CHAPTER 1

INTRODUCTION

1.1   INTRODUCTION

There is nothing quite like the thrill of helping an adult with learning disability caused by cognitive and memory impairments, who had never learnt to read, to be able to read for the very first time! A person's inability to read is of great concern to everyone who knows and works with that person. While most people learn to read easily and naturally at a very young age, just as they learn to talk, there are some who struggle – and some who fail to learn to read. An adult who is not able to read goes through immense difficulties in life.

"When spoken language is represented by visual symbols, and we access meaning from decoding these symbols, we call it reading" (Goswami, 2007, p.124). Learning to read and write is very important in today's society because literacy is fundamental for acquiring knowledge (Puranik, Petscher, Otaiba, Catts, & Lonigan, 2008).

Reading is a complex skill. It is further complicated to teach a person with cognitive and memory impairments. Reading involves several components which contribute to a person being a good reader. Those components are decoding, word recognition, vocabulary, reading fluency and comprehension. To be skillful readers, individuals need to be proficient in all those components contributing to reading. Individuals who have difficulty with decoding, sight word recognition, vocabulary building will have problems in learning to read (Puranik et al., 2008).

Reading deficits are found in children of all age groups from elementary through high school. However, there are very few programs which look into or address the problem of reading deficiency (Endress, Weston, Martella, & Martella, 2007). "It is

increasingly important to further understand the cognitive limitations and compensatory strategies of students with learning disabilities in order to provide appropriate instruction in learning strategies and study approaches to maximize their academic success" (Kirby, Silvestri, Allngham, Parrila, & Fave, 2008, p.85). As such, students who struggle to read and write are best served by designing and delivering appropriate and sufficient instruction and substantial opportunities to engage in high-success reading and writing activities (Allington & Baker, 2007).

1.2   PROBLEM STATEMENT

The issue which led to this study is the inability of an adult with intellectual disability to read. Jasmine, a pseudonym for the participant in this study, was diagnosed as having Treacher Collins Syndrome (TCS), at birth. She has notable developmental delays that characterise her as having cognitive impairment or also known as mental retardation.

Haager & Klingner (2005), wrote on the three basic criteria for identifying individuals with mental retardation. Firstly, a person is called mentally retarded if that person has sub average intellectual functioning, which is usually determined with an IQ test. Jasmine took an IQ test through the website www.iq-test.my. Since she was unable to read, the IQ test chosen for her had tests with positive operations using symbols where she had to choose logical possibilities among a variety of relationships. The score she got was 81. In psychometric terms, mentally retarded individuals have a measured intelligence quotient (IQ) between 70 and 85. The average range of IQ is 90 – 110.

The second criterion explained by Haager & Klingner (2005) is that the individual must have limitations in adaptive skill areas. As for Jasmine, the participant of this research has limitations in social skills and daily living skills. She feels awkward in social situations and feels left out by peers. As for daily living skills and self care, she needs a lot of guidance and help from those around her. The third criterion explored by the writers is that the characteristics mentioned above must be present during the developmental period, or during childhood. Jasmine was diagnosed as having Treacher Collins Syndrome (TCS) since birth. Hence, her limitations in academic, language, social and behavioural skills have been present since childhood.

TCS has caused Jasmine to have marked cognitive delay, memory impairments, hearing impairment, and speech and articulation difficulties. Her poor cognitive processing difficulty causes difficulty in sounding out letters in the alphabet, thus, she has severe reading and spelling problems. Furthermore, she has poor vocabulary and comprehension skills. For educational purposes, her most pressing problems were cognitive and memory issues; her other disabilities such as hearing impairment and speech difficulties played a role as well, although in less significant ways.

Teaching adults with intellectual disability how to read has the potential to bring about change by lowering the illiteracy rates among those with cognitive impairment. This study has tried to prove empirically that an individual with cognitive and memory impairments does have the ability to grasp basic reading skills.

1.3   RESEARCH DESIGN

This research is an effort to study, one learning disabled student's journey through explicit and systematic instruction of basic reading skills. This case study is a qualitative study using *Dynamic Indicators of Basic Early Literacy Skills* (DIBELS) as

a yardstick to gauge the early literacy ability of the research participant. Test-retest method has been used to determine the reliability of the scores from the DIBELS assessment. The researcher aims to inspect and provide an in-depth explanation and outcome of the implementation of the five (5) strategies within a bounded situation. Data from assessments and observations both formal and informal has been presented. The data include DIBELS results, spelling test results, anecdotal notes of Jasmine's strengths and struggles in the learning process, and explanation of Jasmine's progress from a variety of tasks or exercises that she did during lessons.

The five reading strategies used to teach literacy to Jasmine are adapted from the teaching strategies recommended by Janet Lerner (2003), in her book 'Learning Disabilities: Theories, Diagnosis, and Teaching Strategies' (p.427-450). The researcher chose to use these strategies because they have been field tested and found to be effective in teaching students with learning disabilities. The strategies suggested by Lerner (2003) grew out of her experiences working in public schools with students who had reading and learning disabilities and from teaching courses in learning disabilities in colleges and universities. Her work and ideas are in line with new concepts, programs, assessment instruments and intervention strategies suggested by organizations such as the Learning Disabilities Association of America, the Division of Learning Disabilities of the Council for Exceptional Children, International Dyslexia Association, and the National Centre for Learning Disabilities. The strategies are:

i.   Improving word recognition

ii.   Building fluency

iii.   Improving reading comprehension

iv.   Using special remedial methods

v.   Using computers to teach reading

The techniques suggested by Lerner (2003) for improving word recognition are as follows:

 a. phonological awareness

 b. phonics method and

 c. reading books with regular phonics patterns.

As for building fluency, the author has suggested the following:

a. repeated reading

b. using predictable books

c. using basal readers

d. unison reading by the student and the teacher

As for improving reading comprehension, the techniques suggested are as follows:

a. using reading series that gradually increase in difficulty

b. building meaning of vocabulary and concepts

The methods suggested for special remedial practices are as follows:

a. use highly structured phonics instruction with an emphasis on the alphabetic system

b. include abundant drill

c. practice and repetition

d. have carefully planned sequential lessons

e. direct instruction of intensive explicit phonics instruction

Lastly, using computer programmes will help learners in

    a. phonics skills

    b. vocabulary building

    c. rhyming exercises

A control group consisting of two adult learners of early literacy went through the same learning process to compare the performance, weaknesses and strengths of Jasmine. This control group is used due to the absence of local data, pertaining to teaching reading to adults with cognitive disabilities. The adults in the control group are Siva (a pseudonym), a 35 year old taxi driver and Leha (a pseudonym), a 43 year old school guard. Both of them have minimal knowledge of English. They do not speak English; however they are able to understand English when spoken slowly, using very simple English. Siva scored 98 and Leha scored 95 in the IQ test, taken through the website www.iq-test.my.

The research participant's progress and also the control group's progress were measured using various tests explained further in Chapters 3 and 4.

1.4   BIO-DATA OF THE RESEARCH PARTICIPANT

The information about Jasmine given below is gathered from Jasmine's parents. Jasmine is 21 years old. She is able to speak in Tamil, English and Bahasa Malaysia. In the past 11 years of schooling Jasmine had received reading instruction in special schools but had never learned how to read in English. She knows the alphabet and is able to spell and read simple four letter words (spelled using two syllables) in Bahasa Malaysia. According to Jasmine's parents, Jasmine always had an interest in looking at picture books and scribbling on papers and notebooks. She had enjoyed coloring cartoon pictures since young. Now, she enjoys doing very simple mazes and word

puzzles. She enjoys writing, she copies stories or texts from any book that she can find but she copies without understanding or being able to read what she is copying. She does not punctuate any of her writing.

Jasmine has problems in verbal communication skills because of her facial impairments. These are her facial deformities: Her right ear is abnormal and set low. She can only hear partially in both the ears. She has a very small jaw and a large mouth. She cannot open her mouth wide, making her oral movement restricted. Her cheekbones are underdeveloped, so she has a slightly sunken appearance in the middle of the face. Her eyes slant down slightly.

She has a decreased intellectual capacity compared to other adults her age. Her speech is not intelligible to people other than who are close to her. Family members and close friends are able to understand her speech most of the time. Her receptive and expressive language, reasoning, problem solving and pragmatic skills are way low below typical age. The lack of ability to generalize and her memory issues are similar to persons with mental retardation.

Jasmine is independent in self-care. She enjoys talking with those who are able to understand her. She exercises regularly using a treadmill at her home and she is conscious of her figure. Her self-esteem has been affected because of the way the society looks at her facial deformities. She lives in Kuala Lumpur with her family.

1.5   BIOLOGICAL FACTORS

According to R.G. Behrents (1982), Treacher Collins syndrome (TCS) is a condition that affects the development of bones and other tissues in the face. The signs and symptoms of this disorder vary greatly, ranging from almost unnoticeable to severe.

Most affected individuals have underdeveloped facial bones, particularly the cheek bones, and a very small jaw and chin (micrognathia). Some people with this condition are also born with an opening in the roof of the mouth called a cleft palate. In severe cases, underdevelopment of the facial bones may restrict an affected infant's airway, causing potentially life-threatening respiratory problems.

People with TCS often have eyes that slant downward, sparse eyelashes, and a notch in the lower eyelids called a coloboma. Some affected individuals have additional eye abnormalities that can lead to vision loss. This condition is also characterized by absent, small, or unusually formed ears. Defects in the middle ear (which contains three small bones that transmit sound) cause hearing loss in about half of cases. They also have sunken cheeks with stretching of the skin to the sides of the neck, recessed chin, and a large, down-turned, fish-like mouth. In addition some of them will have wide-spaced eyes with antimongoloid slants, prominent nose and the hairline extend to the cheeks. Otherwise their physical development is normal(Trainor, Dixon, & Dixon, 2009).

Inamadar & Palit (2006) summarised TCS as seen below,

> Treacher Collins-Franceschetti Syndrome (TCFS) is an autosomal dominant disorder with high penetrance and variable expressivity. The essential features of this syndrome were described by Treacher Collins in the year 1900. This disorder is also known as mandibulofacial dysostosis and Treacher Collins Syndrome. The frequency of TCFS is 1 in 50,000 live births and approximately 60% of the autosomal dominant occurrences arise de novo (over again from the beginning).(p.512)

However, people with TCS usually have normal intelligence ("Genetics Home Reference,"; "The National Craniofacial Association,").

Jasmine also has a noteworthy medical history. She was born at the University Hospital, Petaling Jaya, where she was reported to have many facial deformities by the gynaecologist, who delivered her. Jasmine suffered from low birth weight and was diagnosed to have Treacher Collins Syndrome. Jasmine turned blue black all around her face when her mother tried breast feeding her for the very first time. This incident caused the doctors to do a thorough physical check up. The doctors found a tiny hole in Jasmine's hard palate. The milk seeping out through the tiny hole into her nose had caused Jasmine to turn blue black when her mother breast fed her. Jasmine was in the neonatal intensive care unit for 2 weeks being released from the hospital. She also had the hard palate correction surgery when she was 11 months old. After this surgery, she had no problems in drinking fluids but because of the facial deformities, she faces problems in talking and eating until today. Jasmine went for another surgery at the age of 6. This time around, the surgeons tried to improve her facial deformities by trying to enlarge her chin and cheeks. This surgery made Jasmine look slightly better in appearance.

She is continuing her physical checkups at the University Hospital and a surgery to loosen her jaw bones has been planned for next year. When her jaw bones have been loosened, she would be able to open her mouth wider. This would enable Jasmine to speak more clearly and also reduce her difficulty in eating.

1.6   RESEARCH METHODS

The tutoring sessions are held at Jasmine's home. The researcher taught her for one (1) hour per day, four (4) days a week, from March – July 2010. The materials used

by the researcher were syllable cards, word cards, picture cards, worksheets, charts, language games, books and CD-ROMs. Daily, detailed lesson plans and notes were kept on what was completed during each session as well as the progress Jasmine was making and with what she was continuing to struggle. Each learning session was videotaped.

Complete lesson plans were prepared and followed at every lesson. Detailed notes were kept on Jasmine's strengths and struggles. Spelling tests were given to help her remember words that she had newly learnt. A portfolio of the tasks and exercises that she did during lessons were also kept.

The control group went through the same lessons. The lessons were held at the study area of the researcher's home.

1.7   DATA COLLECTION AND ANALYSIS

In addition to initial assessment data, data were collected throughout the study. The researcher relied on data, collected during tutoring sessions, to give information pertaining to the instruction provided to Jasmine and the control group. The data collected were Jasmine and the control group's worksheets that were kept in the portfolio, spelling test marks; DIBELS test scores and anecdotal notes. These data were maintained in a master folder which was kept in a secure storage area by the researcher. Anecdotal notes were written down in the lesson plans to record specific responses to instruction. As described in the Methodology section, daily, detailed notes were kept on what was completed during each session as well as the progress Jasmine and the control group were making and with what they were continuing to struggle. The participants' personal information was kept confidential. The researcher has the authorization from the Jasmine's parents and the members of the control group to carry out the empirical study.

1.8   THE PURPOSE OF THE STUDY

The purpose of this study is to examine the reading ability of an adult with cognitive and memory impairments, using a combination of five reading strategies. This study focused on collecting and providing a variety of literacy learning opportunities in reference to the five key teaching strategies recommended by Janet Lerner in her book, 'Learning Disabilities: Theories, Diagnosis, and Teaching Strategies (ninth edition, 2003)'. The strategies were:

  i.   Improving word recognition

  ii.   Building fluency

  iii. Improving reading comprehension

  iv.   Using special remedial methods

  v.   Using computers to teach reading

1.9   RESEARCH QUESTIONS

The research questions of this study are:

  1. What is the reading ability of the research participant based on the five reading strategies?

  2. What difficulties does the participant with cognitive and memory impairments face in learning basic reading skills?

1.10   ASSUMPTIONS

It was assumed that, by being mindful of the ethical obligation to protect the participant's identity (Creswell, 2009), the researcher would be able to keep bias and expectations to a minimum during data collection phases. By attempting to teach reading skills to a student with Treacher Collins Syndrome and allowing her to go

through various learning experiences, the researcher could evaluate the effectiveness of intervention strategies and, then, generate data based on assessment scores indicating levels of fluency and comprehension skills.

It was also assumed that all information obtained would be reported accurately and fairly. It was the intent of the researcher to achieve an understanding of the struggles in learning of an individual with a diagnosed disability. This study will help to dispel the assumption that individuals with cognitive memory impairments may never learn to read. This study may not close the informational gap about effective learning strategies, but it will add to the body of literature on the effective combination of reading strategies necessary to teach individuals with cognitive memory impairments.

1.11   LIMITATIONS

This dissertation is concerned only with a single subject with Treacher Collins Syndrome. This dissertation is not concerned about teaching literacy to normal readers or persons with other deficiencies. This study is not designed for use by teachers in a regular classroom. The study also does not analyze the subject's living skills or ability to interact or communicate with others.

The findings derived from this study were limited to this one particular adult with cognitive and memory impairments, caused by Treacher Collins Syndrome. The findings of this study may not be generalizable to individuals with other cognitive or physical impairments.

This study was also limited by the researcher's role, as teacher and evaluator in the process of implementing the five teaching strategies and implementing the assessments. The findings of this study depended upon data collected within the five months period of teaching and learning.

1.12 SCOPE

This single-case study is an in-depth study of a single student with learning disabilities, in the area of basic reading skills. Data collection was confined to information relevant to this one participant. Following the strategies suggested by Lerner (2003), the researcher spent about 78 hours teaching and evaluating the participant at the participant's home. Data was collected from worksheets, spelling tests and DIBELS assessment results.

1.13 SIGNIFICANCE OF THE STUDY

Students with disabilities have often been excluded from meaningful literacy experiences such as reading stories, book clubs, acting and writing journals. Teachers have tended to rely on instructional materials such as basal readers and sentence level syntactic instruction.

The significance of this study lies in the potential to motivate students with disabilities and increase their academic achievement. In order for students with disabilities to succeed, it is important that they have to be able to read and write English texts.

1.14 DEFINITION OF TERMS

The following definitions are provided to enhance the readers' understanding of this research study. The definitions of terms below are taken from definitions given by Janet Lerner in her book, 'Learning Disabilities: Theories, Diagnosis, and Teaching Strategies (ninth edition, 2003)'.

i. Basal readers – A sequential and interrelated set of books and supportive material intended to provide the basic material for the development of fundamental reading skills.

ii. Benchmarks – A term used in the 1997 Individuals with Disabilities Education Act (IDEA), referring to short-term objectives. It was developed by the U.S. Department of Education.

iii. Cognitive abilities – Clusters of human abilities that enable one to know, be aware, think, conceptualize, reason, criticize, and use abstractions.

iv. Direct instruction – A method associated with behavioral theories of instruction. The focus is directly on the curriculum or task to be taught and the steps needed to learn that task.

v. Explicit instruction – Teachers are clear about what should be taught and how it should be done. Students are not left to make inferences from experiences on their own.

vi. Mental retardation – Significantly sub average general intellectual functioning existing concurrently with deficits in adaptive behavior and manifests during the developmental period.

vii. One-to-one instruction – Teaching with one teacher and one student.

viii. Phoneme – The smallest sound unit of a language system.

ix. Phonics – An application of phonetics to the teaching of reading in which the sound (or phoneme) of a language is related to the equivalent written symbol (or grapheme).

x. Phonological awareness – A child's recognition of the sounds of language. The child must understand that speech can be segmented into syllables and phonemic units.

xi.   Portfolio assessment – A method of evaluating student progress by analyzing samples of the student's classroom work.

xii.   Reading comprehension – Understanding of the meaning of printed text.

xiii.   Reading fluency – The ability to recognize words and passages readily and smoothly.

xiv.   Speech disorder – A disorder of articulation, fluency, or voice.

1.15   CHAPTER SUMMARY AND OVERVIEW OF THE STUDY

Being able to read is a fundamental need of every person who lives in this technological era. Any individual who is not able to read is at a distinct disadvantage of not being able to be independent and survive in this modern and commercialised world. As for individuals with cognitive and memory impairments,   they will need clear and specific strategically planned instruction to meet their needs, especially in the area of literacy.   This requires well informed and experienced instructors to direct their endeavours.

A reading teacher must have various tools and strategies that he or she can choose from based on what is needed at the time of instruction. The tools and strategies should be used and based on a student's need and ability. Direct Instruction provides the tools for instruction, remediation and assessment while meeting the needs of individuals with cognitive and memory impairments.

This single subject case study examined the reading ability of an adult with cognitive and memory impairments, using a combination of five reading strategies. These strategies are: improving word recognition, building fluency, improving reading comprehension, using special remedial methods and using computers to teach reading. The research participant of this study is a 21 year old young woman who was diagnosed

with Treacher Collins Syndrome (TCS), since birth. TCS has caused the participant to have marked cognitive delay, memory impairments, hearing impairment, and speech disorder and articulation difficulties.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

In this review of literature, the researcher could not find research related to instructional approaches to literacy for persons with Treacher Collins Syndrome. Therefore, this section reviews the literature concerning learning difficulties of persons with cognitive disabilities as related to literacy learning. This section also looks at interventions or effective reading strategies necessary to teach persons with cognitive and memory impairments. Furthermore, this section expounds the strategies used in this study. In addition, this section also includes some past researches and case studies that have been conducted to teach older learners or non-readers to read. However, the researcher could not find any local research done in the subject area.

2.2 LITERATURE CONCERNING LEARNING DIFFICULTIES OF PERSONS WITH COGNITIVE IMPAIRMENT OR MENTAL RETARDATION

The American Association of Mental Retardation (2002) defines mental retardation as:

> a disability characterized by significant limitations both in intellectual functioning and in adaptive behaviour as expressed in conceptual, social, and practical adaptive skills. This disability originates before age 18.

