**ANGLIA RUSKIN UNIVERSITY**

**FACULTY OF HEALTH, SOCIAL CARE AND EDUCATION**

# A CASE STUDY OF A READING INTERVENTION PROGRAMME FOR 'DYSLEXIC STUDENTS' IN ISRAEL

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# Table of Contents

# List of Diagrams



# List of Tables

# Abstract

There is agreement among researchers that phonological awareness deficits are one of the main causes of dyslexia. Some researchers support the view that phonological awareness can be improved by teaching reading through a top-down approach (whole word) or a bottom-up approach (grapheme-phoneme); others claim that the combination of these two complementary approaches is more successful. The goal of this research combined reading intervention programme was to enhance the six 'dyslexic students' phonological awareness and to improve their reading in English in the inclusive English as a foreign language classroom. The research studied the effects the reading intervention programme, which systematically combines the two complementary approaches for the same duration of time in each session, had on the six Israeli research 'dyslexic students'.

The present study is an inductive action research applying a case study design using qualitative research tools. Data from in-depth pre- and post-intervention interviews is triangulated with the participants' diaries, the practitioner's journal and the documentation of the pre- and post-intervention participants' assessments.

Thematic data analysis indicated an improvement in the participants' phonological awareness, reading in English and functioning in the inclusive EFL classroom as a result of the combined reading intervention programme.

The contribution to knowledge points to the fact that while a four-month cognitive intervention programme with 'dyslexic students' in Israel, studying English as a foreign language may improve students' cognitive functioning in English, it is insufficient in enabling students to allay their fears regarding the expectations of Israeli society, and their ability to succeed in life. Propositions suggest conducting a further action research study which examines the implementation of an additional emotional intervention to the cognitive one. The development of the emotional intervention will enable evaluation of the effects of a combined programme on 'dyslexic students' in Israel.

# 1 Introduction

The Israeli educational system consists of twelve years of schooling. Elementary school includes; grades one to six, junior high school includes; grades seven to nine and high school includes; grades ten to twelve. The Israeli student begins schooling at the age of approximately seven and finishes high school at the age of eighteen. Instruction in English as a foreign language in Israel is introduced to eight-year old students in their third year of primary school.

In 2001 the Ministry of Education in Israel set new national standards in English as a foreign language education. The rationale for the new curriculum was that on the verge of the 21st century English has become the main language in the world (Abbot, 1999), and has based its status in Israel as the first official foreign language (Ministry of education in Israel, 1996). Israelis use the English language for global communication, international trade, tourism, internet, E-learning and research in higher education. As a language, English is considered as the most valuable possession for an Israeli (State of Israel Ministry of Education, 2001). The Israeli student cannot be accepted into any of the universities in Israel without being granted a matriculation certificate. In order to be granted such a certificate it is a must to pass the matriculation examination in English as a foreign language (FL). However, most of the faculties in the Israeli universities demand a matriculation certificate where the level of English is at least four points. Moreover, to be accepted into medicine and law school in all of the Israeli universities students have to be granted a matriculation certificate where the level of English is of five points. The matriculation examination in English as an FL in Israel is built of five modular points. For example; to be granted the four points matriculation examination in English an Israeli student has to pass modules C, D and E

which contain three unseen texts assignments, one writing assignment and one listening assignment. Another example; to be granted the five points' matriculation examination in English an Israeli student has to pass modules E, F and G which contain three unseen texts assignments, two writing assignments and one listening assignment (For an example of the level of the English language required for each module see Appendix 1). At the end of the eleventh grade of high school the Israeli student has to pass module D if they are taking the four points English matriculation examination or module F if they are taking the five points English matriculation examination. By the end of the twelfth grade of high school the Israeli student has to pass module E if they are taking the four points English matriculation examination or module G if they are taking the five points English matriculation examination. The following table illustrates the structure of the English matriculation examinations in Israel.

**Table 1:1 Structure of the modular English matriculation examination in Israel**

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | FIVE POINTS | |
| | | | FOUR POINTS | | | |
| | THREE POINTS | | | | | |
| ONE POINT | | | | | | |
| A<br>33.3%<br>2 reading passages<br>(70 points)<br>1 listening report<br>(30 points) | B<br>33.3%<br>1 reading passage<br>(70 points)<br>1 writing essay<br>(30 points) | C<br>33.3%<br>1 reading passage<br>(100 points) | D<br>33.3%<br>1 reading passage<br>(70 points)<br>1 writing essay<br>(30 points) | E<br>33.3%<br>1 reading passage<br>(70 points)<br>1 listening report<br>(30 points) | F<br>33.3%<br>1 reading passage<br>(30 points)<br>1 writing essay<br>(20 points) | G<br>33.3%<br>1 reading passage<br>(30 points)<br>1 writing essay<br>(20 points) |
| 1.25 hours | 1.25 hours | 1.25hours | 1.25hours | 1.25 hours | 1.25 hours | 1.25 hours |

As demonstrated in the table above the matriculation examination in English which is necessary for acceptance to any university consists of approximately 70% of reading comprehension, and as mentioned above, without English an Israeli student cannot go on to higher education. As already mentioned above, instruction in English as a foreign language in Israel is introduced to eight-year old students in their third year of primary school, which is just two years after they have begun learning to read in their mother tongue – Hebrew. Most 'non-dyslexic students' learn to decode in English as a foreign language at this point of their academic lives. However, some 'dyslexic students', who may still not have reached fluency and accuracy in reading in Hebrew, their first language (L1), find it extremely difficult to learn to read in a foreign language in general, and in English specifically. Ganschow and Sparks (1991) suggest that:

> poor 'auditory ability' or 'phonetic coding' has the potential to cause foreign language learning problems, just as deficits in phonological coding – the ability to take apart and put together the sounds and their representative letters in words – can cause problems in learning to read and write one's native language (1991, p 385).

Quite often these 'dyslexic students' continue to be less competent in reading English as an FL than their peers, unless they receive additional reading lessons, as I have witnessed from my experience in teaching English as a foreign language. This discrepancy increases in the course of their academic years which jeopardises their chances for a higher education. A large percentage of 'dyslexic students' in Israel do not grasp well reading in English as a foreign language, even if they eventually master reading in Hebrew, their first language (The Director's Annual Circular of the Ministry of Education in Israel, 2005).

Being aware of the fundamental role of phonological awareness in reading and searching for a solution as to how phonological awareness is best enhanced and how reading skills are best achieved, I came to the understanding of the two major complementary theories of learning to read. Researchers and theorists state that children learn to read either through a top-down process or through a bottom-up process. With regard to reading comprehension, the top-down approach refers to the extraction of meaning from a text using schematic background knowledge as a basis for guessing the meaning of unknown words (Goodman 1967, Smith 1994), while the bottom-up approach is based upon word recognition and decoding skills (Eskey 1988, Hover and Tunmer 1993). For further clarification see table 2:1 in chapter 2 of my thesis. When referring to the acquisition of basic reading skills, the top-down approach suggests that individuals learn to read more effectively using a whole-word method (Carnine 1977, Ehri 1992), while the bottom-up approach suggests that using a phoneme-grapheme method is more successful (Tunmer and

Nesdale 1985, Goswami and Bryant 1990). For further clarification see table 2:2 in chapter 2 of my thesis. These two approaches apply in acquisition of reading skills in a foreign language as well (Ganschow and Sparks 1991).

Researchers and theorists of teaching to read agree that phonological awareness (the grapheme/phoneme correspondence) skills are a crucial foundation for learning to read in L1 and in a foreign language (FL). Backman *et al* (1984) support the view that phonological deficits are a major cause of reading disabilities. However, researchers and theorists do not agree on the method of how phonological awareness is best achieved.

Some reading theorists support the view that phonological awareness can be improved by teaching reading through a bottom-up approach, where the student is taught how to make connections between symbols and sounds, and then encouraged to blend these into a word (Frith, 1985; Goswami, 1991; Robertson, 2000). Other scholars claim that phonological awareness can better be improved through a top-down approach, where the student is introduced to a word, learns to recognise it by sight and slowly picks up the rules of decoding grapheme/phoneme correspondences on their own (Manis and Morrison 1985, Tunmer and Rhol 1991).

Reading in English as a foreign language has been taught since 1988 in Israel, using Whole Language, a top-down approach prescribed by the Israeli Ministry of Education for use in mainstream education. However, students who experienced difficulties and were provided with additional instruction were generally taught in these programmes through the use of a bottom-up approach to the teaching of reading in English.

My experience gained from 32 years of professional practice in formal education and private practice in the field of teaching English as a foreign

language (TEFL) to 'dyslexic students', together with the ample literature in the domains of both cognitive theories of dyslexia and cognitive theories of reading, has allowed me to arrive at the awareness that a systematically combined reading intervention programme in EFL developed from a method combining the two complementary approaches to reading, is more effective in enhancing phonological awareness and improving reading in the EFL inclusive classroom of my Hebrew-speaking 'dyslexic students' in Israel, than either individual approach used on its own.

I do not question the effectiveness of the two complementary approaches, as their effectiveness has been researched and documented by many scholars for more than three decades. However, in the course of my years as a practitioner and a researcher, I have witnessed the fact that my private 'dyslexic students', who have been exposed to both a top-down and a bottom-up approach to reading, although the two approaches were used in different contexts and at different times, were still unable to reach fluency and accuracy in their reading in English. On the other hand, when these students were taught by me with the aid of a combined reading intervention programme, I could estimate an enhancement in their phonological awareness and improvement in reading English as a foreign language. Yet, as a practitioner I wished to study what effects a systematically combined reading intervention programme in EFL had on 'dyslexic students' in Israel studying in an inclusive classroom, so as to bridge a gap in knowledge. This wish emerged from a feeling that despite my effort, each of my individual students might not have progressed as far as I expected. Thus, the most suitable research design to study this question seemed to be action research, which enabled me to reflect on my practice so as to improve it.

The reading intervention programme for 'dyslexic students' in Israel, which I constructed, combines the top-down approach to reading and the bottom-up approach to reading. The combined reading intervention programme was implemented in forty-minute sessions, twice a week, for eighteen weeks. Each session consisted of activities implementing a top-down approach (whole word) and additional activities implementing a bottom-up approach (grapheme/phoneme correspondence), for equal durations of time.

This study is an action research within an inductive paradigm. The research studies the effects of the intervention through thematic data analysis using a case study design, with six 'dyslexic students' as participants. Data from in-depth pre- and post-intervention interviews is triangulated with the participants' diaries, the practitioner's journal and the documentation of the pre- and post-intervention participants' assessments.

