢地熟習咗，真喺好投入。態度一定有改善。但係好可惜因為試卷嘅設計，都係跟翻全級嘅課程規劃，未必係佢地上堂嘅 pattern。佢地好投入去寫，但係所得到分數未必咁係預期中咁好。(S2.2)]

[舊年 ABC 舉辦咗三次 training, 我覺得好有用。每次我都有得著。如果有 sufficient 嘅 funding, 希望可以繼續落去，咁樣可以幫我地改進啲教學策略。(S3.4.7)]

[但無上 training 的老師就唔得。如果學校要繼續個 program, 一定要早啲 plan。我地都要摸索咗幾個月先知道做乜，我地重有 training。我地暑假係上堂。而家佢地啲老師，只係上完我地比佢地嘅分享，所以只可以下半年先可以開始，開始得嚟已經係學期尾。咁就會哂咗一年。…..(S2.19)]

[……傳承係難嘅。另外個同事同無同我一齊上堂。我就幫唔倒佢。我將工作紙比哂佢又點呢，等佢試下先。以前，呀 XX 同我預先備課，但係而家無人幫佢，我地係一齊上堂。……我覺得我地都還可以運

作，新嘅同事係運作唔倒。我比咗啲嘢比佢地，佢地 pick up 唔得。其實時間表上有啲困難，我而家唔知點幫佢，我將整個教學計劃，比哂佢，以前有呀 XX 幫我地，我就幫唔倒佢，我自己咁多堂上，都倒瀉籮蟹。我覺得佢都唔會知道點樣做。可能淨係多咗啲工作紙，多咗啲 powerpoint.(S2.16)]

APPENDIX D – INTERVENTION CONTENTS AND TRAINING MATERIALS

a) Co-Planning Record sheet for co-teaching

b) Co-Teaching Record sheet for co-teaching

c) Co-Assessment Record sheet for co-teaching

d) Sample Chinese training materials

e) Sample English training materials

課前商討記錄表

授課老師/級別：　　觀 課 者：

學　　校：　　日　　期：

備註：

自我調控學習策略	教學流程	任教老師回應					
自我教學目標訂定		1	2	3	4	5	6
自我監控	☐ 回饋學生的需要 ☐ 清楚指示學習步驟 ☐ 練習時間以鞏固學習 ☐ 習作/工作紙切合學生程度 ☐ 運用「視聽觸動」學習媒介	1	2	3	4	5	6
自我評估		1	2	3	4	5	6
自我反應行動		1	2	3	4	5	6
自我獎勵		1	2	3	4	5	6

商討重點:

_____

_____

_____

_____

說明文基礎寫作練習
及「自我調控學習策略」單元
評估表

課堂教授過的學習策略	掌握情況		
擴大心理詞庫	仍需努力	已能掌握	表現理想
心理詞庫擴充版	仍需努力	已能掌握	表現理想
自我目標訂定(可行、可數、時限)	仍需努力	已能掌握	表現理想
自我監控（緊貼寫作要求）	仍需努力	已能掌握	表現理想
自我評估（寫作要求與成品比較）	仍需努力	已能掌握	表現理想
自我反應行動（善用回饋）	仍需努力	已能掌握	表現理想
相近知識遷移	仍需努力	已能掌握	表現理想
不同性質知識遷移	仍需努力	已能掌握	表現理想
概念圖	仍需努力	已能掌握	表現理想
點列形式書寫	仍需努力	已能掌握	表現理想
剪裁(詳寫、略寫)	仍需努力	已能掌握	表現理想
利用環境資源	仍需努力	已能掌握	表現理想

觀課記錄表

授課老師/級別：　　觀 課 者：

學　　校：東華三院馬振玉中學　　日　　期：

出席學生人數：　　人　　缺席學生：　　人

自我調控學習策略	教學流程	任教老師回應
自我教學目標訂定		1 2 3 4 5 6
自我監控	☐ 回饋學生的需要 ☐ 清楚指示學習步驟 ☐ 練習時間以鞏固學習 ☐ 習作/工作紙切合學生程度 ☐ 運用「視聽觸動」學習媒介	1 2 3 4 5 6
自我評估		1 2 3 4 5 6
自我反應行動		1 2 3 4 5 6
自我獎勵		1 2 3 4 5 6

整體觀察／意見:

_____

_____

_____

_____

<table>
<tr><td rowspan="4">觀課要求</td><td rowspan="3">學生有什麼急需處理的問題</td><td>認知</td></tr>
<tr><td>動機及情意</td></tr>
<tr><td>環境</td></tr>
<tr><td colspan="2">處理 / 解決的建議：</td></tr>
<tr><td colspan="2">問題解決後，學生有何進步：</td></tr>
</table>

但在教導時，請教師們別忘了，以豐富的語言色彩和帶有感情的節奏，與學生一起誦讀文章，通過誦讀而帶出文字的情韻、情味。

教學套的內容安排

- 是次與大家分享的教學套，為了聚焦在「文言文解讀」此一課題上
- 故從初中三個年級、不同單元(及教科書)中抽取了相關的教學內容
- 分初階、進階、高階三個程度闡述
- 表1：文言文解讀特定策略及其作用
- 表2：策略內容介紹
- 表3：文章分佈及教材簡介
- 表4：高階策略說明