> (Source: AAMR 2002 , taken from
>
> http://www.heionline.org/docs/training/introduction_to_mental_retardation.pdf ;
> Retrieved on 22nd December 2009)

Mental retardation is also seen as a syndrome of delayed or disordered brain development evident before the age of 18 years. It results in difficulty in learning information and skills needed to adapt quickly and adequately to environmental

changes. Effective prevention of mental retardation is difficult because there are so many different causes. More than one possible cause is suggested in as many as 50% of cases. The causes may include genetic factors, prenatal influence, and environmental factors following birth. For 75% of children with mild symptoms and 30– 40% of those with severe symptoms, and there are no specific causes apparent (Ainsworth & Baker, 2004).

In addition, Meier (1976) notes that mental retardation is defective cognitive development which causes severe impairments to the learning process of a person. Thus, a person with cognitive impairment or mental retardation will not be able to live a life or learn as a normal person does.

Children with learning disabilities are often identified on the basis of their scores on intelligence tests. Intelligence tests assess a number of abilities such as producing and understanding language, solving problems and memorizing information, as well as reading and mathematics. The scores on individual items can be put together to give an IQ score (intelligence quotient) which tells us the relation of the child's ability to that of the theoretically 'average' child of the same age. Intelligence tests are usually designed so that an average child of any age receives a score of 100, a child who is more intelligent than average will receive a score higher than 100 and one who is less intelligent than average a score below 100. Although these scores do provide an overall impression of the level of ability of a child, there are worries that such scores fail to capture the characteristics of children who have strengths in some areas and weaknesses in others (Dockrell & Messer, 1999).

According to Haager and Klingner (2005), the characteristics which are associated with learning disabilities are: academic abilities, language abilities, cognitive and metacoginitive abilities, social competence and behavioural characteristics. They also note that law specifies only the area of academic difficulty as a defining

characteristic of learning disabilities. As for this study, the areas of academic abilities and language abilities have been considered.

The characteristics of academic abilities of persons with learning disabilities in the language aspect are: difficulty with decoding or sounding out words; difficulty remembering what is read; difficulty learning spelling; difficulty in comprehending what is said or read; difficulty expressing thoughts and ideas verbally; difficulty with new vocabulary and following logical sequence of ideas.

Further explaining on the subject of the characteristics which are associated with learning disabilities Klinger, Vaughn & Boardman (2007) note that:

Students with learning disabilities are likely to demonstrate difficulties with decoding, fluency (reading words quickly and accurately), and vocabulary. Difficulties in any of these three areas will interfere with reading comprehension. One reason for this interference is that readers only have so much short-term cognitive or thinking, capacity for a task. If too much effort is allocated to decoding, little capacity is available for focusing on comprehension. (p.5)

A research was done by Alloway, Rajendran and Archibald (2009), to compare working memory skills, the ability to store and process information for brief periods, of 163 students with following disorders: 15 children with Specific Language Impairment (SLI), 55 children with Developmental Coordination Disorder (DCD), 83 children with Attention-Deficit/Hyperactivity Disorder (ADHD), and 10 children with Asperger syndrome (AS).

The students' memory was tested using the AWMA tests where students need to recall digits, words and nonwords. Nonverbal IQ was tested using the Weshsler Intelligence Scale for children (WISC-III) and Raven's Coloured Matrices, to test nonverbal reasoning. The authors investigated the nature of working memory deficits

in prevalent developmental disorders found in those students. Their report findings confirmed differential memory ability of students with the disorders mentioned above.

Language impairments were associated with selective deficits in verbal short-term and working memory, whereas motor impairments (DCD) were associated with selective deficits in visuospatial short-term and working memory. Children with attention problems were impaired in working memory in both verbal and visuospatial domains, whereas the children with AS had deficits in verbal short-term memory but not in any other memory component. The implications of these findings were discussed in light of support for learning.

Various other studies (Lane, Pullen, Hudson, & Konold, 2009; McKee, 2008; Puranik et al., 2008; Steed, 1984; Walker-Qualls, 2008) discussed reading problems of children with disabilities including children with cognitive impairment. These included difficulty in phonemic awareness, print awareness, decoding skills, sound-symbol association concept, word recognition and identification, vocabulary, reading fluency and comprehension. However, Gavin (2010), a medical doctor states that:

But having an intellectual disability doesn't mean a person can't learn. Ask anyone who knows and loves a person with an intellectual disability! Some kids with autism, Down syndrome, or cerebral palsy may be described as having an intellectual disability, yet they often have a great capacity to learn and become quite capable kids. Just like other health problems, an intellectual disability can be mild (smaller) or major (bigger). The bigger the disability the more trouble someone will have learning and becoming an independent person. (p.1)

With the notion mentioned above, in mind, the present study was done by the researcher, hoping and having confidence that Jasmine would learn to read, not just words, but also sentences and subsequently, passages.

2.3 INTERVENTION AND EFFECTIVE READING STRATEGIES NECESSARY TO TEACH PERSONS WITH COGNITIVE DISABILITIES

An intervention is any planned action designed to modify or prevent an unwanted outcome. The purposes of interventions include: the acquisition of new skills and knowledge, and also supporting the students to use and maintain skills and knowledge they have acquired. The basic assumption is that when a student receives an intervention, his or her language will improve more rapidly, compared to if they received no intervention at all.

The emphasis of the interventions will vary according to the types of difficulties a child experiences. Thus, sensory impairments and cognitive impairments involve different considerations. It is unlikely that there will be a single intervention which can address the needs of all language problems. Moreover, since different groups of children can vary in their individual needs, it is unlikely that there will be one intervention that will meet the needs of all the children within a particular group. For some children interventions will aim to eliminate specific problems but for many the practical goal of an intervention will be to reduce the impact of the child's difficulties. To devise successful interventions we need a clear understanding of both the child's problems and the ways in which these problems impact on the child's learning ability (Dockrell & Messer, 1999). Using assessment data to understand students' difficulties and identify potential intervention strategies is only the beginning of the journey to improve student outcomes. Facilitating the implementation of intervention techniques is often a greater challenge for the school psychologist and school-based consultant or educator (Brown-Chidsey, 2005).

Intervention programmes of the 1990's for children and adolescents with learning disabilities have begun to stress the importance of each student's experience as a

language learner and language user (Wallach & Butler, 1994). Rao (2009), in her study highlighted recent literature which is taken from years 2000-2005 and showed different strategies of literacy for students with cognitive impairment. Those strategies are:

- Paired-associate strategy: asking students descriptive questions based on picture and then getting them to associate pictures with words

- 'word wall' strategy: to reinforce sight words with beginning readers, developing readers, and struggling readers

- Onset recognition and letter naming: to enhance phonemic awareness in students

- Phonological awareness program: using fifteen activities focusing on first-sound isolation, onset-rime-level blending, segmenting sounds, word and syllable awareness and rhyming, also use peer-assisted learning strategies to teach sounds of letters of alphabet, read sight words, and decode

- Word boxes and sorts: two phonic approaches to help children make connections between sound and print by developing awareness of the phonological and orthographic features of words

- Technology (video segments, photographs, video games): to teach grocery shopping by helping with functional reading of aisle signs, reading product labels and following directions

- Blending and recognizing word patterns: to help students in the process of learning to read

- Picture-word matching: to teach functional reading, recognizing words and put the words in predictable text

- Two-stage approach with numerous steps in each step to enhance phonemic awareness: First step involves consonant-sound perception with the second step focusing on matching sounds to letters

- Constant time delay: using sounds, video, text, and animation to teach sight word recognition to children with developmental disabilities

However, she concluded that there is no comprehensive approach suggested that can help students with cognitive impairment improve from basic to higher order skills such as from pre reading stage to comprehension stage with emphasis on phonemic awareness and decoding skills. She also claimed that "Empirical studies using such approaches are necessary for this population of individuals who CAN READ with support from people who believe in their ability to 'learn to read' and 'read to learn'!" (p.64).

Several scholars (Kleeck, 1994; Lerner, 2003; Muijs & Reynolds, 2001; Richards, 2002) analyzed the Social Constructivist Model by the Russian psychologist Lev Vygotsky and explored the role of adult guidance in fostering various aspects of a child's development. They further expounded that learning is an interpersonal, active social experience that involves at least two people. One person should be more knowledgeable and learned than the other. One of the main ways this learning process can take place is through scaffolding in the *zone of proximal development*. Zone of proximal development refers to the gap between what a student is able to do alone and what she or he can do with the help of someone more knowledgeable or skilled than her or himself. Thus, according to Vygotsky, it is co-operation and interaction that is important in a learning process. Vygotsky's study on language development was meant for individuals with normal cognitive ability; however this study was able to use the zone of proximal development of the research participant to help her improve in learning to read.

In conclusion, students with intellectual impairment need a planned intervention, which will take them through a process of gradual learning and improvement. Thus, the

researcher chose the five reading strategies recommended by Janet Lerner (2003), to help the research participant in her short journey of learning to read.

2.4   THE FIVE READING STRATEGIES USED IN THE PRESENT STUDY

In this study the five reading strategies suggested by Janet Lerner (2003), has been used. The five reading strategies are:

a. Improving word recognition

b. Building fluency

c. Improving reading comprehension

d. Using special remedial methods

e. Using computers to teach reading

2.4.1   Improving Word Recognition

All languages use different sets of sounds. Every language has different sets of sounds from other languages. These sets of sounds and their patterns are used to combine them into words and sentences. This makes up the phonological system of a language. Phonology is the study of the sounds of language (Coelho, 2004). According to Lerner (2003) word recognition can be improved by phonological awareness, phonics method and reading books with regular phonics patterns.

2.4.1 (a)   Phonological Awareness

"Phonological awareness refers to a child's ability to detect and manipulate the component sounds that comprise words, at the different psycholinguistic grain sizes of syllable, onset-rime and phoneme" (Goouch & Lambirth, 2008, p.136). Students must first learn to decode words, to become good readers and writers. Phonological awareness is the most important factor for success in the beginning stages of learning to

read (Cunningham, 2007). Phonological awareness is necessary for the success of beginning reading because in an alphabetical writing system such as English, individual sound segments correspond to letters in the alphabet (Kleeck, 1994). Phonological awareness allows students to analyse words into their component sounds and synthesize sounds together to form words (Blachman, 1994). For example a student can categorise words on the basis of common sounds (e.g., /man/ and /mat/ go together because they both start with /m/).

Al Otaiba et al (2007), investigated the role of the amount, content, and implementation of reading instruction provided by 17 kindergarten teachers in eight *Reading First* elementary schools as it related to students progress. They assessed 286 students from eight elementary schools in North Florida, on phonological awareness and letter naming-decoding fluency. In this study, teachers provided over 30 minutes a day of phonological awareness and phonics instruction and 15 minutes a day of vocabulary and comprehension instruction. The teachers used a core reading program which included student materials and teacher materials that supported explicit and systematic instruction in all five components of reading identified by the National Reading Panel (2000), in the USA. The five components include: phonological awareness, phonics, fluency, vocabulary, and comprehension. At the end of the study, results showed that the students' phonological awareness and letter naming- decoding fluency grew significantly.

2.4.1 (b)   Phonics Method

Another important aspect of treating learning disability is phonics system. Phonics system is word-sound correspondences to decipher reading codes. That is the correspondence of the 44 phonemes (sounds) of the English Language to the 26 alphabetic characters that represent them. For example 'ship' has four letters, but only

three sounds. The phonics instruction approach is supported by theories derived from cognitive psychology. Research has been done with students who have normal learning capacity and also those with learning disabilities (Bald, 2007).

An article by Parliamentary Office of Science and Technology, United Kingdom, explains the reading process and the underlying basis of specific reading difficulties. It is reported that phonics is a strategy that teaches children to link sounds with letters and to use them to decode words and it is recommended that phonics should be taught explicitly (Duff & Border, 2009). The National Reading Panel (NRP, 2000) reviewed experimental researches on teaching phonics and confirmed that explicit and systematic phonics is better to non-systematic or instruction without phonics in it. The National Reading Panel (NRP) (National Institute of Child Health and Human Development, 2000), in examining the empirical literature on teaching reading, indicated that a balanced and effective reading program should include instruction or practice in five areas: phonemic awareness, phonics, fluency, vocabulary, and text comprehension. Specifically, the NRP found that direct and systematic instruction of phonemic skills are important for building reading skills. The report by NRP (2000), *Teaching Children to Read: An Evidence-based Assessment of the Scientific Research Literature on Reading and its Implications for Reading Instruction*, provides a comprehensive review of what is known about best practices in reading instruction in the USA. The panel reported that several reading skills are critical to becoming good readers: phonics for word identification, fluency, and vocabulary and text comprehension. With regard to phonics, their meta-analysis of hundreds of studies confirmed the findings of the National Research Council: teaching phonics (and related phonics skills, such as phonemic awareness) is a more effective way to teach children early reading skills. The panel found that phonics instruction is an effective method of teaching reading for students from kindergarten through 6th grade, and for all children

who are having difficulty learning to read. They also found that phonics instruction benefits all ages in learning to spell.

Direct and systematic instruction in phonological awareness and phonics skills are important and should be taught until students can automatically decode on their own (Muijs & Reynolds, 2001). Furthermore, phonics instruction should include a variety of activities, including letter-sound, spelling and analogy instruction. As students learn more big words, they also should learn to use morphemes to be able to pronounce new words, spelling and meaning of polysyllabic words (Cunningham, 2007).

2.4.2   Building Fluency

Fluency is reading accurately and with sufficient speed (Duff & Border, 2009). As for building fluency, Lerner (2003) has suggested repeated reading, using predictable books, using basal readers and unison reading by the student and the teacher. Fluency is the essential skill to be achieved by students before they are able to comprehend texts.

For students with or at risk for learning disabilities, developing fluency with reading connected texts is a great challenge. To help these students, teachers often use repeated reading practices designed to provide students with multiple exposures to the same words (Chard, Ketterlin-Geller, Baker, Doabler, & Apichatabutra, 2009).

Repeated reading is a strategy for giving the student repeated practice to improve his or her oral reading fluency. Predictable books contain patterns that are repeated over and over. Basal readers are a sequential and interrelated set of books and supportive materials for the development of fundamental reading skills. These books begin with very simple reading materials that gradually increase in difficulty. The books

increase in difficulty, in vocabulary, story content and skill development. There are also series of readers produced specially for beginners and slow readers (Lerner, 2003).

According to Staudt (2009), a reading specialist, at a school in south-central Pennysylvania, her teaching experience has taught her that intensive remediation in phonemic awareness and phonics does not necessarily lead to fluent reading for students with learning disabilities. However, the addition of repeated reading increases the students' reading fluency.

Schwanenflugel, Kuhn, Morris, & Morrow (2009) used two reading approaches called FORI and a wide reading approach to improve the reading fluency of second grade children. These approaches were used in classrooms where the majority of children were reading below grade. The students' reading was brought up to grade level using grade level texts from the children's basal readers through a combination of repeated reading, teacher modelling, and a focus on comprehension with echo, choral and partner reading. Both the programs provided scaffolding which supported the children who participated in that research. Both programs required that the children spent at least 20 – 40 minutes per day focusing on their reading texts and used repeated reading technique.

This study conducted by Schwanenflugel, Kuhn, Morris, & Morrow (2009), proved that a combination of repeated reading, teacher modelling, and unison reading helped students who were having difficulty in fluent reading, improve in their reading ability.

Another study on the effects of repeated reading was done by Landa (2009) for her doctoral study. This study investigated the effects of repeated readings on the reading abilities of 4, third-, fourth-, and fifth-grade English language learners (ELLs) with specific learning disabilities (SLD). A multiple baseline probe design across

subjects was used to explore the effects of repeated readings on four dependent variables: reading fluency (words read correctly per minute; wpm), number of errors per minute (epm), types of errors per minute, and answer to literal comprehension questions. Data were collected and analyzed during baseline, intervention, generalization probes, and maintenance probes.

Throughout the baseline and intervention phases, participants read a passage aloud and received error correction feedback. During baseline, this was followed by fluency and literal comprehension question assessments. During intervention, this was followed by two oral repeated readings of the passage. Then the fluency and literal comprehension question assessments were administered. Generalization probes followed approximately 25% of all sessions and consisted of a single reading of a new passage at the same readability level. Maintenance sessions occurred 2-, 4-, and 6-weeks after the intervention ended.

The results of this study indicated that repeated readings had a positive effect on the reading abilities of ELLs with SLD. Participants read more words per minute, made fewer errors per minute, and answered more literal comprehension questions correctly. Additionally, on average, generalization scores were higher in intervention than in baseline. Maintenance scores were varied when compared to the last day of intervention; however, with the exception of the number of hesitations committed per minute maintenance scores were higher than baseline means.

This study demonstrated that repeated readings improved the reading abilities of ELLs with SLD and that gains were generalized to untaught passages. Maintenance probes 2-, 4-, and 6- weeks following intervention indicated that mean reading fluency, errors per minute, and correct answers to literal comprehensive questions remained above baseline levels.

2.4.3   Improving Reading Comprehension

The goal of reading is to extract meaning. It is called reading comprehension. Reading comprehension is the result of two components. Those components are: decoding and linguistic comprehension. Decoding is converting printed words to spoken words whereas linguistic comprehension is understanding the meaning carried by spoken language. The deficits of these components cause specific reading difficulty (Duff & Border, 2009).

For improving reading comprehension, the techniques suggested by Lerner (2003) are using reading series that gradually increase in difficulty and building meaning of vocabulary and concepts.

Coelho (2004), mentions that vocabulary knowledge is a crucial factor in reading comprehension and academic success. The more words students know, the higher their level of reading comprehension will be. Furthermore, the higher their level of reading comprehension, the better they can achieve academically.

Comprehension is not just a student's understanding and response to a text. It is a complex process which involves many interactions between the student and how the student perceives the text. Comprehension can be improved by using direct instruction approaches. Direct instruction provide more explicit and systematic instruction (Klinger, Vaughn, & Boardman, 2007). For example, in direct instruction the teacher would identify key words in a text and explain the meanings before the students read the passage.

2.4.4   Using Special Remedial Methods

The methods suggested by Lerner (2003), for special remedial practices are:

a. direct , intensive and explicit phonics instruction

b. include abundant drill

c.   practice and repetition and

d.   have carefully planned sequential lessons

Haager & Klingner (2005) proposed that intervention is best when it is systematic, explicit and intensive. Because of the challenges the learning disabled children or adults face, they need this explicit instruction to develop essential skills and strategies. This is provided through individual instruction or within a small homogeneous group. They further explain their stand by saying:

> We do not advocate the wholesale return to a skills-based approach. Rather, we support explicit instruction that is bolstered by meaningful, purposeful reading experiences and is grounded in sound instructional methodology. (p.205)

Students identified as having a learning disability who struggle with reading, need and respond positively to a focused and rigorous direct instruction program (Jackson, 2010). This notion is also supported by Lahey & Bloom (1994). They note that strategic learning is an outgrowth of practice and familiarity, and in some cases direct, explicit and detailed instruction help students learn better.

Adding to that, Rinaldi (2001) too claims that language impaired children cannot learn language incidentally. The correct approach would be to explicitly teach particular language skills and strategies. She notes that language impaired children appear to learn more effectively when teaching is structured and broken down into relatively small steps, the link between each step is made explicit and new elements are introduced in a

way which reinforces and adds to previous learning. Explicit instruction or teaching is where teachers are clear about what should be taught and how it should be done. Students are not left to make inferences from experiences on their own (Lerner, 2003). It is also noted by Allington & Baker (2007) that struggling readers need closer and more explicit teaching from special support teachers and personnel who will be able to provide intensive and personalised instruction. Lerner (2003) also quoted that "Learning and cognitive development are enhanced when the student works collaboratively with an adult or with other students" (p.213).