The goal of the research intervention is to enhance the six research dyslexic participants' phonological awareness and to improve their reading in English in the inclusive EFL classroom in Israel. However, the research question attempts to study the effects of the combined reading intervention programme in EFL, on these 'dyslexic students'. The reading intervention is based on the combination of the top-down and bottom-up approaches to reading. The intervention is unique as it systematically combines the two complementary approaches to reading in each session for the same duration of time.

This study is an inductive action research using a case study of a combined reading intervention programme in English as a foreign language (EFL) for 'dyslexic students', who are native speakers of Hebrew in Israel. It examines through qualitative thematic data analysis, the

effects of the reading intervention programme, informed by a combined theoretical approach, on the six participants studying English in the inclusive EFL classroom in Israel.

**A note about labeling in the thesis:**

In my thesis I use the terms 'dyslexia' and 'dyslexic students' as they apply directly to a difficulty in learning to read which is the aspect being studied in my research. In addition, 'dyslexic students' is the term used in Israel, by the Ministry of Education and other theorists and researchers, for students who were assessed and diagnosed as having a specific reading disability (The Director's Annual Circular of the Ministry of Education in Israel, 2002, 2003 and 2005, Kol-Tuv, 1999, Margalit, 2000, Mishna and Muskat, 2004, Schnitzer, Andries and Lebeer, 2007, Shechtman, 2010 and Avissar, 2012) as in the case of the present research participants. Moreover, dyslexia and 'dyslexic students' are the terms used by the research participants themselves in their interviews and diaries. Many students with dyslexia, who already feel that they are labeled as stupid and lazy, prefer the dyslexia label as it counters this assumption. Arguably, the label stops students blaming themselves, increases understanding and can help them to view themselves more positively (Lauchlan and Boyle, 2007).

The use of labels within education seems to be a complex and a contentious issue as debated by Goffman (1968), Pumfrey and Reason (1991), Lauchlan and Boyle (2007) and Slocombe (2012). They argue that labels can be helpful for supporting professional communication through shared language and concepts, but warn against labels leading to generalisations on the one hand, and to the omission of intervention programmes geared towards the specific needs of the individual, on the other hand.

Using a label such as dyslexia can have useful supportive implications at point of diagnosis for teachers, parents, and even the student. But it must be remembered that this is one element of the process of assessing, identifying and putting in place support. The label can also have a stigmatising impact upon the person labeled, therefore, ultimately contributing to the experience of a 'dyslexic student' of 'spoiled identity' and sense of self (Goffman 1968). This is compounded by the fact that as Becker (1991) in 'Outsiders' suggests that labeling enables others to perceive those who do not conform to particular social norms (reading to the expected level in the case of my thesis) and simply they take on the label and perceive themselves as other, broken or at best different.

To recognise the contentious nature of the term 'dyslexic students' I am putting it into inverted commas throughout my thesis, adopting the UK convention, as recommended by the *Oxford English Dictionary* (2013).

The next chapter discusses the theoretical perspectives which underpin my research.

# 2 Theoretical Perspectives

## 2.1 Preface

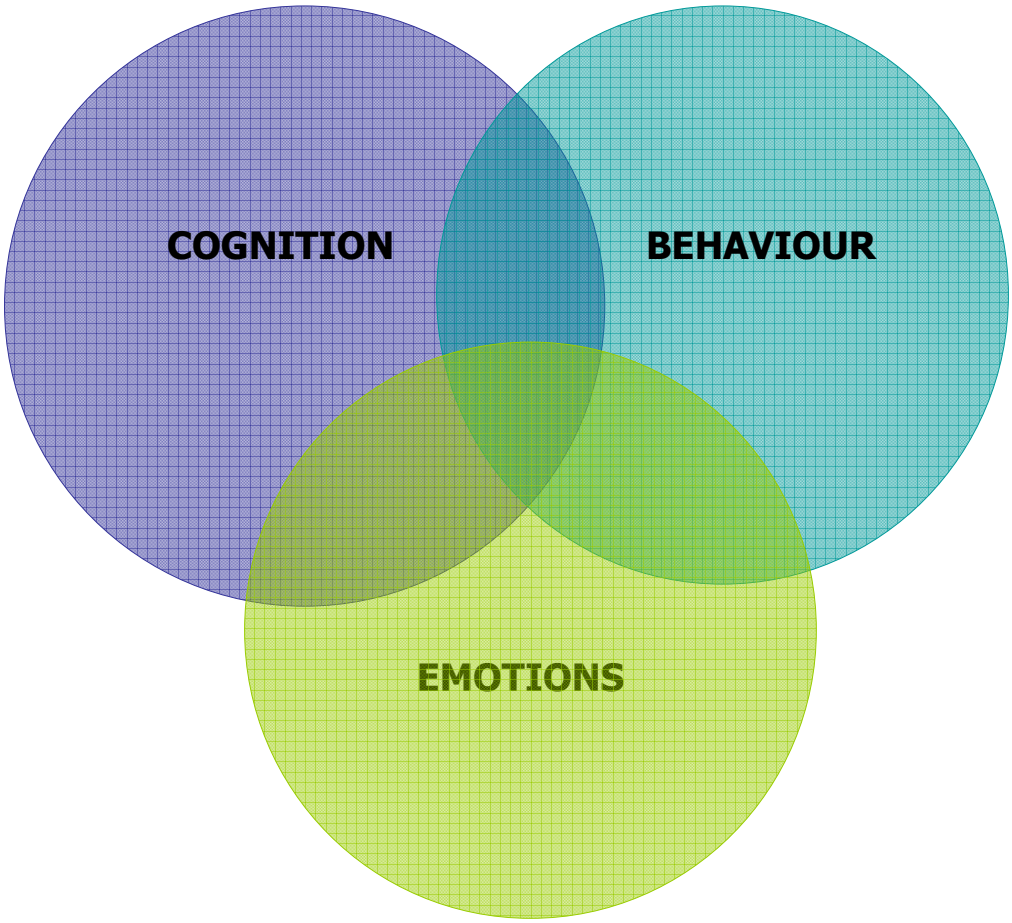
This chapter presents the conceptual framework and the relevant literature that supports and underpins this research.

The conceptual framework of the research emerges from its inductive paradigm and a perspective based upon the research question which claims to study what effects the cognitive combined English as a foreign language (EFL) reading intervention programme has on six Hebrew speaking dyslexic research participants, who study in an EFL inclusive classroom in Israel. Therefore, **cognitive**, **behavioural** and **emotional** theories were examined as illustrated in Diagram 2:1. The research intervention is based on my professional experience witnessing that enhancement of phonological awareness of dyslexic Hebrew speakers who learn English as a foreign language (EFL) in Israel is more effectively achieved by the systematic combination of the top-down and the bottom-up approaches to reading than by either approach on its own, consequently improving reading in English as well. Included is relevant literature on these two complementary approaches, and their influence on acquiring reading skills in the first language (L1) and in FL in general, not just among 'dyslexic students'.

In order to anchor the intervention reading programme that I developed not only in personal in-depth professional practice, but also in a broad theoretical base, this research draws upon previous researchers' theories and work in the field of dyslexia (reading disabilities) in L1 and in FL, while focusing on reading disabilities in English as an FL in Israel. Also included is relevant literature on the EFL curriculum in Israel. This chapter contains the rationale of the synergy of the two complementary approaches to reading, the top-down and the bottom-up, that is, the combined approach

of the research intervention and the rationale of combining an emotional intervention with the research cognitive intervention. It concludes with a background and discussion on inclusion of students with special needs in the mainstream education system, as inclusion is imposed by law in the schools of the six 'dyslexic students' participating in my study.

**Diagram 2:1 Conceptual Framework Model**




## 2.2 Cognitivism

Cognitivism in Ormrod's (1999) view is the field which explains how learning occurs due to a change in mental state, as opposed to behaviourism which claims that learning can be described in terms of a

change in behaviour. Ormrod's view is in accordance with Ellis' (1990) claim that cognitive theory emphasises the role that internal mental processing, rather than external behaviour, plays in learning. In Ellis' (1990) view, cognitive theory seeks to explain three main aspects of learning: how knowledge is established, how knowledge becomes automatic and how new knowledge is integrated into the learner's existing cognitive system.

Cognitivism suggests that an instructor can produce learning by transferring information to the learner and helping them to organise it in such a way that they are able to recall it later, as is done in my research through the reading intervention programme introduced by an instructor. Cognitivists, according to Ormrod (1999), believe in reinforcement, whereby the learner is reinforced through a process of retrieving existing knowledge and presentation of new information. Throughout the learning process, the instruction is motivated through a kind of mental stimulation rather than through behavioural modification. Thus instruction empowers the learner's internal mental processes.

This research is based on cognitivism as it studies the possibility of causing a change in the phonological awareness and reading of English of six 'dyslexic students' in the inclusive EFL classroom through the scaffolding provided by an intervention programme. The combined reading intervention programme is based on the combination of the two complementary approaches to reading, the top-down and bottom-up, for the same duration of time in each session.

### 2.2.1 Cognitive Psychology

In contrast to behaviourists who chose not to incorporate mental events into their learning theories, arguing that such events were impossible to observe and measure and so could not be studied objectively, many

learning psychologists, during the 1950s and 1960s, realised that mental events or cognition could no longer be ignored.

Slavin (2003) states that Jean Piaget (1896-1980) and Lev Vygotsky (1896-1934) were both significant contributors to the cognitive development area of psychology. Slavin (2003) claims that the way in which children learn and mentally grow play a central role in their learning processes and abilities. Slavin (2003, p 30) says that 'by understanding the progression of cognitive development teachers enable themselves to better cater to the unique needs of each child', as it is also suggested by the educational inclusion theory discussed further in this chapter.

Slavin (2003) claims that both Piaget and Vygotsky were regarded as constructivists. Constructivism is an approach to teaching and learning, and one of its central tenets is the premise that cognition is the result of 'mental construction'. From a constructivist viewpoint, students learn by fitting new information together with what they already know. However, the key ideas of Piaget's (1970) and Vygotsky's (1978) theories differ in relation to constructivism. Piaget believed that intelligence comes from action and that learning occurs after development. Vygotsky, on the other hand, believed that learning must take place before development can occur. Vygotsky, as opposed to Piaget, believed that children value input from their surroundings and from others. During my years of practice teaching English as a foreign language, I have witnessed both Piaget's and Vygotsky's key ideas in regard to constructivism. However, I tend to agree with Vygotsky (1978) as I believe that my role as a teacher is that of someone from whose input students benefit because it assists them in their learning process.