正如上文所言，表1~3中所列出的五項文言文策略，屬文言文解讀的特定策略(specific strategies)，這與一般性質的解難策略不同。特定策略即有其語文解難的針對性及獨特性。

表1：文言文解讀特定策略及其作用

	初階		進階	高階	
文言文解讀特定策略	江 (增) 山 (刪) 易改	猜情尋	記敘文法	找排偶	找朋友仔『故矣也』
針對的教學難點	語譯文言語彙、句子	藉助學生對名詞、動詞的已有知識，有助推測事件大意及文章所表達的情感	藉助學生對記敘要素的已有知識，推測事件大意	運用文言文的修辭特點幫助，學生推測文章的中心思想	運用文言句式特點，幫助學生推測文章的中心思想
適合應用的文類	所有文類	記敘文、借 X 說 Y 文類、韻文(詩、詞)	議論文		

表1向大家介紹五項特定的文言文解讀策略，亦會說明這五項策略在「文言解讀」上的針對性。

至於表2，則向大家介紹策略的內容，而每項策略也於表 2 後附有簡單的例子說明。

表2：策略內容介紹

江 (增) 山 (刪) 易改	✧ 江(增)：句子層面：在省略句中加回主謂賓語、結構詞、連接詞等 字詞層面：用「增字法」語譯文言單字，變成雙音節詞 ✧ 山(刪)：省略字詞 ✧ 易　：先將倒裝句還原 ✧ 改　：將字詞改為現代詞彙

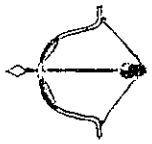
猜情尋	✧ 尋：尋找文章中的題目、名詞、動詞 ✧ 猜：透過文中的題目、名詞與動詞推測故事大意 ✧ 情：完成「尋」和「猜」，推測文章所表達的情感
記敘文法	✧ 時地人：利用文章中的名詞，辨別／找出文章事件發生的背景 ✧ 因是果：利用文章中的動詞，辨別／找出文章事件發生的前因後果 ✧ 感立高：找出動詞及形容詞、形容動詞 (位置：名詞、動詞前) 中的感情色彩、作者立場
找排偶	✧ 利用文言文用排偶句反覆伸論重點的特點 → 提示學生找出文章中心思想的所在位置 ✧ 再利用排比及對偶句的修辭特點 → 包括：句數、每句字數、相對應的詞性及詞意 ✧ 在語意資料互補的情況下，幫助學生推測不明解的詞意及文章重點
找朋友仔『故矣也』	✧ 利用文言文的特有句式，幫助學生尋找及辨別文章的中心思想 ✧『故矣也』三個字，起着文章總結中心思想的提示作用 ✧『故』可在句子起頭找到 → 類似人名的姓氏 ✧『矣也』在句子結尾找到 → 類似排在姓氏後面的名字

原文 螳螂捕蟬	白話語譯
園中有樹，	留園子裡有增一棵樹，
其上有蟬，	改樹上有增一隻蟬。
蟬方奮翼悲鳴，	蟬正改鼓動翅膀地鳴叫，
欲飲清露，	準備吸飲刪露水，
不知螳螂之在後。	卻不知增一隻螳螂易正在它的背後。
曲其頸，欲攫而食之也，	增螳螂彎曲著脖子，想改抓住蟬後吃掉它。
而不知黃雀在後欲啄而食之也。	增螳螂正要吃蟬，卻不知增一隻黃雀在它背後面想刪啄食牠。

這是「江(增)山(刪)易改」策略的例子。見於「初階」文件檔教學簡報1中的示範文章。

下面是《賣油翁》工作紙的節錄，說明「江(增)山(刪)易改」策略的運用。是「初階」的選讀篇章，完整工作紙見於例子檔案。

賣油翁

陳康肅公堯咨善射，當世無雙，公亦以此自矜。 嘗射於家圃，有賣油翁釋擔而立，睨之，久而不去。  見其發矢十中八九，但微頷之。	留陳康肅 刪 公堯咨 改_____ 增_____，表當時沒有人及得上他，而康肅亦以此改_____。增曾經有一次，他易在_____，有增一位 改_____放下增他的油擔子，站等改_____康肅射箭，增而且看了改_____。見改康肅所射出的改_____、增_____

Post Lesson Consolidation:

Syllabication Steps

Look, Listen, Mark, Loop, Say

Listen and mark the vowels

Closed Syllables	Magic e syllables
• can	• cane
• elf	• eve
• pin	• pine
• hop	• hope
• tub	• tube

"Door checking" steps

Step 1

Look for vowels

a e i o u

Make an index card

n o

n o t

n o t e

"Door checking" steps

Step 2

Listen to the vowel sounds

Words from Textbook

Recap

- Oh nō, this nōte is nŏt for you !
- Open, Closed, Magic e Syllables
- Words from textbook

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