Lane et al (2009), conducted a research to study the components of a individualized literacy tutoring model to identify the necessary and sufficient elements for helping struggling beginning readers, in the primary grades. The tutoring components used were word work using manipulative letters, written word work, and a generalization component. This early literacy intervention, the University of Florida Literacy initiative (UFLI, pronounced "you fly") tutoring model, was designed to enhance literacy achievement for struggling beginning readers. Initially, UFLI was designed as a teacher education tool. Through a structured tutoring process, the researchers hoped to develop an understanding of the reading process, how children acquire that process, the difficulties that many children experience while learning to read and effective methods for helping children overcome those difficulties. Tutors used the one-on-one intervention strategy to help students develop phonological awareness, concepts about print, an understanding of the alphabetic principle, decoding skills, reading fluency, and comprehension strategies. One hundred first grade students participated in their study. After the treatment period, the students were assessed on phonological awareness, sight word knowledge, decoding and word attack. Results showed that all the 100 children performed significantly better than those in the control group.

As for adding abundant drill, Ornstein & Lasley (2000), suggest that practice and drill should be used to teach and reinforce a specific skill or process. Practice and repetition is a common method used by elementary teachers to teach the fundamentals. Secondary teachers also use it to teach students who still lack basic skills or knowledge of academic subjects.

2.4.5 Using Computers to Teach Reading

Lastly, using computer programmes will help learners in phonics skills, vocabulary building and, rhyming exercises. CD ROMs offer sound, animation, and graphics (including digitalized photographs). These features are very motivating for students. Most students with learning difficulties will make progress from using the computer through imaginative use of software (Rinaldi, 2001).

Phonological awareness has many levels and includes the concept of rhyme. Rhyming awareness is the ability to make and recognise rhymes. It is one of the earliest developed phonological awareness abilities. Chants, jingles, nursery rhymes and songs have potential to develop phonemic awareness abilities in learners (Cunningham, 2007).

2.5 PAST RESEARCHES AND CASE STUDIES THAT HAVE BEEN CONDUCTED TO TEACH OLDER LEARNERS / NON-READERS TO READ

Cohen, Heller, & Fredrick (2008) used a three- step decoding strategy with constant time delay for teaching decoding and word reading to students with mild and moderate mental retardation. Five students between the ages of 9 and 14 who had mild to moderate mental retardation participated in this study. Two types of preintervention

assessments, reading level assessments, the comprehensive test of phonological processing (CTOPP) and assessment for target words were used to obtain data of students' reading ability. During intervention, students were taught a three-step decoding strategy to decode unknown words. The strategies used were: (a) the attention-getting step, (b) the decoding step, and (c) the reading-the-word step. A 4 second time delay was used to help the students. If the students failed to say the phonemes within the 4 second time period, the investigator helped the student by providing controlling prompt. All the five participants showed improvement in decoding and word reading at the end of the research. In this three- step decoding strategy, students had most difficulty in blending the sounds together into words. Phonological memory appeared to play an important role in the acquisition rate. The students who got better results were older as well as had stronger language ability, phonemic awareness skills and rehearsal skills in phonological memory.

Francoeur (2009), conducted a doctoral study of Deidre, a 13-year old biracial girl diagnosed with dyslexia. She is now   studying in Grade 7 at a middle school in Georgina, USA. Her achievement gap in literacy compared to her peers is 3 years.   Her difficulties in the ability to decode connected text are caused by both environmental and biological factors.   The purpose of the study was to evaluate an intervention that is said to be effective in helping children diagnosed with dyslexia.   This study was done to explore in great depth one student's journey through special education. This study illustrated Deidre's progress over a 7-year period of reading instruction done in her school. Deirdre's difficulty in decoding unknown words is caused by her inability to hold the beginning part of a word in active memory until the end of the word; this difficulty in decoding comes from an inability to differentiate the whole-to-part relationship in words.

Deidre took part in a four phase ABAB-design study carried out to test an intervention which was said to test the effectiveness of a balanced direct instruction intervention. Assessments were done using The Dynamic Indicator of Basic Early Literacy Skills (DIBELS). The DIBELS fluency assessment was selected because it is a nationally norm-referenced assessment and repeated measurement is possible. It is administered easily and quickly, and the results are clearly presented so as to be statistically reproducible in charts and graphs. Deidre went through fluency assessment three times per week, for six weeks. Weekly scores were averaged and graphically analyzed to associate changes in components of the DIBELS to progression along the longitudinal ABAB design. The results showed that phonemic instruction was beneficial in helping with decoding and that a balanced approach to reading acquisition, which included high-interest connected text, was effective in remediating the student.

Goddard & Rinderknecht (2009), describe their work with Susan, a 24 year old woman with traumatic brain injury (TBI). Susan experienced a TBI when she was 2 years old. TBI caused her to have moderate cognitive delays, memory impairments, and blindness in one eye, visual-spatial difficulties and fatigue. Similar to the participant of the current study, Susan's problems were related to cognitive and memory issues. The purpose of the study was to examine the effectiveness of basic reading strategies on reading skills, mainly the five key areas of reading as identified by the National Reading Panel in US. Those key areas are phonemic awareness, alphabetic principle, vocabulary, comprehension and fluency. Susan went through 19 years of formal schooling where she was taught functional reading, particularly sight words. However, Susan never learnt to read. Susan went through initial assessments.

The conclusion made after the initial assessments were that Susan's reading skills were limited in phonemic awareness, letter and word reading, vocabulary and comprehension. Through the initial assessments it was also apparent that Susan had

difficulty with short-term and working memory. Goddard and Rinderknecht used formative assessment to inform instructional decision making. Other than data from formative assessment, other data such as tally marks, graphs, running records and anecdotal records were also collected. The one-to-one tutoring sessions were held for 9 months, 1 hour per day, 4 days a week. The findings suggest that persons with TBI may have the potential to learn basic reading skills, even after many years of the occurrence of TBI. During the initial assessment, Susan only knew letter names for 17 sounds, blend words with only three phonemes and read very few words by sight. As for vocabulary and comprehension, she was only able to recall some basic facts and define simple vocabulary from stories read to her. However, fluency was not assessed due to her limited reading skills.

At the end of the 8 months of tutoring, Susan had improved in all the skills taught to her. Firstly, she was able to identify and produce most letter-sounds, consonant blends and blend words having three and four phonemes. She was also able to segment compound words and syllables but struggled with segmentation of individual phonemes with words. Her rhyming skills had also improved where she was able to discriminate between rhyming words with 80%-95% accuracy, and able to pronounce rhyming words with 67%-80% accuracy. Secondly, for letter and word knowledge Susan was able to recognise all lower and upper case letter names and sounds with occasional confusion between x and z. Thirdly, her vocabulary had also improved where she was able to read basic sight words such as the, I, up, me and go. However she relied on decoding most other words.

Fourthly, for comprehension, other than recalling basic facts and defining simple vocabulary from stories that were read to her, Susan was able to answer factual questions from stories that she read herself. She had difficulties with inference questions and comprehension suffered due to need to continually sound out words. Finally, for

fluency she was able to produce twenty letter sounds in one minute and up to 27 words correct per minute after repeated reading of a text. In sum, Susan began as a non-reader, and 9 months later, was able to read short stories at a primer level. Her family members reported that she was more aware of environmental print compared to when she was not able to read.

Waugh, Fredrick & Alberto (2009), presented a case study of three elementary students aged 9-11 with moderate intellectual disabilities. These students had the IQ between 40-55, received services in special education schools, were able to verbally produce sounds and had the ability to attend to an activity for 20 minutes. The purpose of the study was to examine the effects of teaching phonics skills using simultaneous prompting on acquisition of letter-sound correspondences and blending skills to read consonant-vowel-consonant (CVC) and consonant-vowel-consonant-consonant (CVCC) of previously taught words. This study also examined the effects of teaching phonetic skills to students in an individualized instructional format. Instructional materials included five initial sight-word cards, corresponding letter-sound cards, generalization word cards, and five objects that corresponded to the sight words.

Initial assessments were done to make sure that the three students were not able to read the five sight words before beginning the experimental procedures. The five sight words were taught using simultaneous prompting in an initial group format (3:1) with students leaving the group once they demonstrated mastery. Once all the three students were able to read the five words well, they were taught letter-sound and blending instruction in order to apply word-analysis skills. The words used were which could be represented by real objects. This enabled the students to easily comprehend and identify the written word. Each teacher who helped in this study was trained prior to implementing the intervention.

The teachers were provided with a script for each component of the intervention in order to increase instructional effectiveness and consistency. Next, once the students mastered the five sight words, the teachers taught the second component of the intervention which was the letter-sound and blending instruction. The students were taught in a 1:1 instructional format. The intervention was divided into three components (a) letter-sound correspondences (i.e., Sound Sets), (b) blending skills (i.e., Blending Sets), and (c) generalization (i.e., Generalization Sets). The Sound Sets were composed of individual sounds.

Three sounds were introduced in the first Sound Set with additional one or two sounds in subsequent Sound Sets. A Blending Set, composed of previously taught sight words, followed mastery of each sound set. Since the students previously learned to identify each of the instructional words by sight, blending instruction was focused on isolating the sounds in the word and connecting the sounds first slowly, then fast. Instruction in Blending Sets consisted of (a) saying each sound in the word in isolation (sound identification), (b) saying the sounds slowly without stopping, and (c) saying the sounds fast without stopping (telescoping).

Generalization probes were conducted following the second, third, and fourth Blending Sets. In the instructional sessions, probes used by teachers contained three steps: (a) saying each sound in isolation (sound identification), (b) saying each sound slowly without stopping, and (c) saying each sound fast without stopping. At the end of the study, the students also were able to identify taught letter sounds in the words and to blend those sounds to read at least one (l) word. Simultaneous prompting has been demonstrated to be an effective strategy to teach them.

Jackson (2010), describes her work with thirty elementary school students, who were identified as having a learning disability and struggle with reading. This study centred on the third grade students with learning disabilities. This population included

students diagnosed with learning disabilities, language disorders, mild mental retardation, and autism. The participants were selected for this study because they were reading well below the third grade level and showed deficiencies in decoding and word recognition. All of the students who participated in the study had an active Individualized Education Plan (IEP). Each student received 60 minutes of instruction daily in the area of reading. This study investigated the unique and successful combination of using the Direct Instruction program with special education students. The SRA program called Corrective Reading is a program that incorporates Direct Instruction into each lesson.

The purpose of this case study was to investigate the effect of the Direct Instruction approach in a reading program that impacted reading level and decoding skills. Direct Instruction is a highly organized, teacher-directed approach which utilizes a careful analysis of the skills necessary for learning to read. Direct Instruction is a specific approach to teaching. It is skills-oriented, scripted, and the teaching procedures it requires are teacher-directed. It stresses the use of small-group, face-to-face instruction by teachers while implementing carefully scripted lessons in which cognitive skills are broken down into small units. Each lesson has an explicit and deliberate sequence that the teacher presents.

The purpose of Direct Instruction strategies and interventions is to teach reading effectively and efficiently so that all students learn in the minimum of time. The study took place over one school year. Instruction was provided in small groups of no more than twelve students. The students were assigned a workbook that was used for timed reading checkouts and included numbered stories with charts and graphs for recording number of words read and errors for each story. The Standardized Test for the Assessment of Reading (STAR) test, pre-test and post-test for this Corrective Reading Decoding Strategies was used in this study. Corrective Reading Decoding Strategies

that were used in this study are Direct Instruction System for Teaching Arithmetic and Reading (DISTAR) programs.

Learning data from all students was gathered. Information gathered included previous Standardized Test for the Assessment of Reading (STAR) reports and a placement test for the Direct Instruction program. The tests provided information to the teachers regarding individual students, showing growth and achievement. The program assessed students in grades 1-12.The test was scored by the software, and teachers were able to examine reports on each student. This allowed the teacher to monitor progress and modify instructions to meet individual needs.

This study involved an analysis of the application of the Corrective Reading program designed in 1998 by Siegfried Engelmann and his team of researchers. The researchers also employed a Direct Instruction model of teaching that provided three objectives to enhance learning. The first objective in the model outlines specific lessons focusing on instruction of decoding abilities. The second objective delivered everyday rehearsal of oral reading with immediate feedback. The third objective used everyday timed reading checkouts with specified rate and accuracy that were measured and tracked.

The Direct Instruction program began by teaching every student a concrete review of phonemic awareness and letter sound – letter correspondence. The program then shifted into vocabulary improvement and development, reading segments, formulating reading fluency and general comprehension of the material read. Students identified as having a learning disability that struggle with reading, need and respond positively to a focused and rigorous Direct Instruction program. Without this instruction, the reading difficulties of the majority of student with a learning disability will continue, holding back their occupational and professional prospects and overall success. The basic

reading levels of the students, who received Direct Instruction in the area of reading, appeared to improve. This researcher found that Direct Instruction has been shown to improve students' reading performances.

2.6 SUMMARY OF LITERATURE REVIEW

In sum, mental retardation is a syndrome of delayed or disordered brain development that results in difficulty in learning. Research on intellectual impairment or mental retardation concluded that individuals with cognitive disabilities will face learning difficulties, which are related to literacy learning. Generally, individuals with cognitive impairments face difficulty in decoding or sounding out words, limitations on working memory, difficulty in learning to spell, comprehend what has been read, and learning new vocabulary.

Well planned interventions or effective reading strategies are crucial to teach persons with learning disabilities. The emphasis of the interventions varies according to the types of difficulties a student experiences. However, there is no comprehensive approach suggested that can help students with cognitive impairment improve from basic to higher order skills.

Vygotsky's study on language development which was meant for individuals with normal cognitive ability; however this study was able to use the zone of proximal development of the research participant to help her improve in learning to read.

In this study the five reading strategies suggested by Janet Lerner (2003), has been used. The five reading strategies are:

   a. Improving word recognition

   b. Building fluency

   c. Improving reading comprehension

   d. Using special remedial methods

e. Using computers to teach reading

Several, case studies suggest that non-readers, including those with cognitive impairment and other disabilities, can learn to read, although none of these studies refer to strategies suggested by Lerner (2003).

Chapter 3 will present the research methods used in this single case study, explain the role of the researcher, restate the purpose of the study and the research questions, and describe data collection and data analysis procedures.

CHAPTER 3

RESEARCH METHODOLOGY

3.1   INTRODUCTION

This study used a case study methodology to describe the implementation of direct, systematic teaching of reading and authentic assessment procedures of a 21 year old adult with cognitive and memory impairments, over the course of five months, and two normal adults as control group for a month. The control group was taught for only a month because they did not face any cognitive or memory issues. Thus, they managed to go through all the lessons and assessments in a month. This study was influenced by the researcher-as-teacher approach that employed methodical intervention. The focus of this study was to examine the reading ability of an adult with cognitive and memory impairments, using a combination of five reading strategies. The teaching strategies recommended by Lerner (2003) have been used to provide a variety of literacy learning opportunities using one-to-one or also called as individualized instruction to the participant of this research. Since each individual has his or her own cognitive needs and interest which differ from those from his or her peers, the necessity for individually determined learning opportunities and experiences become self-evident.

In the past four decades, several systematic programmes for individualized instruction have been used by teachers in their attempt to maximize individual learning. Individualized instruction is used for various reasons. The reasons: (1) to diagnose the student's entry achievement levels or learning deficiencies; (2) to provide one-to-one teacher-to-student or machine-to-student relationship; (3) to introduce sequenced and structured instructional materials, frequently accompanied by practice and drill; (4) to permit students to proceed at their own rate. These approaches combine behavioural and

cognitive psychology (Ornstein & Lasley, 2000). In this research the individualized instruction has been used for all the four reasons given above. Furthermore, Haager & Klingner (2005) suggested some specific elements that should be provided in special education classrooms. They are: extra individualized attention, intensive direct instruction, and extensive practice in various contexts, precise monitoring and modified assignments.

Case study is a strategy of inquiry where the researcher explores in depth a program, event, activity, process, or one or more individuals. Cases are bounded by time and activity. Researchers collect detailed information using a variety of data collection procedures over a sustained period of time (Creswell, 2009).

An initial assessment was carried out to identify Jasmine's and the control group's knowledge of letter-sound identification, both upper and lower case letters. The other assessments which are: Initial Sound Fluency (ISF), Regular Word Fluency (RWF), Oral Reading Fluency (ORF) and comprehension were not carried out because of Jasmine and the control group's lack of knowledge and basic skills in reading.

Haager and Klingner (2005) believe that assessment is part of the instructional process. Teachers are recommended to assess the students before planning their lessons. After the assessment, teachers are then to plan, teach, then assess for mastery of what was taught. Furthermore, there are various ways of evaluating students' performance or progress. Some of them are: direct observation, analysis of students' daily work and teacher- designed tasks or projects.

The researcher administered the DIBELS assessments as summative evaluation which measures the products of instruction at the end of instruction. Summative evaluation is designed to determine the extent to which the instructional objectives have been achieved by the students at the end of an instructional unit or course. It can also be

used to judge the effectiveness of a teacher or a particular programme (Browne, 2001; Ornstein & Lasley, 2000).

3.2   RESEARCH DESIGN

"In language intervention, a distinction is made between goals (what one wishes to facilitate) and procedures (how such facilitation will, it is hoped, be accomplished)" (Kleeck, 1994, p.88). In this study, the goal was to teach an illiterate adult with cognitive impairment to read. The procedure used was a case study using single subject design. The single subject design or N of 1 design is where a single individual (or a small number of individuals) behaviour is observed over time. This design involves multiple observations of a single subject (Creswell, 2009). This is also an intervention study, where a specific method or treatment is carried out. Fraenkel & Wallen (2000) comment on intervention study as below,

> This study enables researchers to assess, for example, the effectiveness of various teaching methods, curriculum models, classroom arrangements, and other efforts at influencing the characteristics of individuals or groups. (Fraenkel & Wallen, 2000, p.17)

3.3   SETTINGS AND SAMPLE SELECTION

Haskvitz (2010), in his suggestions on how to help slow learners, explains that teachers and parents should provide a quiet place to work. This will enable the students to learn without distractions and he or she can be easily observed and motivated. Thus, most sessions in this study were conducted with one-to-one teacher-student ratio in a room at the research participant's home. The room contained learning materials a table,

two chairs, and whiteboard and videotape equipment. Sessions ranged in length from 30 minutes to an hour. When the room was not available, the dining area was used for lessons. When the participant used CDROMs to learn, the lesson was held also at the dining area, since the computer was placed there by the research participant's parents. The lessons for the control group were carried out in the study area of the researcher's home. Every lesson was conducted for about two hours.

Single-subject research is carried out when there are not enough subjects available to participate in the study. Other than that, when researchers wish to study persons who suffer from multiple handicaps and that person need to be observed in great detail, single-subject design is the most suitable. This design is most commonly used to study the changes in behaviour a person exhibits after exposure to an intervention or treatment of some sort developed primarily in special education. (Fraenkel & Wallen, 2000)

The participant in this study, Jasmine, is a 21 year old adult who is not able to read. She was diagnosed with Treacher Collins Syndrome, since birth. This syndrome caused cognitive impairment. Jasmine attended special education program from the age of 7 until she was 19. In school she learnt mainly non-academic subjects such as Physical Education and Art, and she was involved in many outdoor activities such as camping, fishing and has been for school trips with her classmates. Jasmine enjoyed these activities because they required minimum language abilities. She had experienced severe reading difficulties over her entire school life.

Jasmine was chosen for this study because of the prominence of her disability which seems to exemplify many other cognitively impaired children and adults. Jasmine also showed keen interest in learning to read, especially because people around her, are not able to understand her well. Her slurred speech caused by her facial deformities

causes her to keep to herself most of the time. At this time, Jasmine resides with her parents and a younger brother in Kuala Lumpur, Malaysia. The researcher hoped that by being able read, Jasmine's quality of life could be improved.

3.4   MATERIALS AND EQUIPMENT

According to Lerner (2003), methods and materials intended for students' progressing normally in reading can be successfully adapted for students with learning disabilities. Such adaptations include increasing the amount of repetition, allotting more time for the completion of work, providing more examples or activities, offering more review, introducing the work more slowly, expanding the background information, providing more work on vocabulary development, and choosing regular books and materials that are different from those the students have previously used. Below are lists of materials and equipment used and explanation on how they were adapted according to Jasmine's need.