Piaget's (1970) theory of cognitive development consists of four stages. The first is referred to as the sensorimotor stage. This stage occurs

between birth and two years of age. During the sensorimotor stage children initially rely solely on the reflexes that they were born with. Intelligence manifests itself through motor activities and the knowledge acquired during this stage is through physical activity. However, some language skills begin to emerge, in addition to the concept of object permanence.

The second stage of Piaget's theory is called the preoperational stage. This takes place between the ages of two and seven. Throughout this stage children are egocentric; for example, they believe that everyone thinks exactly as they do. Children begin to use symbolism in relation to their world. Their use of oral language, memory, and imagination is developed during this stage.

During Piaget's third stage of cognitive development, which takes place between the ages of seven and eleven, children experience a dramatic change in the way they think as thinking becomes less egocentric and more logical. Huitt and Hummel (2003) in agreement with Piaget, state that reversibility, or the ability to perform a mental operation and then reverse one's thinking to return to the starting point, manifests itself significantly during the third stage. Piaget (1970) refers to this stage as the concrete operational stage.

The final step in the cognitive development theory of Piaget (1970), which takes place between the ages of eleven and sixteen, is identified as the formal operational stage. At this stage, children develop the ability to master abstract thinking and relate symbols to concepts. Brown (2007) believes that Piaget's formal operational stage is a critical stage in the consideration of the effects of age on foreign language acquisition. It is during this stage that a person becomes capable of abstraction and of formal thinking which transcends concrete experience and direct

perception. 'Cognitively, then, an argument can be made for a critical period of foreign language acquisition by connecting language acquisition and the concrete/formal stage transition' (Brown 2007, p 66). The six dyslexic research participants are within Piaget's final stage of cognitive development, as all of them are fourteen to seventeen years old.

Slavin (2003) says that while Piaget's theory has four clear stages, Vygotsky's theory assumes that there are no set stages at all, but rather, components. The first component of Vygotsky's (1978) theory is referred to as private speech, or basically talking to oneself. Vygotsky found private speech to be important because it aided children in thinking through an issue and coming to a solution or conclusion. Private speech eventually is internalised, but it never completely disappears.

Vygotsky's (1978) idea of a zone of proximal development is the second component of his cognitive theory. A zone of proximal development is the level of development immediately above a person's present level. The zone of proximal development contains actions that children may not be able to do alone at the time, but are on the verge of achieving. Vygotsky felt it was important to work within the zone of proximal development to achieve maximum learning.

Scaffolding is the final component of Vygotsky's (1978) cognitive development theory. Vygotsky (1978) explains that scaffolding involves instruction, encouragement and assistance to aid a child in mastering a new concept. By using instruction and assistance from teachers, parents, and peers who have already grasped the desired concept, children are able to form their own path toward a solution and eventually solve problems without the help of others.

Bruner (1996), also considered a cognitive constructivist, developed a theory of cognitive growth. His approach was influenced by Lev Vygotsky

and is quite in contrast to Jean Piaget's approach. Bruner's theory looked to environmental and empirical factors. Bruner (1996) suggests that intellectual ability develops in stages through step-by-step changes according to the processes of the mind. He claims that learning is an active process in which learners construct new ideas or concepts based upon their past knowledge. This process is encouraged by instruction where the task of the instructor is to translate information to be learned into a format appropriate to the learner's current state of understanding. In agreement with Bruner (1996) my research combined reading intervention programme was constructed based on the notion that curriculum should be organised in a spiral manner, using repetition and reinforcement, so that students continually build upon what they have already learned.

My research combined reading intervention programme is the scaffolding or the final component of Vygotsky's (1978) cognitive development theory as described by Slavin (2003) as well. My research intervention is meant to provide instruction and assistance to aid the six 'dyslexic students' in enhancing their phonological awareness and mastering reading English as a foreign language, in order to succeed in the EFL inclusive classroom. Cognitive development plays a key role in building this research intervention programme where Vygotsky (1978), Piaget (1970) and Bruner (1996) offer insight into the possible ways in which children learn. Taking advantage of my years of experience in teaching English a foreign language and these scholars' theories, it was possible to create a more conducive learning environment for the six 'dyslexic students' who participated in this research.

The present intervention programme is based on constructivism in that the cognition necessary for improvement of phonemic awareness and reading in English is developed through 'mental construction'. 'Mental

construction' is achieved in each of the thirty-six sessions of the intervention programme as the students build the cognitive structures through which to integrate new information with information from previous sessions, thus implementing the principles of a spiral curriculum. While my research is based on Piaget's, Vygotsky's and Bruner's theories, it is identified more with Vygotsky's and Bruner's cognitive development theories than with Piaget's theory, as both Vygotsky and Bruner believed in instruction and assistance given by others, while Piaget did not. The intervention programme provides the instruction and assistance which Vygotsky's and Bruner's theories seem to support.

### 2.2.2 Cognitive Processes in Foreign Language Acquisition

Cognitive learning strategies involve the identification, retention and retrieval of language elements (Richards and Renandya 2002). Ellis (1990) says that cognitive language related codes and structures are stored and retrieved from memory much like other information. Foreign language acquisition follows the same principles of learning as do other complex cognitive skills. Richards and Renandya (2002) explain that cognitive strategies help students acquire a foreign language, including both analytic and global strategies. Brown (2007), in agreement with Richards and Renandya (2002), claims that another set of constructs for conceptualising the varied processes of foreign language learning is found in models that make distinctions between explicit and implicit linguistic cognitive knowledge. Included in the explicit category are the facts that a person knows about language and the ability to articulate those facts in some way. Implicit knowledge is information that is automatically and spontaneously used in language tasks. Children implicitly learn phonological, syntactic, semantic, and pragmatic rules for language, but do not have access to an explanation, explicitly, of those rules. Brown

(2007) goes on to say that implicit processes enable a learner to use language but not necessarily to cite rules governing their usage. Ellis (2005) claims that there is a need for classroom instruction using implicit and explicit continua, where explicit attention to language form is blended with implicit communicative tasks. The present intervention reading programme implemented cognitive learning strategies involved in foreign language acquisition such as identification, retention and retrieval of language elements, as suggested by Richards and Renandya (2002) and both explicit and implicit linguistic cognitive knowledge, as suggested by Ellis (2005)

### 2.2.3 Reading as a Cognitive Process

Gredler (1997) explains that cognitive theories of learning focus on the mind and attempt to comprehend how information is received, assimilated, stored, and recalled. By understanding the procedure of these processes, teaching methods can be developed to foster the preferred learning outcome. In my research, the intervention programme is based on the understanding of how learning to read is processed in the human mind, an area further discussed hereafter.

## 2.3 Reading

The term *reading* is used in various ways in the literature, and as a result misunderstandings may arise. Therefore in this chapter I will discuss the term from several aspects. The discussion begins with reading comprehension in the first language (L1) and then in a foreign language (FL). Following that, the reading process in the human brain is described. Finally, the process of acquiring basic reading skills in the first language (L1) is examined from a neuropsychological aspect.

Effective reading comprehension in the first language or in a foreign language is based on effective acquisition of basic reading skills. The former depends on the latter, where the former – reading comprehension – is the ultimate goal of reading (Eskey 1988) and as already mentioned in the introduction to this study, approximately 70% of the matriculation examination in English as a foreign language in Israel is based on reading comprehension. This section of my thesis, therefore, begins with a discussion of reading comprehension, even though my research deals with phonological awareness and the acquisition of basic reading skills.

### 2.3.1 Reading Comprehension in First Language

Goodman (1967) views reading as 'a psycholinguistic guessing game' (Goodman, 1967, p 16), which involves interaction between thought and language. Efficient reading results from skill in selecting the fewest, most productive cues necessary to produce guesses which are right the first time. He states that the ability to anticipate written material which has not yet been seen is vital in reading. He notes that reading is

> …a selective process. It involves partial use of available minimal language cues selected from perceptual input on the basis of the reader's expectation. As this partial information is processed, tentative decisions are made to be confirmed, rejected, or refined as reading progresses (1967, p 16).

Wallace (1992) agrees with Goodman (1967) and says that 'the most important resource that any potential reader possesses, whether reading in a first or any other language, is an awareness of the way in which we use language' (1992, p 3). Wallace (1992) believes that reading, like all language, makes sense only in context: 'Reading as interpreting means reacting to a written text as a piece of communication' which the reader has to understand (1992, p 4). To achieve this, reading should be viewed as a process rather than as a product; 'meaning is created in the course of

reading as the reader draws both on existing linguistic and schematic knowledge and the input provided by the printed or written text' (1992, p 39).

Goodman (1967) believes that the reader makes use of three cue systems in the psycholinguistic guessing game. The cue systems are represented by three levels of language within the text which Goodman (1967) terms graphophonic, syntactic and semantic. First, readers make use of their knowledge of the graphophonic features of the language. Second, they draw on knowledge of syntactic constraints such as possible kinds of word order in the language and, third, they are aware of semantic constraints related to knowledge of the meaning of words and what kinds of words collocate with others.

Wallace (1992) emphasises Goodman's (1967) view that 'semantic or propositional knowledge is mediated by schematic knowledge. Syntactic and semantic cues are usually so powerful that effective readers only need to resort to the graphophonic level to refine and check their predictions' (1992, p 40).

Smith (1994) also agrees with Goodman (1967) and views reading as psycholinguistic prediction. He states that:

> …nonvisual information, long-term memory and prior knowledge are alternative terms for describing cognitive structure, each individual's theory of the world. The theory includes schemes, or generalises representations of familiar settings and situations, essential in all understanding and remembering. The theory of the world is the source of comprehension (1994, p 23).

This is vital for reading, because the basis of comprehension is prediction, which is made possible by the complex conventional nature of language. Smith (1994) adds that reading is not only a visual activity, and it is

accelerated by reducing dependency on visual information, mainly through making use of meaning.

**Table 2:1 Comparison of Approaches to Reading Comprehension**

| Reading Comprehension | |
|---|---|
| **Top-down Approach** | 1. Readers bring their knowledge of the language and their knowledge of the world to bear.<br>2. Readers build up expectations.<br>3. Readers make predictions about what is to come, that is, features related to schematic knowledge of genre and topic. |
| **Bottom-up Approach** | 1. Readers demonstrate ability to recognise stylised shapes, which are the letters.<br>2. Readers correlate the letters with language.<br>3. Readers correlate the sounds of the words with the meanings which those words symbolise. |

This research supports Broughton *et al* (1978) who claim that reading is a complex skill which involves a series of lesser skills. The first is the ability to recognise stylised shapes, which are the letters. The second is the ability to correlate the letters with language. The third skill is the ability to correlate the words as sound with the meanings, which those words symbolise. This approach focuses on bottom-up processing. On the other hand, to achieve fluent reading, readers bring their knowledge of the language and of the world to bear, build up expectations and make predictions about what is to come. This last skill is similar to what Goodman (1967) and Smith (1994) claim about efficient reading. The main principle in their approach is that reading is a unitary process. Goodman's (1967) and Smith's (1994) approach focuses on top-down processing; that is, features related to schematic knowledge of genre and topic. The term top-down will be discussed again further on in this

chapter concerning the acquisition of reading skills. Table 2:1 compares the bottom-up and top-down approaches to reading comprehension.

### 2.3.2 Reading Comprehension in a Foreign Language

Some researchers, such as Eskey (1988) for example, claim that foreign language readers need to deal with more 'bottom-up' features than do first language readers. Bottom-up processing involves attention to the specific graphophonic and syntactic features of texts such as semantic and grammar rules. Eskey's (1988) view, which is based on the fact that the foreign language reader will have weaker linguistic competence than the first language reader and will therefore have less ability to draw on the range of cues, which are available to readers in a first language, was taken into consideration in the construction of the research intervention. Broughton *et al* (1978) agree that reading is complex and involves a series of skills including correlation of words with their meaning. As they note, 'the most familiar of all elements of language are *words* and it must be quite clear that part of what is involved in understanding a text is understanding the meaning of individual words in that text' (1978, p 94). Efficient readers are able to understand the patterns of relationships between words - the semantic patterns of lexical items, and the grammatical relationships which connect the lexical items.

Hoover and Tunmer (1993) distinguish between reading ability and reading performance. The 'bottom-up' conception of reading states that reading is a linear process where word recognition precedes linguistic comprehension. However, Hoover and Tunmer (1993) note that though word recognition should not be influenced by processing taking place at any higher level, 'there is evidence that word recognition can be dramatically influenced by linguistic context and this clearly falsifies any strictly bottom-up model of reading performance' (1993, p 3). This

concept influenced the Ministry of Education in Israel, in 1988, to impose the *whole language* approach to teaching English in Israel (Ministry of Education 1988). This approach is top-down in nature and replaced the bottom-up approach which was practised in Israel's centralistic educational system up until then (Ministry of Education 1988).

Gough's (1972) model, also a bottom-up model, contrasts with Goodman's (1967) model. Gough (1972) depicts the good reader as a fluent decoder who makes no use of context at all, but rather makes use of internalised letter-sound correspondence rules. Gough (1972) argues that in learning to read, the child's task is to learn to decode, that is, to convert graphic characters into phonemes, so that the printed form can be mapped to its spoken form.

> The reader converts characters into systematic phonemes; the child must learn to do so. The reader knows the rules that relate one set of abstract entities to another; the child does not. The reader is a decoder; the child must become one (Gough 1972, p 310).

The strength of the Gough (1972) model is that it shows exactly how the good reader can process print without using context. By doing so, the model shows the importance of letter-sound correspondence. Effective letter-sound correspondence is a consequence of effective phonological awareness, as pointed by Ehri (1992) and will be discussed later on in this chapter. Gough (1972) points out that guessing is probably a result of decoding failure. In his view, the use of context could be a cause for concern.

Stanovich (1980) suggested the 'interactive model', which held that regular word recognition made simultaneous use of information from top-down as well as bottom-up processes, such that when bottom-up processes failed, the reader would use top-down processes instead. In

the regular situation, however, Stanovich (1980) holds that the reading process is bottom-up and the use of top-down processes takes place only in order to compensate for a breakdown in decoding. He states:

> The compensatory assumption states that a deficit in any knowledge source results in a heavier reliance on other knowledge sources, regardless of their level in the processing hierarchy. Thus, according to the interactive-compensatory model, the poor reader who has deficient word analysis skills might possibly show a greater reliance on contextual factors. In fact, several studies have shown this to be the case (1980, p 63).

Stanovich's (1980) model helps to explain why poor readers often seem to make use of context clues in reading. It suggests that contextually appropriate errors occur when children are unable to use their decoding skills, and have to make use of context. In other words, like the Gough (1972) model, this model suggests that the crucial problem facing poor readers is an inability to decode rather than the inability to use context. It would therefore seem that both Gough (1972) and Stanovich (1980) agree that the hallmark of the good reader is the ability to decode.

Ulijn (1980) disputes Goodman's (1967) assumption that reading is a psycholinguistic guessing game, and claims that in foreign language (L2), reading may be less of a guessing game than in L1. 'It seems likely that when an L2 reader tries to predict what is coming in the text, he forgets the past cues, when he tries to concentrates on post cues, prediction is impaired' (1967, p 28). Still he suggests that there are certain similarities between L1 and L2 reading.

Eskey (1988) claims that even though the 'top-down' revolution has resulted in major improvements in both our understanding of what fluent and less fluent readers do, still top-down models have a number of limitations:

> They tend to emphasize such higher-level skills as the prediction of meaning by means of context clues or certain kinds of background knowledge at the expense of such lower-level skills as the rapid and accurate identification of lexical and grammatical forms (1988, p 93).

What Eskey (1988) means is that while the top-down model is accurate for the skilful, fluent reader, for whom perception and decoding have become automatic, for the less proficient, developing reader - like most foreign language readers - this model does not provide a true picture of the problems such readers must surmount. Eskey (1988) favours the interactive model suggested by Stanovich (1980). The interactive model does not presuppose the primacy of top-down processing skills - the gradual replacing of painful word-by-word decoding with educated guessing based on minimal visual cues - but rather posits a constant interaction between bottom-up and top-down processing in reading. According to this view, fluent readers are both good decoders and good interpreters of texts, their decoding skills becoming more automatic but no less important as their reading skill develops. Eskey (1988) does not object to prediction based on knowledge, but he believes that simple language decoding also has a major role to play in the process of reading. 'Good reading is a more language-structured affair than the guessing-game metaphor seems to imply' (1988, p 94). Eskey (1988) believes that the rapid and accurate decoding of language is important to any kind of reading and especially important to foreign language reading. Frequent use of top-down strategies at the word level suggests a simple failure to decode properly. Good readers are 'more reliant on context for fluency and poor readers more reliant on context for accuracy' (Stanovich 1980, p 51). According to Eskey,

> To properly achieve both, developing readers must therefore work at perfecting both their bottom-up recognition skills and their top-down interpretation

> strategie. Good reading - that is, fluent and accurate reading - can result only from a constant interaction between these processes (1988, p 95).

Eskey (1988) is in favour of constant interaction between the two processes of reading (top-down and bottom-up) as he believes that 'we must not lose sight of the fact that language is a major problem in foreign language reading, and that even educated guessing at meaning is no substitute for accurate decoding' (1988, p 97). This research is supported by Eskey's (1988) claim that for foreign language reading, the major virtue of the interactive model is that it directs our attention to both the top-down and bottom-up skills which fluent and accurate reading demands. Local (bottom-up) processing will allow global (top-down) reading with true comprehension. This underpins the use of a combined approach (top-down and bottom-up) for enhancing phonological awareness and improving reading skills in English-FL, rather than each approach by itself, as it is used in my research.

The next section discusses the reading process in the human brain which ties reading comprehension in the first language and in the foreign language with the acquisition of basic reading skills.

## 2.4 The Reading Process in the Human Brain

The present section deals with the reading process in the human brain, in order to provide a deeper understanding of the acquisition of basic reading skills, in L1 and FL, by 'non-dyslexic students' and 'dyslexic students', which are discussed later on in this study.

Reading is not a 'natural' human ability. Varney (2002) views reading as a cultural development rather than an evolutionary one. The alphabet was invented only six thousand years ago, and until the 20$^{th}$ century the vast majority of human beings were illiterate (Varney 2002). Thus, the

capacity to read did not evolve biologically, but developed culturally within the last two hundred years in Europe and America, and only after World War II in the rest of the world. Reading, therefore, has a massive cultural and socio historical importance to reading ability and sense of worth to people who master it. The six thousand years that have passed since reading was 'invented' are insufficient for central nervous system structures to have developed specifically for the purpose of mediating reading (Varney 2002). The anthropological concept of preadaptation, which states that the evolution of a structure for one purpose can enable that structure to perform another, must be true for reading. Varney (2002) examined the functions that preadapted the brain for reading. He claims that findings suggest that 'the ancient skills of gestural comprehension and animal tracking were the underpinnings of brain organisation that permitted reading to occur' (Varney 2002, p 1).

Reading differs from speaking or understanding. In most cases four-year old children master aural comprehension and speech just by spending time with people who already speak. However, it takes years of formal, daily education to produce a fluent reader. Aural comprehension is a natural ability, easily acquired, backed by years of central nervous system evolution, while reading is a recent addition to human culture, and is mastered only by long-term training. For this reason reading cannot have any central nervous system mediation by structures built specifically for that purpose. Varney (2002) claims that this creates a conundrum for neurologists today as they attempt to understand the way in which the process of reading takes place in the human brain. This understanding might help practitioners to construct reading interventions for dyslexic people who fail to master reading.

Fiez and Petersen (1998) reviewed nine neuroimaging studies, of 'non-dyslexic students', in order to map in general the regions of the brain that

are active during reading, in an attempt to find the relationship of phonological deficits and dyslexia. A study conducted by Shaywitz *et al* (1998) shed more light upon Fiez's and Petersen's (1998) review. Shaywitz *et al* (1998) claim that learning to read requires awareness that spoken words can be segmented into phonological constituents that alphabetic characters represent. Such phonological awareness is characteristically lacking in dyslexic readers who, therefore, have difficulty mapping the alphabetic characters onto the spoken word. To find the location and extent of the functional disruption in the neural system that underlies this impairment, Shaywitz *et al* (1998) used functional magnetic resonance imaging (fMRI) to compare brain activation patterns in 'dyslexic' and 'non-dyslexic' participants as they performed tasks that made progressively greater demands on phonological analysis.

> Brain activation patterns differed significantly between the groups with dyslexic readers showing relative under activation in posterior regions (Wernicke's area, the angular gyrus and the striate cortex) and relative over activation in an anterior region (inferior frontal gyrus) (Shaywitz *et al*, 1998, p 1).

They also claim that for dyslexic readers these brain activation patterns provide evidence of an imperfectly functioning system for segmenting words into their phonologic constituents. These findings add neurobiological support for previous cognitive and behavioural data pointing to the critical role of phonological analysis and its impairment in dyslexia.