3.4.1 (a)   Teaching Aids and Lesson Plan

The teaching aids used in this research are letter cards, syllable cards, word cards and picture cards. They were used mostly in the beginning stages of the intervention. Daily lesson plans were prepared keeping the points suggested by Rinaldi (2001,p.75) in mind. Rinaldi comments that language impaired children appear to learn more effectively when teaching is structured in the following manner. Firstly, break down learning into relatively small steps, then make explicit the links between learning steps and lastly introduce new elements in a way which reinforces and adds to previous learning. Thus, the researcher prepared lesson plans for each lesson, where a few

learning objectives were tried to be achieved. This was done to ensure that Jasmine have mastered the learning item before moving to the next objective or objectives.

3.4.1 (b)   Teaching Materials

Books and Worksheets

Haager & Klingner (2005) gave some general guidelines for phonics instruction. Firstly, phonics instruction should be systematic, occurring in a set routine during specified blocks of time daily. Secondly, phonics instruction should be sequential. Haager & Klingner suggest purchasing a phonics programme that follows a sequence that builds on students' existing knowledge. Thirdly, phonics instruction should be explicit, where phonics concepts should be taught intentionally. Finally, phonics instruction must have ongoing review built in it. Students should have opportunities to decode words containing previously learned concepts (p.217-218).

Following the suggestions given above, the researcher used Progressive Phonics books which were downloaded from www.ProgreessivePhonics.com. In this series, phonics is supplemented with reading of short stories and passages. As such, reading becomes meaningful and important to the research participant.

The materials used for intervention in this study, are books and relevant exercises which were used in the teaching-learning process. The teaching materials used were as follows:

i.   Progressive Phonics (downloaded from www.ProgreessivePhonics.com)

    a. Elementary books 1- 5

    b. Intermediate books 1 -7

ii.   Exercises that consolidated the Progressive Phonics books were as follows:

      a. Word search exercises

      b. Word guessing exercises

      c. Word search from word bank exercises

      d. Labeling pictures in puzzles

iii.   Beginning Phonics Grades 1-2

iv.   Learn to Read (Zac the Rat and Other Tales) by

Starfall Education 2002-2011 (downloaded from www.starfall.com)

v.   Exercises that consolidated Learn to Read book (Zac the Rat and Other

Tales) by Starfall Education are as follows:

      a. Word rhyme exercises

      b. Writing missing vowels and consonants in given words

      c. Completing words and naming them

      d. Circling words that best complete the given sentences

      e. Labeling things in given pictures

Progressive Phonics is an all-in-one reading programme that is easy, fun, and given free through the website www.progressivephonics.com. With progressive phonics books, anyone can teach a child to read and write in just a few minutes a day. These books come with matching handwriting worksheets and activity sheets for each book. This is because when children write what they learn, they learn it better. This series also teach the essential sight- word that most phonics programme do not include.

Progressive Phonics is the brain child of Miz Katz N Ratz, a writer-illustrator who grew up half in America and half in England. After testing the original materials at Canyon View Elementary School, Progressive Phonics made its debut in January 2006 and released their first seven books on the internet. Since then, hundreds and thousands of books have been downloaded and being used in homes and schools around the world

(Source:

).

The series of Progressive phonics books were chosen because they use the unison reading method. In this method, the teacher can read the books with the student, where the teacher reads the 'regular' text in black while the student reads the big, red words.

It is like reading the different parts in a play. This encouraged Jasmine to have fun reading even though she was struggling to read. Furthermore, this series helped in sounding out every phoneme so that Jasmine could follow the teacher and say the words aloud. There are word lists given at the beginning of the books. These become the vocabulary to be focused and built. Then, in the pages following the word list, very short passages or stories, consisting of about twenty-five to fifty words are given. These stories repeatedly use the words given in the word list. Every story has its cartoon illustration which is colourful and fun to look at. This series of books consolidated the phonic knowledge that the researcher had taught Jasmine, before starting to use these books.

Progressive phonics series' value lay in the link that could be made between vocabulary building and reading sentences which were made into short stories. Subsequently, making it easy for Jasmine to understand and comprehend the passage that she and the researcher had read together. The books can be read as many times as the need arises. For example, when Jasmine was not able to grasp the spelling and struggled to read words in big red writing, the researcher and Jasmine spent more time reading that particular text. Each time Jasmine has difficulty; more practice was given by using repeated reading method.

The next material used was 'Beginning Phonics Grades 1-2'. It is written by Joan Hoffman and edited by Lisa Carmona. It is published by School Zone Publishing Company in 2002. It is a reading workbook developed by teachers to support spelling, writing and reading goals. This book has exercises that teach short vowels which are short a, e, i, o, u, long vowels which are long a, e, i, o, and vowel combinations which are oa, ew, ue.

Besides Progressive Phonics series and Beginning Phonics Grades 1-2, materials from Starfall.com were also used in teaching Jasmine. Starfall.Com opened in September 2002, as a free public service to teach children to read with phonics. The systematic phonics approach, in conjunction with phonemic awareness practice, is useful for preschool, kindergarten, first grade, special education, homeschool and English language development.

The Starfall Kindergarten curriculum is a reading and language art curriculum that is motivational and engaging for both children and teachers. Their dynamic curriculum ensures children are actively involved and guided to direct their own learning, and learn to observe, question, imitate, examine, explore, investigate and discover. The starfall kindergarten is research-based, field-tested and standards aligned (Source: http://www.starfall.com/n/N-info/curriculum.htm).

CDROMs and Computer Assisted Learning Program

CDROMs and Computer Assisted Learning Program make learning come alive for students by incorporating music, voices of actual people, and visual tracks as printed text, pictures and physical motion. They present a multimedia dimension to learning that is more appropriate for the diversity in learning styles and abilities represented by learners. They are also more suitable for nonverbal learners and learners with

disabilities. Furthermore, they promote individualized learning (Ornstein & Lasley, 2000).

The researcher chose The Short Course in Literacy and Language Skills (SCILLS), The Word Machine volumes 1 and 2, and Jumpstart Kindergarten Reading as part of the intervention program. These devices were chosen because they were interactive, were able to sustain Jasmine's interest, were very appealing to both the eyes and the mind and they fit the learning objectives. Besides that, while learning through these devices, Jasmine's answers were promptly acknowledged. Incorrect responses were given more chances to be corrected or review was done, where correct answers were shown to the student.

The Short Course in Literacy and Language Skills (SCILLS)

The short course in literacy and language skills (SCILLS) is a 25 module E-learning, interactive program delivered via DVDs, internal intranet networks and the internet. It is part of the Accelerated English Program (AEP), a series of courses and publications based on the 4S Approach to Literacy and Language (4S) accelerated learning methodology. This E-learning program helps the student to learn progressively in his or her own pace. It can be used by individuals of all age and skill levels. This program helps in reading, speaking, pronunciation, spelling, writing, listening and viewing. It also imparts practical knowledge that quickly enhances word recognition and word creation abilities. SCILLS is presented in 25 interactive, modules. The modules used to teach Jasmine were Modules 5 – 9.

CDROMs

The first set of CDROMs used in the intervention process is 'The Word Machine' volumes 1 and 2, by Innoform Media Pte. Ltd. These CDROMs teach phonics in a fun way by putting letters together and taking them away. 'The Word Machine' CDROMs introduce beginners to phonics and reinforces what has already been learnt. This is done through a variety of animation, real-world action, rhyme and wordplay, along with very interesting sound and music. The volume one CD contains 13 chapters and volume two has 12 chapters. Each chapter centres around one particular group of phonics, for example words beginning with /bl/, /cl/, /fl/, /gl/, /pl/ and /sl/. This is done to ensure a systematic yet enjoyable learning process.

Another CDROM which was used during revision was Jumpstart Kindergarten Reading for ages 4-6 by Knowledge Adventure. This CDROM contains interactive exercises on letter recognition, matching upper and lower case letters, rhyming, vowels, phonics, word building, consonant, and consonant blends, and soft 'c' and 'g' sounds. This CDROM was presented in cartoon form where the student can choose easier or more difficult level and do the exercises which were presented in game form.

3.4.2   Assessment Materials

3.4.2 (a)   The Dynamic Indicators of Basic Early Literacy Skills (DIBELS)

The Dynamic Indicators of Basic Early Literacy Skills (DIBELS) by Good & Kaminski (2002) was used in this study because it is easy to implement and can be hand-scored. School psychologists and other educational professionals in the USA use DIBELS to identify students who are in need of early intervention (Goffreda & DiPema, 2010). Moreover the tests are reliable tools for monitoring progress across time and repeated measurement is possible (Kaminski & Good, 1996).

In this study, the Initial Sound Fluency (ISF) test is administered in the same way as the original DIBELS. However, modifications, selections, and adaptations were made according to the capability of Jasmine, for Nonsense Word Reading Fluency (NWF), Oral Reading Fluency (ORF) and comprehension. These tests were modified because standardized DIBELS could not be used to assess Jasmine who has severe cognitive and speech impairment. The modification done by the researcher were: restating or repeating instructions, allowing native language response or code switching, providing extra practice before test and adapting tests to the need of the research participant.

The DIBELS materials were accessed online at http://dibels.uoregon.edu. DIBELS encompasses a set of brief standardized measures. It was designed for use in kindergarten through fifth grade in USA, and consists of several subtests or tasks. Each subtest or task has shown to be predictive of later reading outcomes. DIBELS also has established benchmarks- levels that indicate sufficient progress with a particular skill such as phonemic awareness. The benchmarks have been established through several years of field testing. In the benchmark, low-risk performance indicates that students have an 80% chance of achieving future proficiency. Some risk performance denotes that students have a 50% chance of achieving future proficiency. Finally, at-risk performance indicates that students have an 80% chance of not achieving future proficiency. In addition to the benchmark assessments, DIBELS includes multiple parallel forms of each measure that can be used monitor skill progress for students receiving additional instructional support (Goffreda & DiPema, 2010; Haager & Klingner, 2005). The National Reading Panel (2000) report is clear on the core components of early reading, and the DIBELS measures explain explicitly onto the first three. They are phonemic awareness, alphabetic principle and accuracy and fluency with connected text.

Initial Sound Fluency (ISF)

This is a standardized, individually administered measure of phonological awareness that assesses a student's ability to recognize and produce the initial sound in an orally presented word (Kaminski & Good, 1996, 1998). In this assessment, the examiner presents four pictures to the student, names each picture, and then asks the student to identify (i.e., point to or say) the picture that begins with the sound produced orally by the examiner. For example, the examiner says, "This is sink, cat, gloves, and hat. Which picture begins with /s/?", and the student points to the correct picture. The student is also asked to orally produce the beginning sound for an orally presented word that matches one of the given pictures. The examiner calculates the amount of time taken to identify or produce the correct sound and converts the score into the number of initial sounds correct in a minute. Twenty sets of pictures were administered to Jasmine. Alternate-form reliability of this assessment is .72.

Every correct response is given 1 point and every incorrect response gets zero points. If the student stops or struggles with a question for 5 seconds, the student is given zero points. When the student finishes the last question, the total time taken to answer is recorded and the total number correct and the time in seconds is written at the bottom of the scoring sheet. The ISF score is calculated using this formula:

$$\text{ISF Score} = \frac{60 \text{ X number of correct responses}}{\text{Seconds}}$$

Nonsense Word Fluency (NWF)

Nonsense Word Fluency (NWF) is used to measure the alphabetic principle, including alphabetic understanding and phonological recording – including letter-sound correspondences in which letters represent their most common sounds and the ability to blend letters into words in which letters represent their most common sounds (Kaminski

& Good, 1996). The student is presented with a sheet of simple Vowel Consonant and Consonant Vowel Consonant nonsense word sequences (e.g., "lob," "hup," "kad," etc.) and may either pronounce individual letter sounds or the entire word.

After a practice trial, the examiner instructs the child to read the "make believe" words as quickly and accurately as possible. If the student does not respond within 3 seconds, the examiner prompts with "next?" the student is allowed one minute to produce as many letter-sounds as he/she can, and the final score is the number of letter-sounds produced correctly in one minute. Since, the measure is fluency based, students should receive a higher score if they are phonologically recoding the word. This is because they will be more efficiently producing the letter sounds. Meanwhile, the students will receive a lower score if they are providing letter sounds in isolation. The intent of this measure is that students are able to read unfamiliar words as whole words, not just name letter sounds as fast as they can. For example if the stimulus word is "cag", the student could say /k/ /a/ /g/ or say the word /cag/ to obtain a total of three letter-sounds correct. This measure has over 20 alternate forms monitoring progress. Alternate-form reliability of NWF is .83.

This assessment was modified in this present research because Jasmine needed to understand words to be able to read them aloud. She did not want to say words that did not have any meaning. During the trial period, Jasmine refused to read aloud any of the nonsense words shown to her. The assessment result was inconclusive. Hence, the researcher used the same score system and tested Jasmine on regular word fluency and not nonsense word fluency. Thus, from here onwards the researcher labelled the assessment as Regular Word Fluency (RWF). The regular words were taken from the Progressive Phonics books that Jasmine was using to learn to read. The researcher chose the words and typed them out onto 20 sheets of papers and used them to assess Jasmine.

Oral Reading Fluency (ORF)

ORF is used to assess a child's fluency in reading connected text. Students read standardized grade-appropriate passages aloud to the examiner. The score, or ORF rate, is the number of words read correctly per minute. Student performance is measured by having students read a passage aloud for one minute. Words omitted, substituted, and hesitations of more than three seconds are scored as errors. Words self-corrected within three seconds are scored as accurate. The number of correct words per minute (WCPM) from the passage is the oral reading fluency score. This assessment has 20 alternate forms for monitoring progress.

Jasmine was not able to read the passages made available in DIBELS, because they were too difficult for her. Thus, the researcher used the passages that the researcher has been using to teach Jasmine, from the Progressive Phonics series. The researcher used 20 short passages from the Progressive Phonics series.

Comprehension

DIBELS Retell Fluency (RTF) is used to provide a comprehension check for the ORF assessment. Retell fluency should be administered to students who are reading at least 40 words per minute. As Jasmine was not capable of reading with such speed, RTF was not administered to assess her comprehension abilities. A researcher made test was used to ask three literal questions for each passage she read for the ORF assessment. Literal questions have responses that are directly stated in the text, so Jasmine was able to answer them orally.

3.4.2 (b)   Portfolio Assessment

Portfolio assessment of reading is an alternative to traditional standardized reading assessment tests. It consists of keeping samples of the students' reading and writing work (Lerner, 2003). Portfolios are permanent collections of the most effective samples of students' achievements. They have two purposes. Firstly to document the long term evolution of works in progress and secondly to monitor individual student's self-assessment of the learning process (Silliman & Wilkinson, 1994). Portfolios are also organized and systematic collections of students' work that show individual's efforts, improvements or achievements over time (McGill-Frazen, 2006). In this research, the portfolio contained formal and informal work samples from all the consolidation exercises answered by Jasmine.

3.4.2 (c)   Spelling

Spelling helps students combine their knowledge of phonemic awareness and phonics. Phonemic awareness instruction helps students to make the connection between letters and sounds. Browne (2001), notes that learning how to spell is an important part of learning to write. Correct spelling makes writing more readable and enables the writer to communicate more easily with his or her audience. As for Jasmine, spelling tests consisting of three to ten words were given frequently, each time she had learnt a new sound or phoneme. The words were taken from Progressive Phonics books. During the period of five months of intervention, the researcher administered 61 spelling tests to Jasmine.

In this study spelling tests have been given as a criterion–referenced instrument. Criterion-referenced tests focus directly on the instruction. It is based on a specific

goal, or target (called a criterion), for each learner to achieve (Fraenkel & Wallen, 2000). The results of the spelling test results are shown in Chapter 4.

3.4.3 Equipment

Video recorder

Every lesson was video recorded and saved in DVDs so that the lessons can be reviewed again and again. Other than that, anyone who is interested in knowing more on the present intervention assessment procedures can see how they had been carried out by the researcher. Another advantage of video recording is, it is a permanent record which can be compared with later or different samples (Fraenkel & Wallen, 2000). Furthermore video recording makes the authenticity of the lessons more reliable and valid.

3.5 PROCEDURE

Before commencing with the intervention process, the researcher had a few informal meetings with the research participant, Jasmine, and her parents to discuss the purpose and scope of the study. The researcher provided detailed information regarding the intervention process to the participant and her parents. The researcher obtained a written permission from Jasmine's parents (Appendix A).

As suggested by Lerner (2003, p. 427), methods and materials used for Jasmine were adapted according to her need. Lerner's suggestions are: increase the amount of repetitions, allot more time for completion of work, provide more examples or activities, introduce the work more slowly, provide more work on vocabulary

development and choose regular books and materials that are different from those the students have previously used.

The researcher started by assessing the Jasmine's previous knowledge. The initial assessment or letter-sound identification results are shown in Chapter 4.

Instructional Progression

In this section month-by-month instructional procedure and assessment process has been described. This is to show in detail the learning process that Jasmine went through and the materials which were used to help her. No other reading instruction was occurring at the time of the study.

March

The researcher began by giving an initial assessment to the Jasmine, where the researcher asked her to read the alphabet, the upper case and lower case letters. Then, Jasmine was asked to write the upper case and lower case letters as the researcher said the letters aloud. Jasmine was asked to produce letter names and not sounds because Jasmine had never learnt letter sounds in school.

After the initial assessment, the researcher taught explicitly the letter sounds, using letter cards and the white board and markers. Once Jasmine was able to produce the letter sounds, she was taught two letter blends such as /ba/, /sa/, /ja/, /be/, /se/, /je/, and etc. Then, the researcher taught Jasmine three letter blends such as bat, cat, fat, hat, mat, pat, rat, sat and etc. After drill and practice of the three letter blends, the researcher started using Progressive Phonics Elementary book 1 which teaches short vowel /a/ sounds in two and three letter blends such as am, an, as, at, bad, dad, lap, map, has etc.

The Progressive Phonics book contains very short passages and stories. Jasmine read words that were printed in bigger font size and coloured red. The researcher read the other words printed in black and of smaller font size. Jasmine could not understand the passages and stories. So, the researcher explained the vocabulary and retold the stories, to help Jasmine understand them.

Each time Jasmine learned new vocabulary she was given spelling tests. Before the spelling test was given, reinforcement was done by teaching Jasmine how to spell words, using letter and syllable cards.

After learning 2 letter and 3 letter words which contain short vowel 'a' sound, Jasmine did exercises in the Beginning Phonics workbook and worksheets. The exercises she did were word search, word guessing and labelling pictures. Then, she read a short story entitled 'Zac the Rat'. Next, she did the consolidation exercises which were completing word rhyme, writing missing short 'a' , write missing letters in the given words, circle the answers for the given sentences and circle pictures of things which had short vowel 'a' sound.

The next step was learning words with short 'e' vowel sound. Researcher began by teaching Jasmine on how to sound the phonemes and words with the short vowel 'e' sound. Jasmine was taught a list of simple 3 letter words such as fed, red, Ted, leg. peg, get, jet etc.

Once Jasmine was able to say and read those words, the researcher taught her reading from the Progressive Phonics Elementary book 2, which had words with short vowel 'e'. After the book was read, Jasmine was given a spelling test from the list of 3 letter words learnt from the Progressive Phonics Elementary book 2. Then, Jasmine did all the consolidation exercises similar to what she did after learning short vowel 'a'.

To help Jasmine remember the entire words which she had learnt in the past two weeks, the researcher revised the short vowel 'a' and 'e' words with Jasmine. Jasmine also did some matching exercises where she had to match pictures with the words she read aloud. Then, the researcher used drill and repeated reading strategy to help Jasmine master the spelling of the words, then gave her a spelling test. Next, Jasmine read aloud a story entitled 'Peg the Hen' and did all the consolidation exercises that came with the story.