In agreement with previous reports (Fiez and Peterson 1998; Pugh *et al* 2000), Simos *et al* (2002), tested two predictions of dual-process models of reading. The first tested the prediction that the brain structures involved in sub-lexical phonological analysis are different from those involved in whole-word phonological access during reading. The second

one tested the prediction that reading of meaningful items, by means of the addressed phonology process, is mediated by different brain structures than reading of meaningless letter strings. Their findings were consistent with the existence of two different brain mechanisms that support phonological processing in word reading. One mechanism serves assembled phonology and depends on the posterior part of the superior temporal gyrus, while the second one is responsible for pronouncing words with rare print-to-sound correspondences and does not necessarily involve this region, but instead appears to depend on the middle temporal gyrus.

The findings of Simos *et al* (2002) are meaningful to the intervention programme applied in this research as they stress the need to use both approaches to reading, the bottom-up approach (phoneme/grapheme correspondence) and the top-down approach (whole word), thus involving equally the different brain structures which are in charge of reading.

Brunswick *et al* (1999) tried to define the role of the Wernicke's region of the brain in the reading process. They claim that if this region is critically involved in lexical retrieval, it may have a special role in the lexical retrieval process during reading. This process is particularly crucial in the English language given the ambiguity of grapheme-to-phoneme mapping. A grapheme is a unit (a letter or letters) of a writing system that represents one phoneme; a single sound that has one phonemic correspondent. A model of how the ambiguity may be resolved is mentioned in Berent's and Perfetti's (1995) two-cycle process where they explain that a consonant skeleton is derived first, in bottom-up mode from grapheme to phoneme. This can be done since consonants in the English language have relatively reliable letter-to-sound mappings. Vowels, on the other hand, do not, and need to be resolved in context. Hence, top-down lexical processes are needed to derive the correct vowel sound in a

second processing cycle. Therefore, the reduced activation of lexical components of the language processing system in 'dyslexic students' may be a consequence of a general slowness in the lexical retrieval process. This implies that the mapping between sub-lexical and lexical processes is delayed and therefore relatively more effort appears to be demanded of sub-lexical processes, as indicated by the increased activation during reading aloud in a region associated with articulatory planning. This, on the one hand, is consistent with findings that dyslexia involves a core deficit in accessing phonological word forms. On the other hand, it implies that a combined method is indicated in the acquisition of reading skills by 'dyslexic students', as done in the reading intervention programme of my research.

Jessen *et al* (1999) presented a study whose conclusions supported those presented by Simos *et al* (2002). Jessen's study demonstrated that meaningless random letter strings and real words are evaluated in the classical language regions on the left side of the brain, but in separate areas within them. Jessen's (1999) study is particularly crucial for my study where the effects of the combined reading intervention are researched, as he suggests that 'these results are important not only for understanding the cerebral mechanisms of reading, but also for the planning of future word processing studies' (Jessen *et al*, 1999, p 16).

Berent's and Perfetti's (1995), Jessen *et al*'s (1999) and Simos *et al*'s (2002) studies influenced the development of the combined reading intervention programme implemented in this research which combines the top-down and bottom-up approaches to reading, which as mentioned above, involve equally the different brain areas of reading. The general effectiveness of these two approaches is not questioned in this research. Nevertheless, there still remain many dyslexic FL learners who do not acquire basic reading skills through either of these approaches on its own,

suggesting that a combined approach is more effective for these learners, as it is done in the research reading intervention.

## 2.5 Acquiring Basic Reading Skills in First Language

Sections 2.4.1 and 2.4.2 discussed the fact that reading comprehension in any language is dependent upon the reading process itself. This section deals with the aspect of basic reading skills in L1, following the previous section which explained the reading process in the human brain.

In her book *Dyslexia and Reading, A Neuropsychological Approach*, Robertson (2000) states that 'When the task demands of reading are analysed, it is clear the skills required change over time and these changes can be viewed as developmental stages in reading acquisition' (2000, p 35). Robertson refers to Frith's (1985) model as an example of a useful model of literacy. Frith's (1985) model includes three stages.

The first is the logographic stage, in which the child responds to a single letter or a series of letters within a word as a whole. At this stage the child can recognise only words within his or her known sight vocabulary. The child does not have the knowledge of letters required to access unknown words through grapheme-phoneme analysis. Over time, and with increased exposure to print, the child begins to learn that the individual letters and sounds within words have meaning and ultimately can help to decode unknown words. The importance of the logographic stage underpins my research combined reading intervention programme, as I have witnessed from my experience teaching reading in English as an FL, that students who fail to attain this first stage, find it difficult to move to the second and third stage which are discussed below.

The developing knowledge moves the child into the second stage, the alphabetic stage, where the child can sound out phonically regular words

such as p - a - d (pad) [p – e – d, for the equivalent word in Hebrew] or c - up (cup) [k – os, for the equivalent word in Hebrew] and blend them correctly.

> Increased skill is also evident in spelling ability and now phonically regular words will be spelled correctly and irregular words will be represented in a more logical (or phonic) manner (Robertson, 2000 p 36).

The final stage, the orthographic stage, is reached when the child learns the orthography of the language. In this stage, reading is fluent and skilful, and spelling generally involves correct representations of the desired words. The early reader, who is at the logographic stage, responds to the visual pattern of a word and does not pay attention to the individual letters. Over time, however, the reader needs to become familiar with the alphabetic symbols used within an alphabetic writing system. To do so, the early reader needs to pay attention to the surface features of shape, form and direction, that is, to appreciate the visual perceptual differences; e.g. in English, the differences between the letters b and d, p and q, m and w, and n and u. 'The differences of orientation are crucial to the child acquiring the correct grapheme-phoneme representations of each letter and ultimately of each word' (Robertson, 2000, p 37).

Letters require both form and orientation to be correct. The right hemisphere of the brain focuses upon the perceptual and directional features of the visual stimuli. In early reading, the child becomes familiar with simple vocabulary, identifying words as logographic symbols, a process that occurs in the right hemisphere of the brain.

In order to move to the alphabetic stage, the child needs to develop grapheme-phoneme correspondence through repeated exposure to simple words. This occurs in the left hemisphere of the brain. Children first

process each letter initially as a visual symbol, which ultimately acquires a sound. In order to build up the ability to recognise these word-specific characteristics, readers need to encounter similar symbols and words multiple times. The awareness of orientation of shape and form becomes automatic and certain whole words can be recognised by sight and can be accessed immediately. 'The skilled reader can automatically process the graphophonic elements and can concentrate on the meaning of the text' (Robertson, 2000, p 37). The visual system plays a central role in reading, as it is one of the main routes by which information is transmitted to both cerebral hemispheres for processing.

After the initial skills are acquired, reading can begin to focus on the linguistic aspects, and this requires greater involvement on the part of the left hemisphere. Support for this can be found in Paulesu *et al*'s (1996) study which found evidence from PET (Positron Emission Topography) scanning that for the majority of people the left hemisphere is specialised or dominant for language, and therefore there is a requirement for the involvement of both hemispheres within the reading process. This requirement should be taken into consideration when building any reading training programme.

Goldberg and Costa's (1981) 'novelty model' supports the idea of the involvement of both hemispheres in reading, as mentioned in the previous section. They present evidence that novel information is processed by the right hemisphere and familiar information by the left. The right hemisphere is also more suited to processing intermodal information such as grapheme-phoneme correspondence tasks, which require use of both the visual and the auditory modalities. Eventually, when alphabetic symbols become more familiar, the balance of activity transfers to the left hemisphere.

The auditory system also has an important part to play when learning to read, 'as by repeated exposure to letters and their corresponding sounds the child needs to build up an accurate and consistent picture of the sounds (phonemes) associated with the different letters (graphemes)' (Robertson, 2000: 40). The reader needs to understand that words are not just blocks of sounds but are built up of different shorter sounds. 'Accurate reading and spelling depends on the ability to identify and manipulate these sounds successfully. The ability to carry this out is called phonemic awareness' (Robertson, 2000 p 40).

Several researchers have dealt with the question of whether phonemic awareness (also called phonological awareness) is achieved by the teaching of sounds or the teaching of words. Carnine (1977) concluded that children who were taught sounds learned more grapheme-phoneme correspondence and read more transfer words than did those taught words. Carnine's conclusion confirms earlier studies (e.g. Silberman, 1964; Bishop, 1964; Jeffrey and Samuels, 1967), which compared sounds (phonic) and word (look-say) beginning reading approaches and reported higher transfer scores with the sounds approach. However, Jeffery and Samuels (1967) caution that positive transfer effects from teaching one-to-one grapheme-phoneme correspondences might not extend to irregular words and their findings were confirmed by those of Carnine (1977) on positive transfer to irregular words.

Ehri (1992), on the other hand, claims that readers can read words using one of two routes. The first is a visual route that leads directly into the lexicon, and to the word's meaning. The second is a phonological route that leads indirectly into the lexicon; readers first apply letter-sound translation rules to derive the word's pronunciation and then find a word matching this pronunciation in the lexicon. These two routes are considered to operate independently when words are read, with the visual

route being faster than the phonological one. 'According to dual route theory, words are read visually by retrieving associations between the visual form of the word and its meaning.' (Ehri, 1992: 110)

### 2.5.1 The Top-Down Approach to Acquiring Basic Reading Skills in First Language

The top-down approach to reading has been defined as learning to read using a whole-word method (Carnine, 1977; Ehri, 1992). This approach is often expanded to include aspects of reading comprehension, whereby extracting meaning from a text is accomplished through activation of background knowledge, enabling the reader to guess meaning of unknown words (Goodman, 1967; Smith, 1994).

According to Ehri (1992), sight word reading; that is reading that makes use of a top-down approach, is developed in three phases: The first phase occurs when children begin to recognise words in their environment. Because they have little knowledge about letters, however, they form connections that are arbitrary. Visual cues seen in or around a word are linked to the meaning and pronunciation of the word in memory but the link is not phonological. These connections are learned by rote. Brown (2007) claims that in cognitive theories of learning, repetition and rote (students' practice and imitation) play an essential role. These are meaningful activities when they are contextualised and purposeful for the teaching of word identification, which is connected to the top-down approach to reading.

The second phase occurs when children learn the letters' names or sounds. They use their knowledge to form systematic visual-phonological connections between letters seen in words and sounds detected in their pronunciations. In this phase the connections are as yet incomplete.

Only some of the letters seen in spellings are linked to sounds, usually initial or final letters.

In the third phase, children continue to use the alphabetic principle to read words by sight but in a more mature way. When readers acquire phonemic segmentation and phonological decoding skills, they use this knowledge to form complete visual-phonological connections in learning to read sight words. At this stage individual letters are linked to individual phonemes, and the sequence of letters is connected to the blend of phonemes. The knowledge of letter-sound correspondence is vital to form a complete network of visual-phonological connections.

This process is seen as a top-down process of reading as it moves from the whole word recognition to the grapheme/phoneme association. The top-down process of reading was taken into account when constructing the combined reading intervention programme used in this research, and will be discussed again further on in this chapter when dealing with dyslexia (reading disabilities).

Ehri (1992) notes it is clear that readers read words by sight because they do so immediately without hesitation. To some theorists, sight words are the entire set of words that a reader has learned to access in memory while others restrict the term to irregularly spelled words that cannot be read accurately through phonological recoding. Still, others restrict sight words to high frequency words, because those words are practised so often, they are thought to be read as wholes instantly by accessing memory. However, Ehri points out that this view of sight word reading has several weaknesses:

> Few studies have been conducted with spellings that are totally arbitrary and that lack letter-sound relations to show that visual-semantic connections and not visual-phonological connections form the basis of sight word

> reading. Furthermore, this view does not explain why it is necessary for beginners to have phonological awareness and phonological recoding skill in order to learn to read words, yet this necessity has been demonstrated by research (Ehri 1992, p 108).

### 2.5.2 The Bottom-Up Approach to Acquiring Basic Reading Skills in First Language

A second route in dual route theory is phonological, whereby the printed words are converted into pronunciations through the application of letter-sound rules; namely recoding rules. This is reflective of the bottom-up approach to the acquisition of basic reading skills in L1.

> The pronunciations are then used to enter the lexicon and retrieve meanings. As readers improve at phonological recoding, they automatically apply letter-sound rules to many different spelling patterns. They execute this process fairly rapidly although never as rapidly as visual word reading. (Ehri 1992, p 110)

Generally, it is thought that phonological recoding is not used to read words that the reader has read several times before. Usually unfamiliar, low frequent, difficult or nonsense words are read using phonological recoding. Once words become familiar in print they are read by sight.

In agreement, Stanovich (1986) states that once readers become familiar with printed words, they stop decoding them and read them by sight. Ehri (1992) provides an alternative explanation of sight word reading that does not eliminate phonological processes but only omits phonological recoding. Ehri (1992) claims that when letter-sounds are used initially to decode words they will be retained and will participate in the reading-by-memory operation.

> Setting up a visual-phonological route into memory involves forming specific connections between visual cues seen in the word and its pronunciation stored in memory.

> The visual cues consist of a sequence of letters. The connection linking the letters to the pronunciation are formed out of readers' knowledge of letter-sound correspondence and other orthographic regularities linking print to speech (1992, p 114).

When readers see an unfamiliar word, they phonologically recode the word. This triggers the processor setting up a visual-phonological route of that unfamiliar word leading from its spelling directly to its pronunciation in memory. The moment such routes are set up, readers can look at spelling and immediately retrieve their specific pronunciations without resorting to translation rules and recoding. The critical connections that enable readers to find words in the lexical memory through the visual-phonological route are connections linking spelling to pronunciations rather than to meanings. Ehri (1992) believes that the connections between spelling and meaning are easily formed in the process of building visual-phonological routes, due to the fact that readers already know the connections between pronunciations and meanings from speech, and when spellings are connected to pronunciations, the connections, perhaps automatically, extend to meaning as well. The visual-phonological route consists of many systematic connections, which makes it much more stable and well established in memory, than the visual-semantic route.

If the dual route theory is correct in stating that sight words are read by a non-phonological visual route, then one would expect readers to learn to read both type of words, those whose spelling bears no relationship to sound and those which have systematic letter-sound correspondences, with equal skill. However, studies by Brooks (1977) and Spring (1978) indicate that this is not the case.

In his study, Brooks (1977) used artificial orthography and found that words having systematic letter-sound relations were read more rapidly than arbitrarily spelled words. Spring's (1978) study confirms these

findings. Spring (1978) found that even after much practice, when letters related arbitrarily to words had presumably achieved sight-word status; phonologically spelled words were read faster than arbitrarily spelled words.

The findings of both studies indicate that systematic or arbitrary spelling of words makes a big difference in how readers learn to read the words by sight. Ehri (1992) explains these findings by noting that:

> Letters in spellings are processed as symbols for phonemes in the pronunciations of specific words in the course of forming visual- phonological connections. As a result, spellings become amalgamated to pronunciations and are retrained in memory as orthographic 'images' of the words, that is, visual letter-analysed representations. These representations also become amalgamated to meanings in memory. It is this amalgam that is accessed directly when sight words are read and recognised by means of visual-phonological connections (Ehri, 1992, p 120).

Smith (1994), as well as Ehri (1992), believes that some 'procedures permitting the visual identification of words without the prior identification of letters also permit comprehension without the prior identification of words' (p 119). He describes three approaches to word identification. The first, the whole-word approach, is based on the premise that readers do not stop to identify individual letters (or groups of letters) in the identification of a word. This view claims that knowledge of the alphabet and of the sounds of letters is irrelevant to reading.

Supporting evidence for this approach is that words may be identified when none of their component letters can be clearly discriminated as mentioned before, in the logographic stage of Frith's (1985) model; for example, identifying a name on a roadside sign when just giving it a quick glance. In this case, word recognition does not depend on letter

identification. Smith (1994) has shown that words can be identified as quickly as letters. And if entire words can be identified as quickly as letters, 'how can their identification involve spelling them out letter by letter?' (Smith 1994, p 120)

Smith (1994) goes on to say that what actually enables a skilled reader to identify a word is broad, acquired knowledge about the way in which letters are grouped into words. This knowledge of the way words are spelled is an alternative non-visual source of information to the visual information available to the reader. In other words, the reader knows the number of alternative ways in which a written word might be constructed. This knowledge includes the fact that when certain features occur in one part of a word, there are limits to the kinds of feature combinations in other parts of the word and to what the word as a whole might be. Thus a reader is able to make use of sequential redundancy among features, and as a result will be able to identify words with so little visual information that the identification of letters is completely bypassed. This phenomenon occurs due to the fact that the reader realises there are systematic correspondences between the letters of the alphabet and the phonemes of the phonological system (Tunmen and Bowey, 1984). To break the orthographic code, the beginning reader must figure out what phonemes go with what graphemes, which requires the ability to recognise the units of the written and spoken language. This point was mentioned before by Ehri (1992) and stressed by Bowey and Tunmer (1984) who claim that,

> On first consideration, young children's inability to segment words into phonemes seems paradoxical, given that they can discriminate different speech sounds and use phonemic differences between spoken words to signal meaning differences. The difference, however, is that using a phonemic contrast to signal a meaning difference is not the same as realising that the relevant difference is

> a phonemic difference. The perception and analysis of the speech code is done intuitively and at a subconscious level while the analysis of written language requires an explicit and conscious awareness of the relationship that exists between alphabetic shapes and phonological segments (Tunmer & Bowey 1984, 158-159).

Goswami (1990) argues that it is most unlikely that the progress that children make in reading is determined by their sensitivity to phonemes.

> On the contrary, their progress in learning to read is probably the most important cause of awareness of phonemes. Children are not particularly sensitive to the existence of phonemes in words at the time when they begin to learn to read, and if they do not learn an alphabetic script they continue to be insensitive to these phonological units for some time (Goswami 1990, p 26).

Goswami (1990) explains that awareness of sounds (or phonological awareness), which plays an important part when learning to read, is an umbrella term. She believes that since there are different ways of breaking up a word into its constituent sounds, there must be different forms of phonological awareness. The first way to break up a word is into syllables. Monosyllabic words, generally the first words learnt by beginning readers, are not relevant to this kind of awareness.

Another way involves much smaller phonological segments; that is, dividing a word into phonemes. The importance for the beginning reader of using the relationships between single letters and single phonemes, or 'grapheme-phoneme correspondences', has been widely recognised as crucial to success in learning to read.

Goswami (1990) suggests that there is a third and intermediate kind of phonological awareness. Words can be divided up into units that are larger than the single phoneme but smaller than the syllable. These units lie somewhere between a phoneme and a syllable (they are sometimes called 'intra-syllabic-units'). The terminology for the opening unit of a

word is 'the onset' and the end unit 'the rime'. 'To know that there are categories of words which end with the same sound is a form of phonological awareness' (Goswami, 1990: 3).

The importance of phonological awareness in reading success is clear and when composing the pre- and post-intervention assessment for the dyslexic participants of my research, the three kinds of phonological awareness suggested by Goswami (1990) were taken into consideration and are discussed in Chapter 3, on research design and methodology.

The question then arises whether reading leads to phonological awareness or phonological awareness affects reading. If the experience of learning to read produces phonological awareness, then readers will only become aware of the constituent sounds in words after they have begun to learn to read. But, in fact, they are expected to detect and recognise these constituent sounds quite some time before they can read. Goswami (1990) reports that young children who have not yet learned to read, find it difficult to detect and manipulate phonemes, which might indicate of a lack of awareness of phonemes. Sutherland and Gillon (2005) claim, in this context, that preschool children with speech impairment experience more difficulty judging correct and incorrect speech productions of familiar multi-syllable words and show less performance in the ability to acquire nonwords as compared to children without speech impairment. Sutherland and Gillon (2005) conclude that performance on these tasks is correlated with phonological awareness ability.

Two experiments performed by Ehri and Wilce (1980) and Tunmer and Nesdale (1985) support Goswami's (1990) view. In the two experiments, children who had already mastered reading were asked to represent each phoneme in a word by a counter (Ehri and Wilce, 1980) or to tap out the number of sounds in real words and nonsense words (Tunmer and

Nesdale, 1985). Both studies show that children use what knowledge they have of spelling sequences when they are given phoneme tasks of this sort. They count or tap out letters. Their route to phonemes is through the letters which represent them.

In other words, these studies support the belief that phonological awareness is acquired through the prior knowledge of the alphabet, and not the other way around. This approach to reading is a bottom-up one, where explicit knowledge about letters and syllables precedes reading, while an awareness of phonemes follows it. The bottom-up approach contrasts the top-down one where, as mentioned in the previous section, researchers believe that phonological awareness is acquired through teaching whole words. The bottom-up approach will be discussed again further on in this chapter in the section on dyslexia (reading disabilities). Table 2:2 compares the top-down and bottom-up approaches to learning to read.