Subsequently, the researcher taught Jasmine short vowel 'i' sound. The teaching learning process was similar to what Jasmine went through when she learnt vowels 'a' and 'e'. She did the spelling test, went through reading drill, did all the exercises and read a story entitled 'The Big Hit'. Other than the usual reading, spelling and answering language exercises, the researcher also used the CDROM, 'The Word Machine' volume 1, to teach Jasmine.

April

Jasmine began by learning words that rhyme with 'big'. Then, she learnt, words that end with 'ick' and 'ing'. After that she continued learning short vowel 'o' and 'u' sounds. She did all the exercises prepared by the researcher, and the spelling tests. She also read the stories entitled 'Mox's Shop' and 'Gus the Duck'. Jasmine went through rhyming exercises, repeated reading of short passages and stories, and word reading drill, and also learnt from the CDROM 'The Word Machine' and a lot of revision.

Since, Jasmine had completed learning from the Progressive Phonics Elementary books 1-5, the researcher began using Progressive Phonics Intermediate books 1, where Jasmine was taught words beginning with /sh/, /th/ and /ch/.

May

The researcher used Progressive Phonics Intermediate book 2 to teach Jasmine words that begin with /sl/, /sn/, /sk/, and /sw/. In the book Progressive Phonics Intermediate book 3, Jasmine learnt consonant 'r' blends such as /br/, /cr/ and /dr/. Next, from Progressive Phonics Intermediate book 4, she learnt new vocabulary using consonant 'l' such as /pl/ and /sl/. In the Progressive Phonics Intermediate book 5, she was taught words that contain long vowel 'a' and 'e' sounds. Other than that she also learnt special words that end with 'e' and words that had long 'i' sound. To consolidate this she read the story 'Jake's Tale' and 'Pete's Sheep' and 'Sky Ride'. From Progressive Phonics Intermediate book 6, Jasmine learnt words that contained 'oo' sound. In book 7, she learnt long vowel 'y' sound. Jasmine also did similar exercises in worksheets and learnt from CDROM 'The Word Machine', as she has been doing in the past months.

June

The researcher administered the DIBELS, Initial Sound Fluency Progress Monitoring 1-20, Regular Word Reading Fluency Assessment 1-20, and Oral Reading Fluency and comprehension 1-20. The researcher recorded the results of all the tests.

The above assessments were to be administered after 3 weeks, so the researcher did revision using SCILLS programme modules. The modules used were modules 5 – 9. Module 5 contained the teaching of vowel and consonant sounds and exercises. The exercises were: finding missing frontal, middle and final consonants in words, finding missing double consonants rhyming words. Module 6 had exercises on short and long vowels, putting two vowels together, symbols and sounds of the alphabet and, silent symbols. Module 7 contained core symbol combinations such as sp+ort and f+ork. Module 8 had exercises on consonant blends such as /eg/,/ br/, /tl/, /cr/ etc. Module 9

had exercises on blends and consonant digraphs. The other modules were not used for teaching Jasmine because she found them to be very challenging and she was not interested in continuing with the modules.

Revision was also done using the CDROM Jumpstart Kindergarten Reading. Jasmine learnt while playing language games through this interactive CDROM. She learnt letter recognition, matching upper and lower case letters, rhyming, vowels, phonics, word building, consonant, and consonant blends, and soft 'c' and 'g' sounds.

July

The DIBELS was administered as reassessment after 3 weeks of revision. The exact same tests were administered, namely Initial Sound Fluency (ISF), Nonsense / Regular Word Reading Fluency (NWF), Oral Reading Fluency (ORF) and comprehension.

3.6   ROLE OF THE RESEARCHER

The researcher played the roles of a teacher-researcher in this study. The researcher planned the intervention, prepared the lesson plans, got the teaching materials, conducted the lessons and administered the assessments.

3.7   DEPENDENT AND INDEPENDENT VARIABLES

In this study, the dependent variables were the pre-intervention data collected before beginning the intervention, the spelling test scores and portfolio data which were collected all through the period of intervention was going on, and DIBELS test scores,

which were used as summative evaluation. The independent variable was the five chosen, essential reading strategies.

3.8   DATA COLLECTION AND DATA ANALYSIS PROCEDURES

Data collection and analysis involved four steps, which were initial assessment, intervention, test and re-test. Initial assessment involved a pre-intervention assessment which was carried out to identify Jasmine's knowledge of letter-name identification, both upper and lower case letters. The result of the initial assessment was recorded in a 'Letter-Name Record Sheet'

During the period of intervention, various ways of evaluating students' performance or progress was carried out. Some of them are: direct observation, analysis of students' work and teacher- designed tasks or projects. Direct observation was recorded as anecdotal notes of Jasmine's strengths and struggles in the learning process. Anecdotal notes were written down in the lesson plan. Spelling tests were given regularly, as Jasmine mastered in naming phonemes reading words. Jasmine did the spelling tests in notebooks. Spelling test scores were recorded on a spelling data collection sheet and then plotted on a bar graph, as shown in Chapter 4. Other than that, analysis of students' work and teacher- designed tasks or projects were done from a variety of tasks or exercises that Jasmine did during lessons. These tasks were kept in a portfolio.

Test and re-test were carried out using formal measurements. The measurements were Initial Sound Fluency (ISF), Regular Word Fluency (RWF), Oral Reading Fluency (ORF) and comprehension. The formal measurements utilized a standardized assessment, the DIBELS 6th Edition. DIBELS is a standardized test. Standardized tests contain a set of items that are administered according to uniform scoring standards.

DIBELS was used as a criterion-referenced test, where it measures an individual's ability in regard to a criterion, which is a specific body of knowledge or skill. The criterion-referenced tests are used to determine what students know or can do in a specific domain of learning rather than how their performance compares with other students. The criterion-referenced measurement is practical to be used in areas of achievement that focus on the acquisition of specific knowledge and in special programmes such as individually prescribed instruction (Ornstein & Lasley, 2000).

In this study, DIBELS has also been used as summative evaluation. Summative evaluation measures the final results at the end of an instructional unit or term. It is designed to determine the extent to which the instructional objectives have been achieved (Ornstein & Lasley, 2000).

Test-retest method was used in this study with a control group, where the same tests were administered twice to the same participants of the study (Fraenkel & Wallen, 2000). The re-test was done after three weeks. All the scores were tabulated into tables and then shown in graphs in Chapter 4.

3.9   VALIDITY, RELIABILITY AND USABILITY

The present research is a single-subject case study. Single-subject designs enhance their internal validity when objective measures are used, noted Kazdin (1982), and when performance is assessed on several occasions over time and information is available regarding the stability of performance.

DIBELS was used to assess Jasmine, and the same test was repeated after 3 weeks. A test is called valid when the test measures what it is represented as measuring. An invalid test does not measure what it should measure. A test is considered to be

reliable when the test yields similar results when it is repeated over a short period of time or when an equivalent form of the text is used. A reliable test is consistent, dependable and stable. The usability of a test is measured by how easy it is for students to understand, how easy it is to be administered and scored, within budget limitations, suitable to the test conditions (for example time available and appropriate in degree of difficulty (Ornstein & Lasley, 2000). DIBELS indicator contains established reliability and validity factors.

All teaching sessions were videotaped and used for documenting reliability and procedural fidelity.

3.10   ETHICAL CONSIDERATIONS AND PROTECTION OF PARTICIPANT

According to Cresswell (2009), it is the responsibility of the researcher to protect the participant from harm by asking for voluntary participation through informed consent. The informed consent form is to be signed before researchers engage in their research. Thus, before getting the consent form signed, the researcher advised the participant and her parents about the nature of the study. The participant and her parents were continuously involved in making decisions regarding participation during the study. Access to the participant was obtained with parental and student permission.

Cresswell (2009) also recommended that the researcher explains without deception to the parents and the participant, the purpose of the study, which, in this case, was an effort to explore the central issue of reading disabilities. Anonymity of the student was accomplished by using a pseudonym. Direct intervention was scheduled with permission of the parents.

Fraenkel & Wallen (2000), advised that participants should always be treated with respect, and ensure that no physical or psychological harm will come to anyone who takes part in the study. Jasmine was treated with all due respect during all the sessions and the researcher made sure that neither intervention nor assessment exhausted her. Each time Jasmine was not feeling well, the session was cancelled and each time she felt bored during lessons, the lesson time was shortened.

3.11   SUMMARY

According to Gardner (2004), "when students receive adequate resources and timely interventions most deficits can be recovered" (p. 37). In this study, the researcher has implementing planned intervention with the use of adequate resources to an adult with intellectual impairment.

Teachers need to be proactive when implementing the curriculum, starting with at-risk students and implementing specialized instruction for children with diagnosed disabilities (Gardner, 2004). Successful reading programs should be balanced and include the elements of phonemic awareness, phonics instruction, vocabulary development, oral reading fluency, and comprehension, as recommended by the NRP (2000). The elements recommended by the NRP (2000) have been used in the present study.

Kliewer & Biklen (2001) noted that:

> People constructed as having severe intellectual disabilities demonstrate a symbolic and literate presence when supported by those who believe in their capacities and with whom they share intimate relationships. (p.11)

The researcher believed in Jasmine's capabilities and Jasmine trusted the researcher to be a caring educator. Jasmine attended school for 12 years but she never learnt to read and understand printed text. During the phase of one-to-one intervention, Jasmine showed enthusiasm in learning to read and worked hard on it.

This chapter discussed the research methods used in the study. It restated its purpose and explained the role of the researcher. It described the context of the study, the participant's background information, and data collection and data analysis procedures. It was the intent of the researcher to develop a working hypothesis that might offer general educators, special education teachers, and reading specialists guidance when their work requires them to make the most appropriate academic and social decisions for students who present reading difficulties similar to Jasmine. The next chapter will discuss the results of the study including data collection and analysis.

CHAPTER 4

FINDINGS AND ANALYSIS OF DATA

4.1   INTRODUCTION

The purpose of this qualitative exploratory, single case study (Creswell, 2009; Fraenkel & Wallen, 2000) was to explore the reading ability of a 21 year old illiterate adult who is cognitively impaired. The participant of this study, Jasmine was diagnosed as having Treacher Collins Syndrome (TCS), at birth. She has notable developmental delays that characterise her as having cognitive impairment or also known as mental retardation. A control group consisting of two normal adult learners of early literacy went through the same learning process as Jasmine. Their learning and test data was used to compare their performance with that of Jasmine.

Jasmine and the control group were given an initial assessment to identify and gather information on their previous knowledge in reading. Then, Jasmine received one-to-one instruction for five months. Whereas the control group learned together for a month, utilizing a combination of five reading strategies suggested by Janet Lerner (2003), in her book 'Learning Disabilities: Theories, Diagnosis, and Teaching Strategies' (p.427-450). The strategies are:

    i.   Improving word recognition

    ii.   Building fluency

    iii.   Improving reading comprehension

    iv.   Using special remedial methods

    v.   Using computers to teach reading

During the intervention period, Jasmine and the control group were given spelling tests and her class work was compiled in portfolios. Other than that, anecdotal notes were

taken of their struggles and achievements. After five months, Jasmine was given the Dynamic Indicator of Basic Early Literacy Skills (DIBELS) as a yardstick, which showed their achievement gained after the intervention. The control group was given the assessment after a month of intervention.

4.2 FINDINGS

In this section, the findings will be reported in two parts. The qualitative analysis will be shown in the form of anecdotal records and the literacy portfolio analysis of the participant and control group. The second part will show the quantitative results of the assessments in table and graph forms.

4.2.1 Qualitative Results: Anecdotal Records and Records of Literacy Portfolio

The qualitative results show the progress of Jasmine and the control group in phonological awareness and letter-sound correspondence, vocabulary, comprehension and fluency. They show the progress from initial assessment, intervention, test and retest. Next, the results show the analysis of class work done by Jasmine and the control group which was compiled in portfolios.

4.2.1.1 Phonological Awareness and Letter-sound Correspondence

Table 4.1: Phonological Awareness and Letter-sound Correspondence

Names of Participant and Control Group	Initial Assessment	Intervention	Test	Retest
Jasmine	-Jasmine was able to produce all the names of the letters, both upper and	A lot of drilling and repetition was done to help Jasmine learn and	-Able to identify and produce most letter sounds except x and	-Able to identify and produce all the letter sounds, consonant

lower case -Did not know any of the letter sounds -The pronunciation was not clear but she knew the letters well -When asked to write all the upper case and lower case letters, she was confused between capital and small letters of L, Q, T, and Y.	remember letter names, letter sounds, consonant blends, blend words having three and four phonemes and rhyming words	w, consonant blends and blend words having three and four phonemes -Struggle to segment syllables and compound words -Able to discriminate between rhyming words	blends and blend words having three and four phonemes -managed to segment several syllables and compound words -Able to discriminate between rhyming words
Siva	-knew all the letter names -Did not know any of the letter sounds	Letter sounds, consonant blends, blend words having three and four phonemes and rhyming words were taught	Knew all the letter sounds, consonant blends, blend words having three and four phonemes and rhyming words	Knew all the letter sounds, consonant blends, blend words having three and four phonemes and rhyming words
Leha	-knew all the letter names -Did not know any of the letter sounds	Letter sounds, consonant blends, blend words having three and four phonemes and rhyming words were taught	-Knew all the letter sounds and consonant blends - Had some difficulty with blend words having three and four phoneme	Knew all the letter sounds, consonant blends, blend words having three and four phonemes and rhyming words

			- knew all the rhyming words	

During initial assessment, Jasmine was only able to produce all the names of the letters, both upper and lower case. However, by the time she went through the retest she was able to identify and produce all the letter sounds, consonant blends and blend words having three and four phonemes. She also managed to segment several syllables and compound words. Moreover she was able to discriminate between rhyming words.

In the beginning, Siva and Leha knew all the letter names but did not know any of the letter sounds. By the time they did the retest, they knew all the letter sounds, consonant blends, blend words having three and four phonemes and rhyming words well.

4.2.1.2 Vocabulary

Table 4.2: Vocabulary

Names of Participant and Control Group	Initial Assessment	Intervention	Test	Retest
Jasmine	Jasmine was only able to name letters. She could not read any words.	- Jasmine was able to read words better when they were presented in the form of stories, compared to when the words were taught in isolation	The mean performance of WRC, in the test was 5 words recoded correctly and completely in one minute.	During retest Jasmine scored a slightly higher score of mean 6 words per minute. The difference in score between the test and retest were +3 and -1. She had scored higher

		- She accumulated a small list of basic sight words, as presented in Table 4.1 -However, she relied mostly on sounding out letter sounds as she read - many a times, she confused letter names to their letter sounds		marks in the retest, 65% of the time.
Siva	Siva was only able to name letters. He could not read any words	- Siva was able to read words better than Leha. -He managed to learn words rather quickly. - He showed a lot of enthusiasm in learning.	The mean performance of WRC, in the test was 17 words recoded correctly and completely in one minute.	During retest Siva scored a slightly higher score of mean 19 words per minute.
Leha	Leha was only able to name letters. She could not read any words	- Leha learnt words at a slower pace compared to Siva. - However, with more guidance and repetitions she learnt well.	The mean performance of WRC, in the test was 15 words recoded correctly and completely in one minute.	During retest Leha scored a slightly higher score of mean 17 words per minute.

		- She managed to read all the words taught to her during lessons.		

When the researcher gave initial assessment on vocabulary, Jasmine was only able to name letters. She could not read any words. However, after going through the intervention , Jasmine's mean score was 6 words per minute, in the Words Recoded Correctly test.

As for Siva and Leha, they were only able to name letters. They could not read any words. During retest Siva's mean score was 19 words per minute, while Leha's mean score was 17 words per minute.

Fromkin, Rodman & Hyams (2007), have divided word categories into lexical and functional categories. Table 4.3 shows sight words accumulated by Jasmine, according to the categories suggested by Fromkin, Rodman & Hyams (2007).

Table 4.3: Basic Sight Words Accumulated by Jasmine

Categories		**Sample Vocabulary Items**
Lexical Categories	**Nominals**	bat, cat, jam, map, pen, ten, it, zip, box, cup, sun, bee, book, zoo, food
	Verbals	sit, see, do, go, look, cook
	Prepositions	at, in, on, of, up
	Adjectives	hot, good
	Adverb	very
Functional Categories	**Determiner**	a, an, the
	Demonstratives	this, that

	Auxiliary	has, have, was
	Modals	can, may

4.2.1.3   Comprehension

Table 4.4: Comprehension

Names of Participant and Control Group	Initial Assessment	Intervention	Test	Retest
Jasmine	Jasmine could not read words or sentences. Thus, comprehension assessment was not carried out.	-Jasmine enjoyed reading the stories because she could immediately say the words aloud -nonetheless, she could not understand the stories -Therefore, the researcher explained each story - After the explanation, Jasmine was able to answer some very basic literal comprehension questions which began with 'who', 'what', and 'where',	In the comprehension assessment, Jasmine's mean performance for the test was 2 answers out of 3 per passage. This shows that she scored 66.6% in answering literal questions from very simple phonics reading passages.	During retest also Jasmine got 2 answers out of 3 per passage. This shows that she scored 66.6% in answering literal questions from very simple phonics reading passages.

		- but as shown in the results of the comprehension assessment, there were times she was not able to answer some of those literal questions - In addition, she was neither able to answer inferential questions nor retell the stories		
Siva	Siva could not read words or sentences. Thus, comprehension assessment was not carried out.	-Siva enjoyed reading the stories because he could immediately say the words aloud -He understood the stories well - He was able to answer all the comprehension questions which began with 'who', 'what', and 'where', - He was able to retell the stories - However,	In the comprehension assessment, Siva's mean performance for the test was 3 answers out of 3 per passage. This shows that he scored 100% in answering literal questions from very simple phonics reading passages.	During retest also Siva got 3 answers out of 3 per passage. This shows that he scored 100% in answering literal questions from very simple phonics reading passages.

		since he could not speak English, he used Tamil and Bahasa Malaysia to tell the stories		
Leha	Leha could not read words or sentences. Thus, comprehension assessment was not carried out.	-Leha enjoyed reading the stories because she could immediately say the words aloud -She understood the stories well - She was able to answer all the comprehension questions which began with 'who', 'what', and 'where', - She was able to retell the stories - However, since she could not speak English, she used Bahasa Malaysia to retell the stories	In the comprehension assessment, Leha's mean performance for the test was 3 answers out of 3 per passage. This shows that she scored 100% in answering literal questions from very simple phonics reading passages.	During retest Leha got 3 answers out of 3 per passage. This shows that she scored 100% in answering literal questions from very simple phonics reading passages.

During initial assessment for comprehension, Jasmine could not read words or sentences. Thus, comprehension assessment was not carried out. During retest Jasmine got 2 answers out of 3 per passage. This shows that she had learnt to read very simple sentences and understand them.

The control group, Siva and Leha, also could not read words or sentences during the initial assessment. Thus, comprehension assessment was not carried out. During retest also Siva and Leha got 3 answers out of 3, per passage. This shows that they scored 100% in answering literal questions from very simple phonics reading passages.