**Table 2:2 Comparison of Approaches of Learning to Read**

| Learning to Read | |
|---|---|
| **Top-down approach** | 1. Readers begin to recognise words in their environment and form connections that are arbitrary but not phonological.<br><br>2. Readers learn the letter names or sounds. They use their knowledge to form systematic visual-phonological connections between letters seen in words and sounds detected in their pronunciations. However, connections are as yet incomplete.<br><br>3. Readers acquire phonemic segmentation and phonological decoding skills and use this knowledge to form complete visual-phonological connections in learning to read sight words.<br><br>4. Readers link individual letters to individual phonemes and the sequence of letters is connected to the blend of phonemes. |
| **Bottom-up approach** | 1. Readers are taught to make connections between symbols and sounds (grapheme-phoneme correspondences).<br><br>2. Readers are taught to blend the graphemes and phonemes into words.<br><br>3. With experience, readers learn to decode more complex grapheme-phoneme correspondences on their own. |

### 2.5.3 The Role of Phonological Awareness in Acquiring Basic Reading Skills in First Language

This section deals with the importance of phonological awareness in acquiring basic reading skills in L1. This point is stressed by Anthony and Francis (2005) who claim that phonological awareness is the phonological processing ability most strongly related to literacy. Tunmer and Rohl (1991) explain that 'phonological awareness can be defined as the ability to reflect on and manipulate the phonemic segments of speech' (1991; p 2). They argue with Goswami's (1990) view that phonological awareness is also the awareness of syllables, intrasyllabic units or phonemes by suggesting that phonological awareness is only the awareness of phonemes. They mention two conflicting views of the relationship

between phonological awareness and learning to read an alphabetic orthography.

The first claims that phonological awareness is causally related to learning to read. Not only does it facilitate the acquisition of basic reading skills, but it is also necessary for learning to read. The second, and contrasting one, is that phonological awareness is a consequence of learning to read. According to the first view, some minimal level of explicit phonological awareness is necessary for children to be able to discover the systematic correspondences between graphemes and phonemes. This knowledge will enable beginning readers to identify unfamiliar words and to gain the levels of practice required for developing speed and fluency and accuracy in reading words. However, eventually beginning readers will need to develop a more advanced form of phonological awareness in order to acquire more specific grapheme-phoneme correspondences to recognise words that do not share common rime spelling patterns with other words.

Manis's and Morrison's (1985) study shows that knowledge of grapheme-phoneme correspondence is intimately related to the acquisition of basic reading skills; thus children must acquire phonological recoding skills. Phonological recoding ability in the beginning stages of learning to read predicts later reading achievement. Successful readers in strictly whole word reading programs are the children who score higher on tests of phonological recoding ability. This suggests that phonological awareness may be both a cause and consequence of learning to read. According to this view, beginning readers must achieve some minimal level of phonemic segmentation ability in order to acquire basic reading skills that, in turn, enable them to acquire the by-product skills of reading that provide the basis for performing more difficult phonological awareness tasks. This would explain why phonological awareness tasks that draw heavily on the by-product skills of reading can only be performed by children who have

already acquired some reading skills. This point is in agreement with Tunmer's and Rohl's (1991) view of the relationship between phonological awareness and learning to read.

Morais *et al* (1987) appear to agree with the view that phonological awareness is crucial for reading but suggest that 'on the basis of the current knowledge, it may be claimed that alphabetic literacy and segmental awareness develop together, through a process of multiple reciprocal influences, at least to some level' (1987, p 539).

Warren-Leubecker and Carter (1988) demonstrated that phonemic awareness consistently predicted reading better than any subtest of a reading readiness test or scores from a vocabulary test. Juel *et al* (1986) found that phonemic awareness accounted for almost half the variance in word recognition at the end of Grade 1. Mann (1986) found that pre-school training of phonological awareness facilitates the acquisition of reading and spelling skills in school.

The fact that phonological awareness can be developed without using the letters of the alphabet does not necessarily mean that letters are unimportant. On the contrary; letters can serve as an effective system of representation of the elusive phonological structure. Hohn and Ehri (1983) found that phoneme segmentation was better learned by using letters rather than by using blank markers.

The discussion in this section confirms and reinforces the critical role that phonological awareness plays in learning to read in the first language.

The next section discusses theories which explain dyslexia. It is vital to understand what dyslexia is before discussing the difficulties faced by 'dyslexic students' when learning to read in their first, and then second, language.

## 2.6 Dyslexia

Although dyslexia has experienced unprecedented awareness in recent years, it remains a problematic classification because of the vagaries and antagonisms surrounding its definition. Habib (2000) and Anthony and Francis (2005) claim that five to ten per cent of school age children fail to learn to read in spite of average intelligence, adequate environment and educational opportunities. Habib's (2000) claim is in accordance with the data regarding 'dyslexic students' presented in the US Department of Education's report (1997), The Director's Annual Circular of the Ministry of Education in Israel (2003), the online report of the British Dyslexia Association (2004) and the Dyslexia Handbook Revised (2007).

Habib (2000) goes on to say that during the past few years, dyslexia (see definition below) has been the focus of considerable interest from researchers in different scientific areas. Public awareness that this condition, which affects up to ten per cent of the population, has a neurobiological basis, gave rise to the hope of effective therapy, which stimulated research in quite different areas such as neuropsychology and educational sciences.

Shaywitz (1998) characterises dyslexia as an unexpected difficulty in reading in children and adults who otherwise possess the intelligence, motivation and schooling considered necessary for accurate and fluent reading. Dyslexia (or specific reading disability) is the most common and most carefully studied of the learning disabilities, affecting 80 per cent of all those identified as learning disabled (Lerner, 1989).

Dyslexia is normally identified by unexpected problems in learning to read for children of average intelligence –

> a disorder in children who, despite conventional classroom experience, fail to attain the language skills of reading, writing and spelling commensurate with their intellectual abilities (World Federation of Neurology 1968, p 26).

One definition of learning disabilities (the umbrella term) is that found in the *Individuals with Disabilities Education Act* (IDEA) formulated in 1990 by the US Office of Education. The IDEA definition reads as follows:

> The term 'specific learning disability' means disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations. (IDEA 1990, p 37)

Based on this early definition, the *National Joint Committee on Learning Disabilities* (NJCLD) formulated a definition 7 years later which states:

> Learning disabilities is a general term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical abilities. These disorders are intrinsic to the individual, presumed to be due to central nervous system dysfunction, and may occur across the life span. Problems in self-regulatory behaviour, social perception, and social interactions may exist with learning disabilities but do not by themselves constitute a learning disability. Although learning disabilities may occur concomitantly with other handicapping conditions (for example, sensory impairment, mental retardation, serious emotional disturbance) or with extrinsic influences (such as cultural differences, insufficient or inappropriate instruction), they are not the result of those conditions or influences (NJCLD 1997, ps 61-66).

The Ministry of Education in Israel (2003) based its definition of learning disabilities and recommendations for assessment upon the NJCLD's (1997) definition.

Ramus *et al* (2003) claim that dyslexia is traditionally defined as a discrepancy between reading ability and intelligence in children receiving adequate reading tuition. They go on to say that 'it is now well established that dyslexia is a neurological disorder with a genetic origin, which is currently being investigated' (p 842). This neurological disorder has lifelong persistence, reading retardation being just one of its manifestations. Despite decades of intensive research, the underlying biological and cognitive causes of the reading retardation are still hotly debated. This debate has led to different theories of dyslexia which are mentioned hereafter.

The Dyslexia Handbook Revised 2007 (Procedures Concerning Dyslexia and Related Disorders) summarises the definitions of dyslexia mentioned above by stating that 'dyslexia means a disorder of constitutional origin manifested by a difficulty in learning to read, write or spell, despite conventional instruction, adequate intelligence and sociocultural opportunities' (2007, p 1). They report that the current definition from the International Dyslexia Association states,

> Dyslexia is a specific learning disability that is neurological in origin. It is characterised by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge. (Adopted by the International Dyslexia Association Board of Directors, November 12, 2002, p 1)

Both the research participants' assessment and combined reading intervention programme is aligned with the discussion of the primary

reading and spelling characteristics of dyslexia in the Dyslexia Handbook Revised 2007:

1. Difficulty reading real words in isolation.

2. Difficulty accurately decoding pseudo words.

3. Lack of reading fluency.

4. Difficulty with learning to spell.

The reading and spelling characteristics are the result of difficulty in the development of phonological awareness, including segmenting, blending and manipulating sounds in words, and difficulty in learning the sound/symbol association of the letters of the alphabet. All these result in variable levels of difficulty with aspects of reading comprehension, which is the ultimate goal of reading (Eskey 1988) and consists of approximately seventy per cent of the English as a foreign language matriculation examination in Israel.

### 2.6.1 Early Theories of Dyslexia

The notion that dyslexia may have a neurological origin was initially mentioned at the end of the 19th century by the Scottish ophthalmologist James Hinshelwood and the British physician Pringle Morgan who both emphasised the similarity of certain symptoms in dyslexic children or teenagers with the neurological syndrome of *visual word blindness* (Hinshelwood, 1895; Morgan, 1896). This was first reported by the French neurologist Jules Dejerine (1891), who claimed that damage to the left inferior parieto-occipital region results in a specific impairment in reading and writing, suggesting that this region, namely the left angular gyrus, may play a special role in processing the *optic images of letters* (Dejerine, 1891).

As a result of this, these early authors reasoned that impaired reading and writing in their young dyslexic patients could be due to defective development of the same parietal region which was damaged in adult alexic patients (Hinshelwood, 1917). However, these speculations remained unconfirmed until the first description of the brain of a dyslexic boy who died from brain haemorrhage due to a vascular malformation (Drake, 1968) was presented. Samuel Orton (1925) is considered the 'founding father' of the now famous atypical lateralisation theory of dyslexia. Orton followed the initial observations that dyslexic children have poor or inadequate brain lateralisation, especially for language. Thus Orton (1937) proposed the idea that the lateralisation of language functions to the left hemisphere was delayed in 'dyslexic students', so that the language prerequisites for learning to read could not develop normally. This idea was the foundation for a large number of experimental studies. Geschwind and Galaburda (1987) examined brain asymmetry in general and cortical asymmetry in dyslexia in particular, which, as a result, became one of the key issues in neurological science for the second half of the twentieth century.

### 2.6.2 Other Theories of Dyslexia

The phonological theory postulates that 'dyslexic students' have a specific impairment in the representation, storage and retrieval of phonemes; that is, speech sounds. Learning to read an alphabetic system requires learning the grapheme – phoneme correspondence (the correspondence between letters and their constituent sounds of speech). If these sounds are poorly represented, stored or retrieved, the learning of grapheme – phoneme correspondences, the foundation of reading for alphabetic systems, will be affected. While theorists have different views about the nature of the phonological problems, they agree on the central and causal role of phonology in dyslexia (Bradley and Bryant, 1978; Vellutino, 1979;

Snowling, 1981; Brady and Shankweieler, 1991; Anthony and Francis, 2005). Snowling (2000) as well supports the phonological theory by stating that dyslexic individuals perform particularly poorly on tasks requiring phonological awareness; for example, conscious segmentation and manipulation of speech sounds, and poor verbal short-term memory and slow automatic naming. Anthony and Francis (2005) and Gathercole *et al* (2006) agree with Snowling's (2000) support and claim that severity of reading difficulties is significantly associated with phonological awareness abilities. 'Basically, individuals who have difficulty detecting or manipulating sounds in words will struggle with learning to read' Anthony and Francis (2005, p 255).