4.2.1.4 Fluency

Table 4.5: Fluency

Names of Participant and Control Group	Initial Assessment	Intervention	Test	Retest
Jasmine	-Jasmine could only name individual letters -She could not read words	-Jasmine began reading words by saying aloud every letter sound, and then figured out the sound of the word -Repeated reading of rhyming words (i.e. mat, sat, cat, rat, bat, and etc) helped her read words faster than giving her words which have different	-During the DIBELS Oral Reading Fluency (ORF) assessment, her reading rate (words read correctly per minute) was 17 words per minute - In contrast, during the Regular Word Fluency (RWF) assessment, she was only able to recode a total of 5 words	During the DIBELS Oral Reading Fluency (ORF) assessment, her reading rate (words read correctly per minute) was 17 words per minute -- In contrast, during the Regular Word Fluency (RWF) assessment, she was only able to recode a total of 6 words

Siva		spelling patterns or non-rhyming words (i.e. mat, kid, cot, bed, mud and etc). -Stories in Progressive Phonics books contained words which rhymed and the same words were repeated many times, so Jasmine had no problems in quickly reading those words - she enjoyed quickly reading them aloud -However, the stories in Progressive Phonics books were read in unison, where the researcher and Jasmine took turns reading the words printed in black and red. Thus, Jasmine did not read whole sentences on her own.	per minute.	per minute.
Siva	-Siva could only name	- Siva read words by	-During the DIBELS Oral	During the DIBELS Oral

	individual letters -He could not read words	saying aloud every letter sound, and then figuring out the sound of the word -Siva read rhyming words very quickly -Siva read the stories in Progressive Phonics books with some guidance from the researcher	Reading Fluency (ORF) assessment, his reading rate (words read correctly per minute) was 35 words per minute	Reading Fluency (ORF) assessment, his reading rate (words read correctly per minute) was 39 words per minute
Leha	-Leha could only name individual letters -She could not read words	- Leha read words by saying aloud every letter sound, and then figuring out the sound of the word -She read rhyming words very quickly -She read the stories in Progressive Phonics books with some guidance from the researcher -She needed more guidance compared to Siva	-During the DIBELS Oral Reading Fluency (ORF) assessment, her reading rate (words read correctly per minute) was 32 words per minute	During the DIBELS Oral Reading Fluency (ORF) assessment, her reading rate (words read correctly per minute) was 35 words per minute

During the initial assessment in fluency, Jasmine could only name individual letters but could not read words. During the DIBELS Oral Reading Fluency (ORF) assessment, her reading rate (words read correctly per minute) was 17 words per minute. This shows improvement in fluency.

As for the control group, Siva and Leha could only name individual letters. They also could not read words. During the DIBELS Oral Reading Fluency (ORF) assessment, Siva's reading rate (words read correctly per minute) was 39 words per minute while Leha got 35 words per minute. Their improvement in fluency was much better than Jasmine's improvement.

4.2.1.5 Literacy Portfolio

Generally speaking, a literacy portfolio is a systematic collection of a variety of teacher observations and student products, collected over time, that reflect a student's developmental status and progress made in literacy.

The lesson plans prepared by the researcher which shows Jasmine's learning progress, her achievements and struggles, and the video recordings of the lessons, are also part of the portfolio.

The exercises that consolidated the Progressive Phonics books were: word search exercises, word guessing exercises, letter search and word search. In word search exercises, 10 to 15 words related to the skills Jasmine has been learning were given, and she has to find the words in a cross word puzzle and colour them. Jasmine enjoyed these exercises the most, and found the words in the cross word puzzle all the time. She took her time answering them and felt proud of her achievement. Letter guessing exercises were quite easy for Jasmine to complete. In word guessing exercises, pictures were given, and Jasmine was to write the appropriate words. In this exercise Jasmine needed a lot of guidance from the researcher, firstly to know the correct word and secondly to

spell them correctly. These activity sheets were very beneficial because as Jasmine wrote down what she had learnt, she learnt them better. Moreover writing helped her remember better. These activities also helped improve learning sight-word.

Next, Beginning Phonics grades 1-2 contain various exercises where Jasmine had to say the picture word, write the beginning letter to make words, add letters to make new words, match pictures with correct words, write the opposite words and answer word puzzles. All these exercises were very simple, thus, Jasmine found them to be very interesting and she answered them without delay. She also enjoyed colouring all the given pictures.

Other than the materials explained above, Jasmine also read stories from Zac the Rat and other tales by Starfall Education. Exercises that consolidated Learn to Read book (Zac the rat and other tales) by Starfall Education are as follows: word rhyme exercises, writing missing vowels and consonants in given words, completing words and naming them, circling words that best complete the given sentences and labelling things in given pictures. These stories and activities teach children to read with phonics. The systematic phonics approach, in conjunction with phonemic awareness practice, was very useful for Jasmine. The activities were motivational and engaging for both Jasmine and the researcher. Jasmine actively involved in doing the activities and the researcher guided her whenever the need arose. Samples of Jasmine worksheets are shown in Appendices K, L and M.

The control group, Siva and Leha completed all the exercises and worksheets without any difficulty.

4.2.2 ASSESSMENT RESULTS

The assessment results show the progress of Jasmine and the control group in the spelling tests and DIBELS assessments. The DIBELS assessments consist of Initial Sound Fluency (ISF) which measures phonological awareness, Regular Word Fluency (RWF) which measures alphabetic principle (phonics) and Oral Reading Fluency (ORF), where students orally read passages.

4.2.2.1 Spelling Tests

In this study spelling tests have been given as a criterion–referenced instrument. According to Fraenkel & Wallen (2000), Criterion-referenced tests focus directly on the instruction. It is based on a specific goal, or target (called a criterion), for each learner to achieve. Jasmine and the control group went through 61 times of spelling tests. Each spelling test consisted of only 3 to 10 words. The researcher administered the spelling tests after each time Jasmine and the control group mastered new vocabulary or new vowel and consonant combinations. Before administering the spelling tests, the researcher helped Jasmine and the control group learn the words by drill and practice. Table 4.6 shows the spelling test scores shown in frequency (how many times they were able to get the scores)

Table 4.6: Spelling Test Scores

Spelling test scores	Frequency		
	Jasmine	**Siva**	**Leha**
20%	2	0	0
21 – 30%	0	0	0
31 – 40%	2	0	0

41 – 50%	2	0	0
51 – 60%	1	0	0
61 – 70%	1	0	0
71 – 80%	7	0	0
81 – 90%	4	0	8
91 – 100%	42	61	53
Total	61	61	61
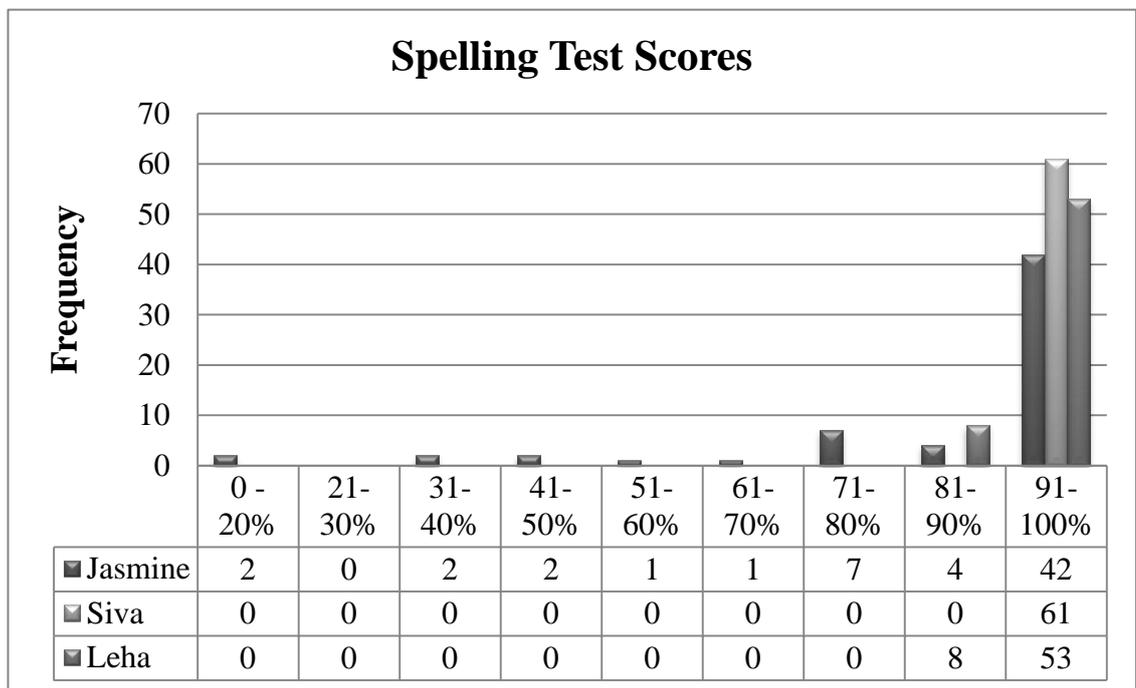
Figure 4.1: Spelling Test Scores

The highest score that Jasmine got during the spelling tests was 100% and the lowest score was 20%. She scored 91-100% at least 42 times of 61(which is 68.9%) spelling tests given. Jasmine got an average score of 85% in the spelling tests.

A lot of repetition and relearning helped Jasmine to spell well. Jasmine spelt well words with a consonant-vowel-consonant (CVC) or vowel-consonant (VC) pattern. She had difficulty in spelling longer words which have CCVC pattern, such as stab, spat, spin, slim, snap, crab, cram etc. Understanding the meaning of words also affected

Jasmine's scores. When Jasmine understood the meaning of a word, she was able to grasp the spelling and spell it out easily. Whereas, words that she found difficult to understand, she had difficulty in spelling them. Some words that she could not understand were yet, blab, blob, plop etc.

As for the control group, Siva scored 91-100% in all the spelling tests. In fact 56 times out 0f 61 spelling tests, he scored 100% marks. Whereas Leha scored less marks compared to Siva. Her marks ranged 81-100%. She scored all correct in 53 times out of 61 spelling tests.

4.2.2.2 DIBELS Assessments

In this research, three out of the seven DIBELS measures have been used. The first measure used is Initial Sound Fluency (ISF) which measures phonological awareness. In this assessment the student identify pictures with a target initial sound and the student also articulates the first sound or sounds in a word. The second measure, Nonsense Word Fluency (NWF) measures alphabetic principle (phonics). In this measure, students read nonsense words spelled with two and three letters or they name the letter sounds. This measure was adapted according to the participant's need, and was labelled as Regular Word Fluency (RWF). Since, Jasmine refused to read words which did not carry meaning, the assessment result was inconclusive. Thus, the researcher created lists of words which were taken from Progressive Phonics series. The third measure used was Oral Reading Fluency (ORF), where students orally read grade-level passages. As for Jasmine, the passages were chosen from Progressive Phonics series, so that she would be able to read them.

In DIBELS progress monitoring assessments, comprehension is assessed using Retell Fluency (RTF), where the students retell the passage they read in Oral Reading

Fluency (ORF). Retelling what was read was a tedious task for Jasmine because she could not remember details. Thus, the researcher asked 3 simple literal questions from each passage, where Jasmine can find the answers easily from the passages.

These assessments were modified also because standardized DIBELS could not be used to assess Jasmine who has severe cognitive and speech impairment. The modification done by the researcher were: restating or repeating instructions, allowing native language response or code switching, providing extra practice before test and adapting tests to the need of the student.

The DIBELS benchmark scores are the minimum scores that indicate the student has the ability to apply a basic reading skill (refer to the DIBELS Benchmark and Target Scores for Kindergarten and First Grade Table in the Appendix). Benchmark scores are any scores that are equal to or higher than the cut points for the risk levels labelled Established or Low Risk. Risk levels are labelled Established, Emerging, and Deficit for some measures at certain benchmark periods, and they are labelled Low Risk, Some Risk, and At Risk at other benchmark periods. Once scores and cut points are labelled Established, Emerging, and Deficit, they never change. That is because the score to achieve the Established level is the score that shows a student of any age has mastered the skill being measured (Farrell, Hancock, & Smart, 2006).

Reaching a Low Risk score for a DIBELS measure indicates a high probability (approximately 80% or higher) of reaching the next score for that measure if the student has appropriate reading instruction. For example, reaching the Initial Sound Fluency (ISF) Low Risk score of 8 at the beginning of kindergarten indicates a high probability of reaching the ISF Established score of 25 by the middle of kindergarten (with appropriate reading instruction). Reaching an Established score indicates a high probability (approximately 80% or higher) of reaching the next Established score for a different measure, with continued reading instruction (Farrell et al., 2006). The DIBELS

benchmark scores indicate the *minimum* level of skill students need for teachers to achieve confidence that their students are on track to read at grade level. Additionally, DIBELS benchmark assessments are given three times a year: at the beginning, middle, and end of the school year. In this study, the benchmarks used in the middle of the year, because this benchmark is used for assessing students after they have learned for 4-6 months. As Jasmine's intervention was carried out for 5 months, thus, the middle of the year benchmark was used by the researcher. For ISF the researcher used the benchmark given for kindergarten level because this assessment is prepared only for assessing kindergarten level students or those who are beginning to read. As for RWF and ORF first grade benchmarks have been used by the researcher to relate to Jasmine's ability or improvement in word reading fluency and oral reading fluency.

The researcher chose the DIBELS assessments because it is easy to implement and can be hand-scored. Moreover the tests are reliable tools for monitoring progress across time and repeated measurement is possible, so the DIBELS assessments were administered twice. The retest was given after a gap of 3 weeks, because a test is considered to be reliable when the test yields similar results when it is repeated over a short period of time or when an equivalent form of the text is used (Ornstein & Lasley, 2000).

4.2.2 (a) Initial Sound Fluency (ISF)

This is a standardized, individually administered measure of phonological awareness that assesses a student's ability to recognize and produce the initial sound in an orally presented word (Kaminski & Good, 1996, 1998). The researcher administered 20 sets of probes downloaded from http://dibels.uoregon.edu. Each probe contained four pictures The researcher presented the four pictures to Jasmine, named each picture, and then asked her to identify (i.e., point to or say) the picture that begins with the sound

produced orally by the researcher. For example, the researcher says, "This is sink, cat, gloves, and hat. Which picture begins with /s/?", and Jasmine points to the correct picture. Jasmine was also asked to orally produce the beginning sound for an orally presented word that matched one of the given pictures. The researcher then calculated the amount of time taken to identify or produce the correct sound and converted the score into the number of initial sounds correct in a minute. The ISF score was calculated using this formula:

ISF Score = $\dfrac{60 \ X \ \text{number of correct responses}}{\text{seconds}}$

Table 4.7 shows the results of Initial Sound Fluency (ISF) test and retest. Jasmine and the control group answered 20 probes. The test and retest scores have been calculated using the ISF score formula.

Table 4.7: Initial Sound Fluency (ISF) Test and Retest Results

Probes	Jasmine		Siva		Leha	
	Test Scores	Retest Scores	Test Scores	Retest Scores	Test Scores	Retest Scores
1	11	15	36	38	30	34
2	26	24	32	34	30	32
3	10	17	35	36	32	35
4	11	15	40	44	36	36
5	8	8	36	38	30	32
6	10	15	43	45	40	44
7	10	14	44	46	40	44
8	15	18	50	52	44	45
9	15	20	45	45	40	43
10	21	18	42	44	38	42
11	21	21	32	36	30	43
12	17	20	30	34	30	33
13	28	26	45	46	38	40
14	22	25	34	36	30	33
15	17	20	45	47	43	45
16	18	18	38	40	32	32
17	17	21	42	44	38	36
18	18	16	44	46	40	43

19	24	22	47	48	40	44
20	14	18	52	50	47	47

	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
		Jasmine			Siva			Leha	
Test	16.65	28	8	40.6	52	32	36.4	47	30
Retest	18.55	26	14	42.45	50	34	39.15	47	32
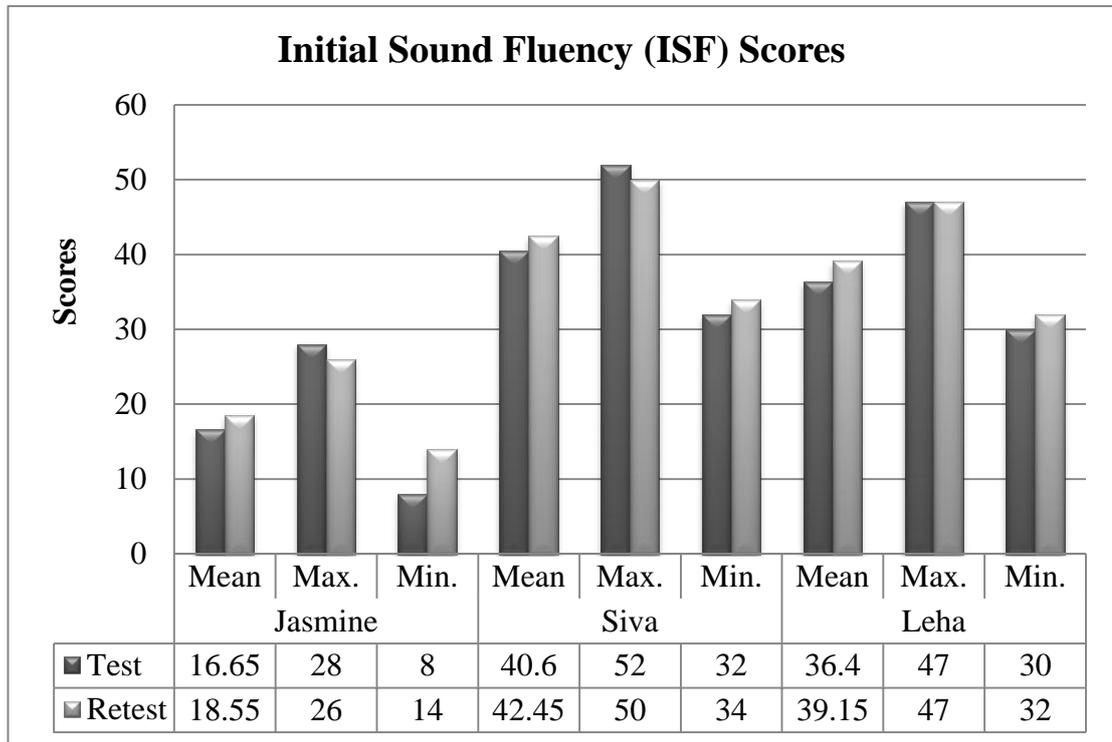
Figure 4.2: Comparison of Initial Sound Fluency (ISF) Test and Retest Results

In the Initial Sound Fluency test, Jasmine's mean performance was 17 initial sounds correct in a minute, while in the retest the mean was 19 initial sounds correct in a minute. In the benchmark and target score for kindergarten (mid year), the score of 10 – 24 indicates that the student is 'Emerging'. Reaching the ISF 'Emerging' score of 10 – 24 denotes that the student has a high probability of reaching the ISF 'Established' score of 25 with appropriate reading instruction(Farrell et al., 2006).

During both the ISF test and retest, in all the 20 probes, Jasmine's scores were about the same. The difference in score is between +7 and -2. In addition, 65% of the time, Jasmine had scored higher marks during the retest. The reason for her improvement might have been caused by the revision exercises that the researcher did with Jasmine.

As for the control group, Siva's mean performance was 41 initial sounds correct in a minute, while in the retest the mean was 42 initial sounds correct in a minute. Leha's mean performance was 36 initial sounds correct in a minute, while in the retest the mean was 39 initial sounds correct in a minute. Both Siva and Leha's scores indicate that they are 'Established'.

4.2.2.2 (b) Nonsense Word Fluency (NWF) modified to Regular Word Fluency (RWF)

Nonsense Word Fluency (NWF) is an assessment where students read nonsense words spelled with two and three letters or they name the letter sounds. All nonsense words are spelled with a consonant–vowel–consonant (CVC) or vowel–consonant (VC) pattern. At the end of this assessment, students gain two scores, which are Correct Letter Sounds (CLS) and Words Recoded Completely and Correctly (WRC).

NWF assessment was modified in this present research because Jasmine needed to understand words to be able to read them aloud. She did not want to say words that did not have any meaning. Hence, the researcher used the same score system and tested Jasmine on word fluency and not nonsense word fluency. Thus, this assessment is labelled by the researcher as Regular Word Fluency (RWF). The words were taken from the Progressive Phonics books that Jasmine was using to learn to read. The researcher chose the words and typed them out onto 20 sheets of papers.

This is how the assessment was carried out. Jasmine was presented with a sheet of simple VC, CVC, CVCC and CVVC word sequences (e.g. at, dad, plus, good etc.) and may either pronounce individual letter sounds or the entire word. After a practice trial, the researcher instructed Jasmine to read the words as quickly and accurately as possible. If Jasmine did not respond within 3 seconds, the researcher prompted with

"next?" Jasmine was allowed one minute to produce as many letter-sounds as she could, and the final score was the number of letter-sounds produced correctly in one minute. Since, the measure is fluency based, Jasmine received a higher score whenever she was phonologically recoding the word. This is because she was more efficiently producing the letter sounds. Meanwhile, she received a lower score when she was providing letter sounds in isolation. Table 4.8 and graph Figure 4.3 show CLS test and retest scores. Jasmine, Siva and Leha answered 20 probes. The test and retest scores show the number of letter sounds that they read correctly in one minute.

Table 4.8: Correct Letter Sounds (CLS) Test and Retest Scores

Probes	Jasmine		Siva		Leha	
	Test Scores	Retest Scores	Test Scores	Retest Scores	Test Scores	Retest Scores
1	27	26	34	38	32	33
2	34	35	43	45	40	42
3	39	37	44	44	42	42
4	16	20	32	38	32	34
5	24	22	30	40	28	32
6	25	28	44	48	44	46
7	33	30	45	54	42	44
8	24	28	46	57	44	46
9	31	30	43	50	40	48
10	34	33	45	56	42	50
11	39	35	46	56	50	52
12	30	36	44	44	42	44
13	46	50	56	59	55	57
14	40	42	50	62	43	45
15	47	47	54	57	50	50
16	49	47	56	61	53	55
17	53	55	60	67	59	60
18	48	50	65	70	62	66
19	50	54	66	66	64	66
20	53	54	67	69	60	62

Correct Letter Sounds (CLS)

|	Jasmine			Siva			Leha		
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
Test	37.1	53	16	48.5	67	30	46.2	64	28
Retest	37.95	55	20	54.05	69	38	48.7	66	32
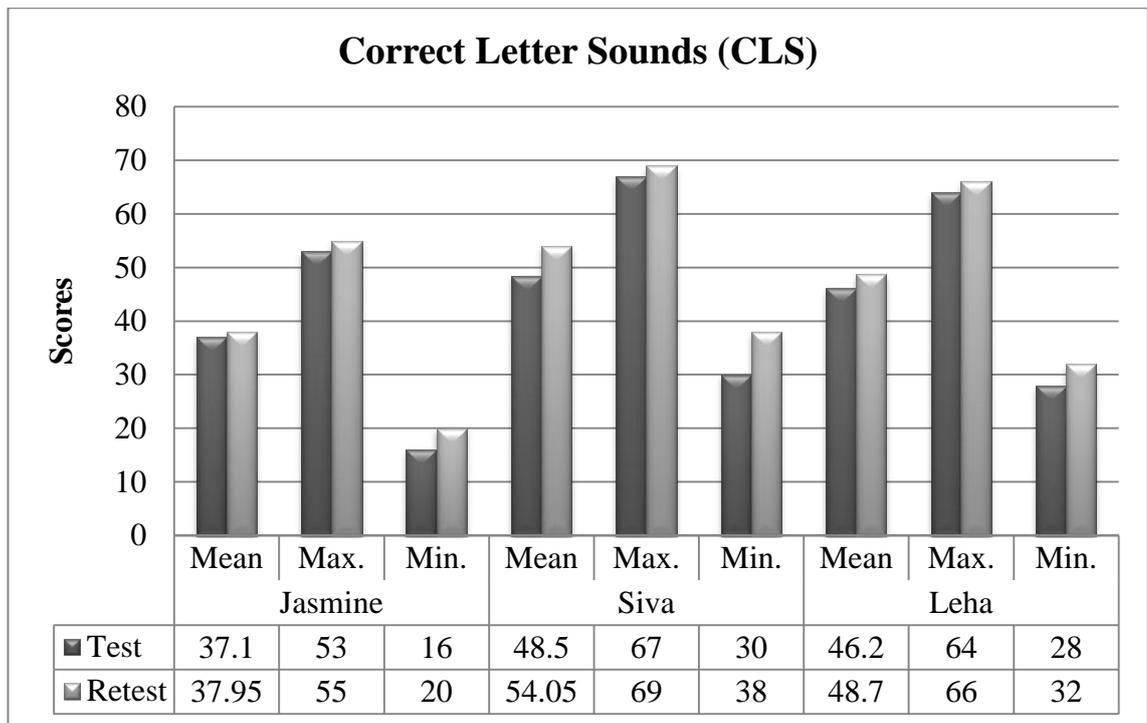
Figure 4.3: Comparison of Correct Letter Sounds Test and Retest Results

In the Correct Letter Sounds assessment, Jasmine's mean score during the test was 37 letters per minute. While, during the retest her mean performance was 38 letters per minute. In the benchmark and target score for first grade (mid year), the score from 30 to 49 indicates that the student is 'Emerging'. Reaching the RWF 'Emerging' score of 30-49 denotes that the student has a high probability of reaching the RWF 'Established' score of 50 with appropriate reading instruction (Farrell et al., 2006).

In comparison between the test and retest score, Jasmine has scored higher marks during the retest. The difference in score is between +6 and -4. Besides that, she has scored higher in the retest compared to the test, 55% of the time. The reason for her improvement might have been caused by the revision exercises that the researcher did with Jasmine.

As for the control group, Siva's mean score during the test was 49 letters per minute. While, during the retest his mean performance was 54 letters per minute. Leha's mean score during the test was 46 letters per minute. While, during the retest her mean

performance was 49 letters per minute. Siva and Leha has reached the 'Established' grade while Leha has managed to only achieve 'Emerging' grade.

The second score accumulated from the RWF measurement was Words Recoded Completely and Correctly (WRC) scores. The WRC score shows Jasmine's ability in reading sight words. As the researcher was measuring the Correct Letter Sounds (CLS), the researcher also noted the words Jasmine read, without needing to sound out every letter sound or syllables. The intent of this measure is that Jasmine was able to read familiar words as whole words, not just name letter sounds as fast as she could. For example if the stimulus word was "mug", Jasmine could say /m/ /u/ /g/ or say the word /mug/ to obtain one mark for words recoded completely. Table 4.9 shows Words Recoded Completely and Correctly (WRC) test and retest results. As Jasmine and the control group answered the 20 probes for Correct Letter Sounds (CLS), the researcher took note of the words that they were able to recode without sounding out each letter. This result shows their ability in reading sight words.

Table 4.9: Words Recoded Completely and Correctly (WRC) Test and Retest Results

Probes	Jasmine		Siva		Leha	
	Test Scores	Retest Scores	Test Scores	Retest Scores	Test Scores	Retest Scores
1	9	11	16	17	15	15
2	10	9	19	21	17	19
3	14	13	21	21	20	21
4	0	2	12	16	11	14
5	5	7	18	21	18	19
6	4	4	16	19	13	15
7	1	3	15	18	12	12
8	0	2	14	14	11	13
9	4	6	19	19	15	15
10	8	7	14	13	12	14
11	7	9	22	23	20	21
12	5	6	17	18	15	17
13	6	8	20	22	20	21
14	8	8	19	21	14	19
15	7	7	20	21	17	19

16	0	2	17	19	14	18
17	3	2	15	18	13	13
18	1	4	14	18	12	14
19	3	6	18	20	15	17
20	3	4	13	17	12	16

Words Recoded Completely and Correctly (WRC)

| | Mean | Max. | Min. | Mean | Max. | Min. | Mean | Max. | Min. |
		Jasmine			Siva			Leha	
Test	4.9	14	0	16.95	22	13	14.8	20	11
Retest	6	13	2	18.8	23	14	16.6	21	12
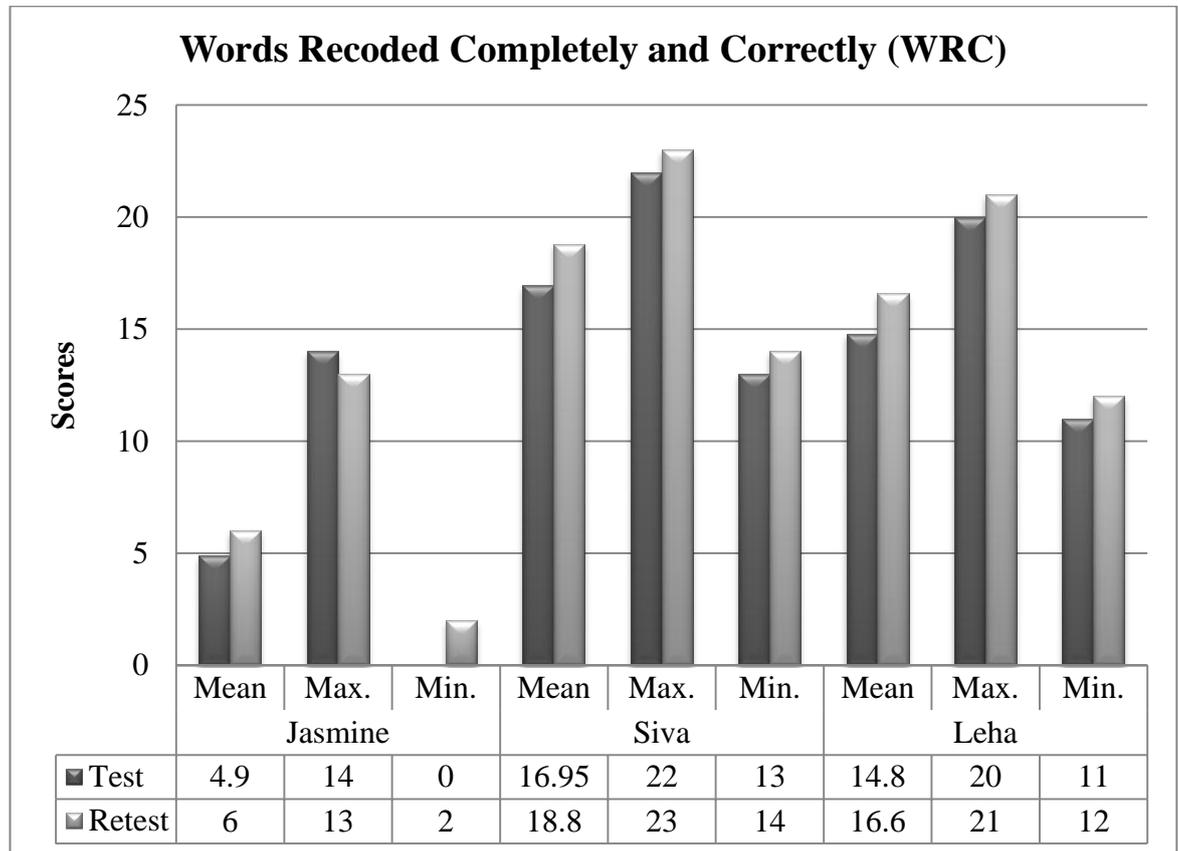
Figure 4.4: Comparison of Total Words Recoded Completely and Correctly (WRC) Test and Retest Results

The mean performance of Jasmine, in the test was 5 words recoded correctly and completely in one minute. During retest Jasmine scored a slightly higher score of mean 6 words per minute. The difference in score between the test and retest were +3 and -1. She had scored higher marks in the retest, 65% of the time.

The mean performance of Siva, in the test was 17 words recoded correctly and completely in one minute. During retest Siva scored a slightly higher score of mean 19

words per minute. Whereas, Leha recoded 15 words correctly during the test, and 17 words during the retest. This shows that Siva was able to learn faster and better than Leha.

4.2.2.2 (c) Oral Reading Fluency (ORF)

In the Oral reading Fluency (ORF) assessment, students orally read a grade-level passage. Jasmine was not able to read the passages made available in DIBELS. Thus, the researcher used the passages that the researcher has been using to teach Jasmine, from the Progressive Phonics series. The researcher used 20 short passages from the Progressive Phonics series.

The score, or ORF rate, is the number of words read correctly per minute. Jasmine's performance is measured by having her read a passage aloud for one minute. Words omitted, substituted, and hesitations of more than three seconds were scored as errors. Words self-corrected within three seconds were scored as accurate. The number of correct words per minute (WCPM) from the passage was the oral reading fluency score. Table 4.10 shows Oral Reading Fluency (ORF) test and retest results. Jasmine and the control group read from 20 passages that the researcher had chosen. The test and retest scores show the number of words read correctly by them in each passage.

Table 4.10: Oral Reading Fluency (ORF) Test and Retest Results

	Jasmine		Siva		Leha	
Probes	Test Scores	Retest Scores	Test Scores	Retest Scores	Test Scores	Retest Scores
1	14	14	27	30	26	27
2	11	10	28	32	25	28
3	7	11	30	35	25	28
4	26	24	40	46	34	36
5	21	23	32	36	30	38
6	12	14	33	38	33	35
7	27	30	42	45	38	40
8	21	22	34	40	32	37

9	13	13	36	43	40	40
10	6	6	26	27	26	26
11	16	16	38	43	35	38
12	10	10	37	42	35	37
13	17	16	36	40	32	37
14	19	20	42	46	37	40
15	16	15	24	27	22	24
16	22	20	39	42	40	40
17	18	18	35	37	34	33
18	18	16	37	43	34	36
19	18	16	40	43	36	40
20	20	20	38	40	32	38

Oral Reading Fluency (ORF)

|	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
		Jasmine			Siva			Leha	
Test	16.6	27	6	34.7	42	24	32.3	40	22
Retest	16.7	30	6	38.75	46	27	34.9	40	24
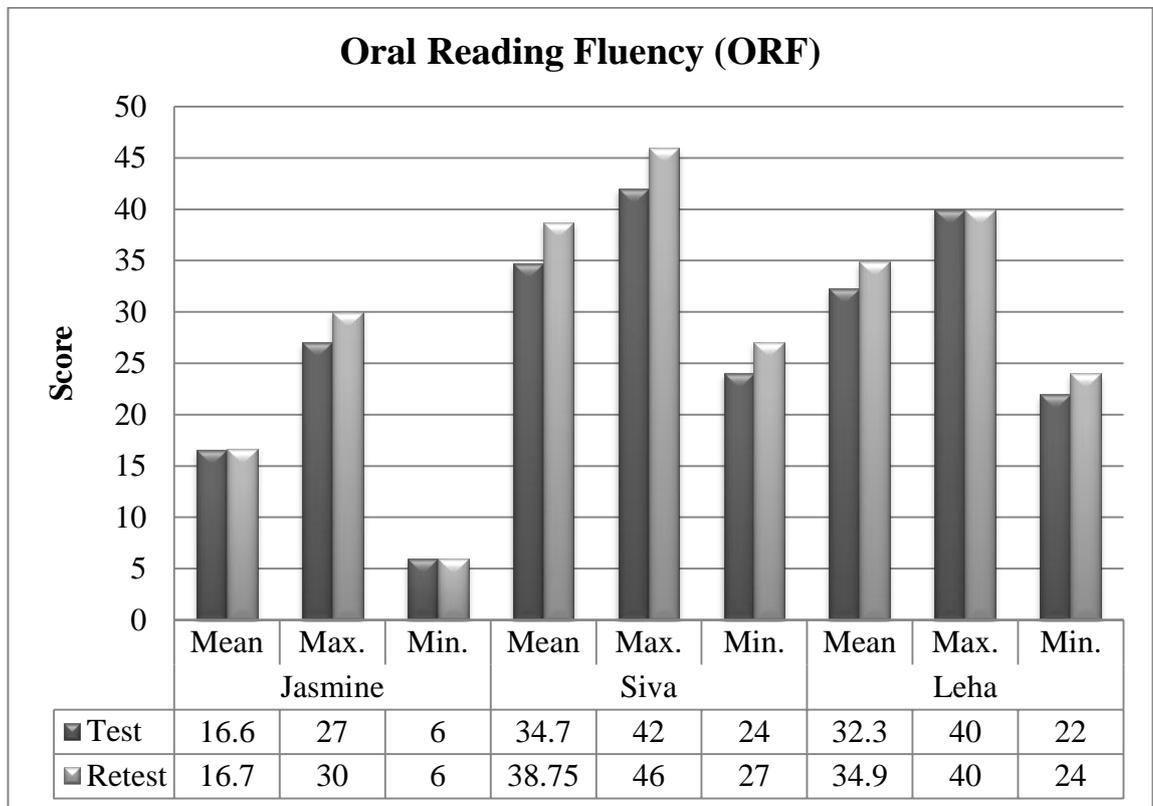
Figure 4.5: Comparison of Oral Reading Fluency (ORF) Test and Retest Results

In the Oral Reading Fluency (ORF) test and also retest Jasmine's mean score was 17 correct words per minute. In the benchmark and target score for first grade (mid year), the score of 8-19 indicates that the student is at the 'Some Risk' category. Reaching the ORF score of 8-19 denotes that the student has a high probability of

reaching the ISF 'Low Risk' score of 20 with appropriate reading instruction(Farrell et al., 2006). Jasmine has scored 17 words per minute, and this score is only 3 points away from 20 (Low Risk score). Reaching a Low Risk score for a DIBELS measure indicates a high probability (approximately 80% or higher) of reaching the next score for that measure if the student has appropriate reading instruction.

On the other hand, Siva's mean score in the test is 35 words per minute and 39 words per minute in the retest. As for Leha, her mean score is 32 words per minute in the test and 35 words per minute in the retest. Siva and Leha's scores indicate 'Low Risk'.

Table 4.11 shows a summary of the DIBELS grade level benchmark and Jasmine, Siva and Leah's Mean Scores.

Table 4.11: DIBELS Grade Level Benchmark, Mean Scores and Indications

DIBELS assessments	Grade level	Middle of year (month 4-6) Benchmark	Jasmine's mean score and Indication	Siva's mean score and Indication	Leha's mean score and Indication
Initial Sound Fluency (ISF)	Kinder-garten	0 - 9 Deficit 10 – 24 Emerging 25+ Established	Test: 16.6 Retest: 18.5 **Emerging**	Test: 40.6 Retest: 42.45 **Established**	Test: 36.4 Retest: 39.15 **Established**
Regular Word Fluency (RWF)	First grade	0 - 29 Deficit 30 – 49 Emerging 50+ Established	Test: 37.1 Retest: 37.9 **Emerging**	Test: 48.5 Retest: 54.05 **Established**	Test: 46.2 Retest: 48.7 **Emerging**
Oral Reading Fluency (ORF)	First grade	0 – 7 At risk 8 – 19 Some risk 20+ Low risk	Test: 16.6 Retest: 16.7 **Emerging**	Test: 34.7 Retest: 38.75 **Low risk**	Test: 32.3 Retest: 34.9 **Low risk**

4.2.2.3 Comprehension

DIBELS Retell Fluency (RTF) is used to provide a comprehension check for the ORF assessment. Retell fluency should be administered to students who are reading at least 40 words per minute. As Jasmine was not capable of reading with such speed, RTF was not administered to assess her comprehension abilities. A researcher made test was used to ask three literal questions for each passage she read for the ORF assessment. Literal questions have responses that are directly stated in the text, so Jasmine was able to answer them orally. As Jasmine read the 20 short passages taken from Progressive Phonics series, the researcher asked 3 literal questions for each passage. Jasmine's scores are shown in Table 4.12. Test and retest columns show the number of answers that Jasmine and the control group got correct out of the 3 questions asked by the researcher.

Table 4.12: Comprehension Assessment Results

Probes	Jasmine		Siva		Leha	
	Test Scores	Retest Scores	Test Scores	Retest Scores	Test Scores	Retest Scores
1	3	3	3	3	3	3
2	3	2	3	3	3	3
3	1	2	3	3	3	3
4	1	1	3	3	3	3
5	3	3	3	3	3	3
6	0	0	3	3	3	3
7	2	3	3	3	3	3
8	0	1	3	3	3	3
9	2	3	3	3	3	3
10	2	2	3	3	3	3
11	3	3	3	3	3	3
12	2	2	3	3	3	3
13	1	1	3	3	3	3
14	3	2	3	3	3	3
15	2	1	3	3	3	3
16	2	2	3	3	3	3
17	0	0	3	3	3	3
18	3	2	3	3	3	3
19	2	2	3	3	3	3
20	2	3	3	3	3	3

Comprehension

|	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
		Jasmine			Siva			Leha	
■Test	1.85	3	0	3	3	3	3	3	3
■Retest	1.9	3	0	3	3	3	3	3	3
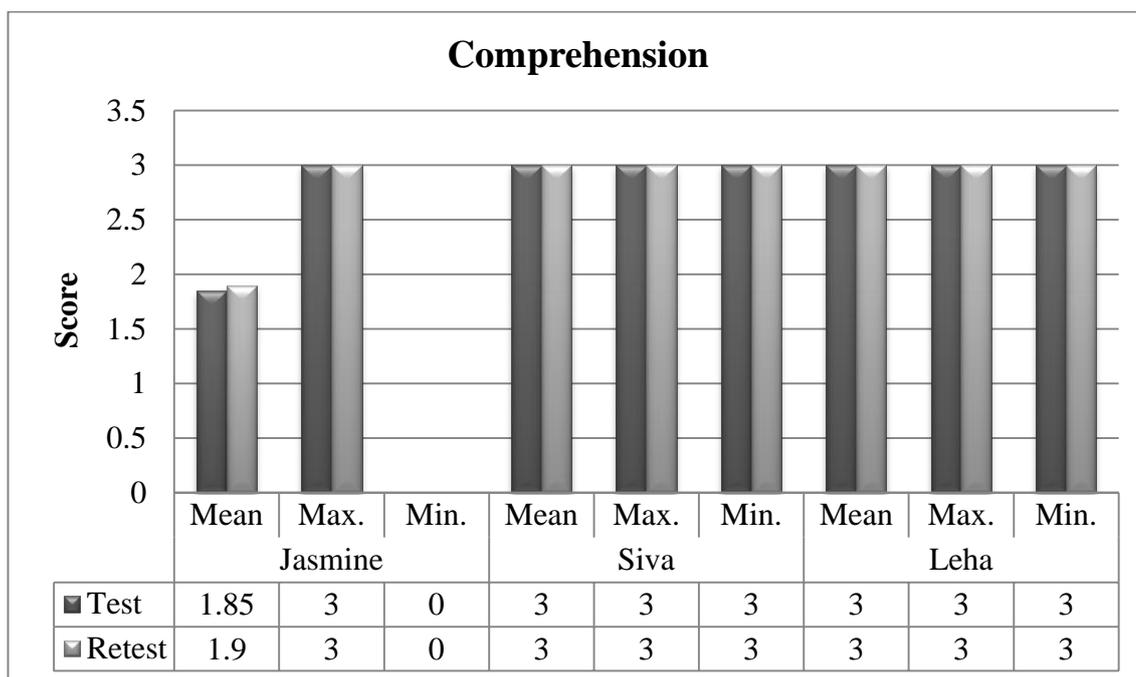
Figure 4.6: Comparison of Oral Reading Fluency (ORF) Test and Retest Results

In the comprehension assessment, Jasmine's mean performance for both the tests was 2 answers out of 3 per passage. This shows that she scored 66.6% in answering literal questions from very simple phonics reading passages.

As for Siva and Leha, they did not face any challenges in answering the comprehension questions. Thus, they scored full marks in all the probes.

4.3   DIFFICULTIES FACED AND THE COMPENSATORY STRATEGIES USED BY JASMINE

This section elaborates the strengths and struggles of Jasmine as she was learning to read, during the intervention period. This section also shows Jasmine's progress for phonological awareness and phonics, vocabulary, fluency and comprehension.

Jasmine faced some difficulties in learning basic reading skills. She could not remember letter sounds by learning them once or twice. She needed a lot of drill and practice. There were times she had forgotten letters sounds of /x/ and /w/. Other than that, she had difficulty pronouncing the letter sounds of /d/. /g/, /h/, /j/, /r/, /s/, /w/, /x/ and /y/. For example, Jasmine could say the letter 'h' but not the sound /h/. When she pronounced /d/, it sounded /n/, /v/ sounded /w/, and /x/ sounded nasal /ngs/. This pronunciation difficulty was mainly caused by her facial and oral mechanism impairments, where she could not open her mouth wide enough to sound out the letters clearly. The researcher guided her by showing her how to round the lips and where to place the tongue. Jasmine tried following the researcher's example but her facial impairments impeded her efforts. Nevertheless, Jasmine understood the sounds that she was being taught.

The researcher could only teach about seven or eight letter sounds each lesson, because Jasmine found them to be new and difficult to remember them. Learning letter sounds from the CROM 'The Word Machine' volume 1, helped her learn sounds repeatedly and she enjoyed the colours and movements shown in the CDROM. Moreover, Jasmine was shown how to carefully articulate the sound of each letter, beginning from vowels, then moving on to consonants. The sounds were introduced

one-by-one and associated with their printed symbols on the whiteboard. A lot of drilling was done to help her remember the letter sounds.

Moreover, as lessons progressed she could not remember some letter sounds that she had learnt earlier. So, the researcher helped her to remember the letter sounds by relating the sounds to an object, animal or person than Jasmine was familiar with, for example, /r/ sound was related to rabbit, and /k/ sound was related to Kak Lis (Jasmine's domestic helper's name). Even so, during DIBELS Word Reading Fluency assessment, Jasmine confused letter sounds of /t/, /d/, /h/, /w/ and /y/ with their letter names.

She also had difficulty understanding why the same vowel letters had two different (short and long) sounds. Jasmine also relied mostly on sounding out letter sounds as she read words, and many a times, she confused letter names with their letter sounds. This might have been caused by her memory issue, where she is only able to remember a little information at one time. She also forgot part of the lesson taught previously.

As Jasmine was learning two letter blends, the blends also needed to be related to words that gave meaning to Jasmine. For example, /j/+/a/=/ja/, the related word used was 'jam', as for /ju/ the related word was 'jump' and for /je/ the related word was 'Jeremy' (Jasmine's cousin's name). The related words used in teaching Jasmine helped her learn and remember faster. But, as revision was done, Jasmine tended to say 'jam', 'jump' and 'Jeremy' as she was reading the letter blends //ja/, /ju/ and /je/. In addition, Jasmine's facial impairment caused her difficulty pronouncing 2 letter blends that began with the letter /d/. /g/, /h/, /j/, /r/, /s/, /w/, and /y/ but this did not discourage her efforts in learning. However, she had difficulty understanding why the same vowel letters had two different (short and long) sounds. Thus, as she was learning she needed a lot of

guidance from the researcher in saying the letter sounds and reading the words aloud. She was also struggling to segment syllables and compound words.

This might have been caused by her memory issue, where she is only able to remember a little information at one time. She also forgot part of the lesson taught previously. So, a lot of drilling was done to help her remember letter sounds. However, she did well in matching rhyming words. As the letters progressed to 3 letter blends, Jasmine began to enjoy the lessons more because she understood the words that she was being taught.

The Progressive Phonics series contain short stories which are written for both the teacher and student to read together. The teacher is to read words in small black print while the student is to read words which are in big red print. The research participant was expected to read only the vocabulary which had been introduced earlier, before beginning to read the stories. The words were repeated many times and in a progressive manner. Examples of comprehension passages are shown in Table 4.13 below.

Table 4.13: Examples of comprehension passages

Book	Passage
Progressive Phonics Elementary Book 3 (page 39)	Henry's Wig Henry Fig wore a big, red wig. When I say big, I mean big, big, BIG. He wore it in the swimming pool; he wore it every day to school.
Progressive Phonics Elementary Book 4 (Page 29)	My Dog My dog had a dot on top of his nose, but the dot disappeared when he had to blow his nose.

Progressive Phonics Intermediate Book 2 (page 36)	Little Fishy I can swim. I can swim a lot. I can swim in a bath or swim in a pot. I am a little fishy, and it is my only wishy, to swim, swim, swim in the pot that I am in.
Progressive Phonics Intermediate Book 3 (page 36)	A Little Rat A little rat saw a little trap. And the little rat gave the trap a little tap. The trap went snap, and the rat stole the cheese – I guess a little rat never has to say, "Please."
Progressive Phonics Intermediate Book 4 (page 7)	My Chin I cut my chin, and it bled a lot, so I had to go see Doctor Dot. Doctor Dot put stitches in my chin. Now I look like the blanket that I sleep in.

As for comprehension, Jasmine was able to answer literal comprehension questions which began with 'who', 'what', and 'where', but as shown in the results of the comprehension assessment, there were times she was not able to answer some of those literal questions. In addition, she was neither able to answer inferential questions nor retell the stories.

Table 4.14 below shows examples of comprehension questions asked to assess Jasmine during the reading comprehension assessment.

Table 4.14: Examples of comprehension questions

Book	Comprehension questions
Progressive Phonics Elementary Book 3 (page 39)	1. What did Henry wear? 2. What colour was the wig? 3. Was the wig big or small?
Progressive Phonics Elementary Book 4 (Page 29)	1. What did the dog have? 2. Where was the dot? 3. When did the dot disappear?
Progressive Phonics Intermediate Book 2 (page 36)	1. What can the fish do? 2. Where does it swim? 3. Does the fish swim a lot?
Progressive Phonics Intermediate Book 3 (page 36)	1. What did the rat see? 2. What did the rat do to the trap? 3. What did the rat steal?
Progressive Phonics Intermediate Book 4 (page 7)	1. What did the boy cut? 2. What happened when he got cut? 3. What is the name of the doctor?

Jasmine answered well in spelling tests. However, words that she found difficult to understand, she had difficulty in spelling them. Some words that she could not understand were words such as yet, blab, blob, plop etc. Jasmine had the most difficulty blending the sounds together into a word. This was observed during Regular Word Fluency (RWF). During the DIBELS Oral Reading Fluency (ORF) assessment, her reading rate (words read correctly per minute) was 17 words per minute. In contrast, during the Regular Word Fluency (RWF) assessment, she was only able to recode a

total of 5 words per minute. This great difference in number of words read in one minute might have been caused by the difficulty in decoding non-rhyming words.

4.4　CONCLUSION

The following research questions were addressed in this study:

> 1. What is the reading ability of the research participant based on the five reading strategies?
>
> 2. What difficulties does the participant with cognitive and memory impairments face in learning basic reading skills?

The independent variable was the five essential reading strategies. The dependent variable was the reading levels of the research participant.

At the end of the study, the test results showed that the research participant, who was an illiterate, was able to identify and produce most letter sounds, consonant blends and blends which have three and four phonemes. She was also able to discriminate between rhyming words. She was able to produce up to 38 letter sounds per minute and read up to 17 words per minute. She showed the ability to decode by saying aloud the letter sounds and blending them and spell simple VC, CVC and CVCC words. Moreover, she was able to answer at least 2 out of 3, basic 'who', 'what', 'where' questions from stories that were read together by the researcher and the participant.

For Initial Sound Fluency (ISF) and Regular Word Fluency (RWF) assessments Jasmine's result showed 'Emerging' score. As for Oral Reading Fluency (ORF) assessment, Jasmine's result showed 'Some Risk' score. Reaching 'Emerging' and 'Some Risk' scores for a DIBELS measure indicates a high probability (approximately 80% or higher) of reaching the next score for that measure if the student has appropriate reading instruction.

The outcome of the personalized instruction using five reading strategies in teaching basic reading skills to an adult with cognitive and memory impairments showed positive results. During the phase of one-to-one intervention, Jasmine showed enthusiasm in learning to read and worked hard on it. The personalized instruction using five reading strategies helped her improve in her reading abilities.

She learned in her own pace but she was eager to learn and never complained of boredom. She enjoyed learning by answering worksheets and learning from interactive CDROMs. She responded well to the intervention given and tried hard answering questions during the assessments, especially during the spelling tests. She was trying as much as possible to get all the words correct during the spelling tests.

As for the second research question, Jasmine mainly faced memory and pronunciation difficulties. In a nutshell, the findings of this single subject case study proves that utilizing a combination of five reading strategies is significantly beneficial in teaching individuals with cognitive and memory impairments how to read.

CHAPTER 5

SUMMARY AND CONCLUSION

5.1   SUMMARY

Learning to read is a complex phenomenon and it is an even harder accomplishment for individuals with cognitive and memory impairments. The problem for students with cognitive and memory impairments is that they experience failure in learning to read, in school. Some schools and teachers force every learner into a one-size-fits-all reading program, without regard to ability or need (Cooter & Cooter, 2004). This problem is a major concern to special education teachers because they must find effective ways to instruct this group of students. This is vital because reading is a critical skill in every aspect of our society. Without print knowledge, surviving in this linguistically based world is a great challenge.

In response to this challenge, this single subject case study examined the reading ability of an adult with cognitive and memory impairments, using a combination of five reading strategies. The participant was a 21 year old young lady who was diagnosed with Treacher Collins Syndrome, since birth. A control group consisting of two adults of early literacy went through the same learning and testing process as the research participant. Their results were used to compare with the performance, weaknesses and strengths of the research participant's results.

These strategies used for teaching them are: improving word recognition, building fluency, improving reading comprehension, using special remedial methods and using computers to teach reading. The five reading strategies were adapted from the teaching strategies recommended by Janet Lerner (2003), in her book 'Learning Disabilities: Theories, Diagnosis, and Teaching Strategies' (p.427-450).

The research questions of this study are:

1. What is the reading ability of the research participant based on the five reading strategies?

2. What difficulties does the participant with cognitive and memory impairments face in learning basic reading skills?

The findings of the research indicated that the combination of 5 reading strategies was a successful strategy in teaching decoding and word reading skills. Moreover the participant, Jasmine had the potential to learn basic reading skills and she improved in her reading skills.

The research participant, Jasmine was assessed before the intervention began, to collect data on her existing knowledge from her school education. Then, data was collected from continual spelling tests during the intervention and also all the worksheets done were kept in a portfolio. After the intervention, Jasmine was assessed and all the test results are shown in Chapter 4. To help the research participant feel comfortable and protect her from possible harm, the researcher had an ongoing positive relationship with the participant and her family.

This study was conceptualized from a sense of need. There is a need for students with cognitive impairment to be able to read. It was the intent of the researcher to use evidence from this intervention to draw a composite picture, which might be useful to educators who are teaching individuals with similar disabilities. In considering all the five strategies used in this study, in helping an adult with cognitive and memory impairments, the interaction of these strategies are seen to be important in terms of educating individuals with special needs. The information gathered by this study could be useful to other educators, especially educators who teach non-readers or struggling readers. Successful interventions must offer a balanced approach to reading acquisition.

To be effective as instructors of reading, educators must have a variety of effective methods at their disposal in order to permit each child to learn and think in his or her preferred way (Lerner, 2003).

The assessment results of this study indicated that the five strategies used produced significant improvement in reading. Initial assessment showed that Jasmine only knew the letter names in the alphabet, and she was not even able to decode simple CVC words. The data collected throughout the intervention period indicated that there was significant growth in Jasmine's reading ability.

Jasmine had the most difficulty blending the sounds together into a word. This is observed during Regular Word Fluency (RWF), words recoded completely and correctly were only 5 wpm, while in sentences she read much faster, where she scored 17 wpm in Oral Reading Fluency (ORF). Jasmine may need more assistance in the blending process between saying the sounds and reading the word.

As for comprehension, Jasmine needed a lot of guidance in understanding the stories that she and the researcher were reading together. She was able to answer only very simple literal questions. With continual guidance and teaching, the researcher believes that Jasmine would be able to read sentences on her own, and her comprehension skills will improve.

Furthermore, this study adds to the extant literature regarding reading and intervention for students with cognitive impairments and learning disabilities. This research adds to the extant literature by showing the five teaching strategies suggested by Janet Lerner (2003), which were used in the intervention to teach an adult with, cognitive and memory impairments, may be an effective approach in helping this group of individuals to improve their reading skills.

Even though in recent years some researchers have been studying on ways of planning good reading interventions for cognitively impaired children and adults, there is not sufficient information on which reading interventions are effective for this group of individuals who have special needs.

Jasmine was able to improve word recognition using phonological awareness and phonics method. Previous research with persons with cognitive disabilities also indicated that word recognition can be improved by phonological awareness and phonics method (Lerner, 2003; Cunningham, 2007; Kleeck, 1994; Blachman, 1994; Cohen, Heller, & Fredrick, 2008).

Building fluency by repeated reading was used in this study. This strategy was also suggested by (Chard, Ketterlin-Geller, Baker, Doabler, & Apichatabutra, 2009). In the past researches by, Kuhn, Morris, & Morrow (2009), and Landa (2009) proved that a combination of repeated reading, teacher modelling, and unison reading helped students who were having difficulty in fluent reading, improve in their reading ability.

As for improving reading comprehension, the techniques suggested by Lerner (2003), Klinger, Vaughn, & Boardman (2007), Haager & Klingner, (2005) and Rinaldi (2001) are using reading series that gradually increase in difficulty and building meaning of vocabulary and concepts and also explicit and systematic instruction. In two of the studies reviewed earlier in Chapter 2, Francoeur (2009) and Jackson (2010) conducted studies with children identified as having a learning disability and struggle with reading reported of the effectiveness of the balanced direct instruction intervention.

5.2   LIMITATIONS

Although the findings in this study are important, there are some notable limitations. The researcher asked Jasmine's parents to provide information about Jasmine's physical impairments and school and learning history. This information was obtained informally. However, the study would have been strengthened if the researcher had conducted a structured interview with Jasmine's parents. Therefore, it is suggested that future research incorporate structured interviews as part of the study design so that researchers may have the potential to provide more detailed information of the participant.

Another limitation is pertaining to the nature of the study. This is a single subject case study, thus cannot be generalized to the population of persons with cognitive disabilities or Treacher Collins Syndrome. However, this study does provide evidence, that individuals with cognitive and memory impairments may have the ability to learn to read. Moreover, the combination of 5 reading strategies used in this study may be suitable to teach persons with cognitive impairments. In addition, the intervention was conducted in a one-on-one arrangement; therefore additional research is needed if these strategies would be effective with groups of individuals.

The developers of DIBELS have made significant efforts and have used specific readability index to choose equivalent passages at each grade. However, in this study, the researcher had to adapt and choose texts according to the reading ability of the research participant, thus researchers who wish to do a similar study may have to use a different form of assessment.

5.3   FUTURE RESEARCH

This research has only touched a small part of a vast area, and many issues have been left unexplored.   Students may need more systematic instruction on how to generalize known letter-sound correspondences and the decoding process to unknown words. Future studies are needed to examine this issue.

This study has used phonological and phonics instruction to teach Jasmine. Another variant to teaching instruction is sight word instruction for students with cognitive disabilities. So, future research should experiment using sight word instruction. Jasmine's reading was slow and laborious directly affecting her ability to comprehend what she read. In this research, the researcher and Jasmine had to do unison reading, where the researcher and Jasmine took turns reading, to complete each sentence. If she had experienced improvement in her sight word, her ability to read more fluently may have been possible. This would have also have allowed her to read independently.

There is a need for advanced research in helping individuals with cognitive impairments and also helping educators in choosing the right strategies to be used with those with special needs.

5.4   IMPLICATIONS FOR PRACTITIONERS

It took five months of intensive tutoring to obtain these results for an adult learner. Jasmine's parents were certain that throughout Jasmine's schooling she was taught reading skills in a systematic way. Maybe if Jasmine had been instructed in phonological awareness, phonics, vocabulary, fluency and comprehension skills, using research-based instruction beginning in kindergarten, maybe she would have been able

to begin reading much earlier, and her literacy outcomes might have been different. Jasmine might have acquired the ability to read independently.

The case studies presented in Chapter 2 in this present study, prove that individuals with cognitive impairment do need planned systematic direct instruction to help them learn to read. This also shows that more empirical research should be conducted in educating individuals with cognitive impairments.

5.5   CONCLUSION

This study shows that there is potential for persons with significant disabilities to learn to read. It is hoped that this study helps scholars, teachers, and other interested individuals who are keen on helping students with cognitive impairments. As Lev Vygotsky (Vygotsky & Hall, 1997) has suggested in his Social Constructivist Model, the active interpersonal experience of learning that has been carried out in this study, is also hoped to be helpful in bridging the gap between what a student is able to do alone and what he or she can do with the help of someone more knowledgeable.