Another theory is the rapid auditory processing theory which specifies that the deficit lies in the perception of short or rapidly-varying sounds. Tallal *et al* (1993, 2004) claim that the phonological deficit is secondary to a more basic auditory deficit. Support for this theory arises from evidence that 'dyslexic students' show poor performance on a number of auditory tasks including frequency discrimination (MacAnally and Stein 1996, Ahissar *et al*, 2000) and tone-in-noise detection (Boets *et al*, 2006). The failure to represent short sounds and fast transitions correctly causes further difficulties in particular when such acoustic events are the cues to phonemic contrasts, as in /*ba*/ versus /*da*/. In this view, Serniclaes *et al* (2001), claim that the auditory deficit is therefore the direct cause, in the course of development, of the phonological deficit, and hence of the difficulty in learning to read.

The visual theory reflects another long-standing tradition in the study of dyslexia, whereby dyslexia is considered a visual impairment causing difficulties with the processing of letters and words. It may take the form of unstable binocular fixations and poor vergence as Eden *et al* (1994) claim, or increased visual crowding as Spinelli *et al* (2002) pointed out.

The visual theory does not exclude a phonological deficit, but emphasises a visual contribution to the reading problems.

When Nicolson and Fawcett first presented their cerebellar theory on the role of the cerebellum in dyslexia in 1990, the concept was quite novel. They claimed that the cerebellum of people with dyslexia is mildly dysfunctional and a number of cognitive difficulties ensue. First, the cerebellum plays a role in motor control and therefore in speech articulation. It is postulated that retarded or dysfunctional articulation would lead to deficient representations. Secondly, the cerebellum plays a role in the automatisation of over-learned tasks, such as driving, typing and reading. A weak capacity to automatise would affect, among other things, the learning of grapheme-phoneme correspondences (Fawcett *et al*, 1996). Evidence of poor performance of 'dyslexic students' in a large number of motor tasks, supports the cerebellar theory. Support to this theory is also found in brain imaging studies which show anatomical, metabolic and activation differences in the cerebellum of 'dyslexic students' (Nicolson *et al*, 1999; Brown *et al*, 2001; Leonard *et al*, 2001).

An additional theory is the magnocellular theory which attempts to integrate all the findings mentioned in the phonological theory, the rapid auditory processing theory, the visual theory and the cerebellar theory, all of which were discussed above. The magnocellular theory assumes that magnocellular dysfunction is not restricted to the visual pathway but is generalised to all modalities, including visual, auditory and tactile. Furthermore, according to Stein *et al* (2001), as the cerebellum receives massive input from various magnocellular systems in the brain, it is also predicted to be affected by general magnocellular defect.

When comparing and contrasting the different theories, the magnocellular theory manages to account for all known manifestations of dyslexia which

include visual, auditory, tactile, motor and, consequently phonological deficits. While the phonological theory does not explain the sensory and motor disorders that occur in a significant proportion of 'dyslexic students', the magnocellular theory suffers does not account for the absence of sensory and motor disorders in a significant proportion of 'dyslexic students'. However, the cerebellar theory does deal with both types of problems.

Yet, it can be argued that it might be possible that all theories are true of different individuals. There could be, for instance, four partially overlapping subtypes of dyslexia, each being an independent contributor to reading difficulties (phonological, auditory, visual and cerebellar). On the other hand, it could also be that each case of dyslexia is accounted for by a different theory, and that the other manifestations mentioned are associated without causation.

Ramus *et al* (2003) conducted a multiple case study where they assessed the leading theories of developmental dyslexia: the phonological theory, the magnocellular theory (including the auditory and visual theory) and the cerebellar theory. The study results suggest that a phonological deficit can appear in the absence of any other sensory or motor disorder, and is sufficient to cause literacy impairment. Auditory disorders, when present, aggravate the phonological deficit, hence the literacy impairment. Ramus *et al* (2003) also found that auditory deficits cannot be characterised simply as rapid auditory processing problems, as would be predicted by the magnocellular theory. Nor are they restricted to speech. They claim that:

> Contrary to the cerebellar theory, we find little support for the notion that motor impairments, when found, have a cerebellar origin or reflect an automaticity deficit. Overall, the present data support the phonological theory of dyslexia, while acknowledging the presence of additional

> sensory and motor disorders in certain individuals (Ramus *et al*, 2003, p 841).

The variety of imaging methods, from magneto encephalography to functional MRI (fMRI) and positron emission topography (PET), not only assisted in drawing conclusions to the vast directions of research mentioned before, but also highlighted the important information obtained through the different theories of dyslexia (the phonological theory, the rapid auditory processing theory, the visual theory, the cerebellar theory and the magnocellular theory).

Moreover, the variety of imaging methods has contributed to the observation that, at a microscopic level, a meticulous analysis of serial coronal slices disclosed specific cortical malformations including ectopias, mainly distributed across both frontal regions and in the left language areas (Kaufmann and Galaburda, 1989). This finding will be discussed in some depth in the next section in which reading disabilities are discussed.

## 2.7 Reading Disabilities

This section includes definitions of reading disabilities as they relate to learning to read in the mother tongue (L1) and in a foreign language (FL).

### 2.7.1 Reading Disabilities in First Language

Dyslexia is defined as a specific and significant impairment in reading abilities, unexplainable by any kind of deficit in general intelligence, learning opportunity, general motivation or sensory acuity (World Health Organisation, 1993). Children with this condition often have associated deficits in related domains such as oral language acquisition (dysphasia), writing abilities (dysgraphia and misspelling), mathematical abilities (dyscalculia), motor coordination (dyspraxia), postural stability and dexterity, temporal orientation (dyschronia), visuospatial abilities

(developmental right-hemisphere syndrome), and attentional abilities (hyperactivity and attention deficit disorder) (Weintraub and Mesulam, 1983; Rapin and Allen, 1988; Dewey, 1995; Gross-Tsur *et al*, 1995, 1996; Fawcett *et al*, 1996).

Besides their multiple possible interrelations and associations, all these developmental syndromes share in common their relative specificity, meaning the fact that general intelligence is intact, as reflected in a average or above average non-verbal IQ. Depending on the pattern of such associated disorders, verbal and performance IQ may show usual or reversed dissociation. Such dissociation is a good argument in favour of a 'developmental lesion affecting separately one or several brain circuits or modules specialised in various aspects of cognitive function' (Habib, 2000, p 2376).

Such co morbidity also suggests a common origin involving either genetic factors or prenatal environmental influences, or both. It also has important diagnostic as well as prognostic significance, influencing both evaluation and remediation (a term still used in Israel) of the reading disorder, which will be considered in the process of the research of this thesis.

According to Habib (2000) one aspect of these associated disorders has received particular attention during the last decades, namely the frequency of oral language impairment. Habib (2000) claims that a considerable proportion of dyslexic children have known not only more or less severe problems in oral language and in speech acquisition, from mere delay to severe dysphasia, but have also experienced subtle impairment in perception and articulation of speech, which is currently considered the most likely mechanism leading to the reading disorders.

However, Habib (2000) warns that it is important to keep in mind that the relationship between oral language deficits and dyslexia is far from being straightforward since, although these are not the majority; there are 'dyslexic students' for whom even sophisticated examination fails to disclose oral language impairment, and, more often, severe dysphasics who learn to read without apparent difficulty.

The reading disorder itself may appear either as primary, thus manifesting at the time when the child learns to read, or as an additional feature of an already diagnosed learning disorder. In the large majority of cases, and irrespective of the age of diagnosis, children who fail to achieve average reading performances make the same type of errors: visual confusions between morphologically similar letters, especially those having a symmetrical counterpart (e.g. /b/ and /d/), difficulty in acquiring a global logographic strategy which would allow them to recognise common words presented briefly, and difficulty in generalising previously learned grapheme to phoneme rules. This latter aspect appears as the core dysfunction in dyslexia, since grapheme to phoneme conversion is a critical stage in learning to read (Frith, 1995).

This stage is compromised by the two main aspects of neurological dysfunction evidenced in dyslexic children, which affect visual perceptual and phonological processes. The written production of dyslexic children is also stereotyped: phonemic errors in the transcription from oral to written form of letters and syllables, defective spatial arrangement of letters, inversions, omissions and substitutions of letters and syllables, aberrant segmentation of words, and weak grammatical development, 'which all combine to bring about a fuzzy, sometimes incomprehensible production' (Habib, 2000, p 2377). My research took these dysfunctions into consideration in developing the pre- and post-intervention assessment for

the dyslexic research participants, and in preparing the combined reading intervention programme.

Snowling (1996) claims that the core of dyslexia is a phonological processing deficit. Vellutino and Scanlon define dyslexia as having

> …its roots in a dysfunction during storage and retrieval of linguistic information; phonological-coding deficits (inability to represent and access the sound of a word); deficient phonemic segmentation (inability to break words into component sounds); poor vocabulary development and syntactic differences among words and sentences. (Vellutino and Scanlon, 1987, cited in Krupska and Klein 1995, p 9)

Both Snowling (1996) and Vellutino and Scanlon (1987) stress the fact that the core of dyslexia is a phonological awareness deficit. Phonological awareness refers to the ability to rime and to segment words into syllables and phonemes (Goswami and Bryant 1990). Phonemes are the smallest units of sound that can change the meaning of a word (Goswami 1991).

Research over the years has strongly suggested that dyslexia is the result of a verbal deficit. Vellutino (1979) related reading deficits to language problems and this hypothesis has been refined over the years. The relationship between specific reading difficulties and early language problems has been well documented (Stackhouse, 1985). Stackhouse cites evidence that children with spoken language difficulties have written language problems and those children with dyslexia may have a hidden speech and language difficulty. The consensus of recent research suggests that learning disabled people have an early impairment in phonological skills which prevents them from acquiring the phonological awareness ability necessary for reading and spelling.

Moreover, Miles (2000) emphasises this point and states that a great deal of research has been done on dyslexia difficulties in recent years, and

particular stress has been laid on their phonological difficulties, especially weakness in phonemic discrimination. This phonemic discrimination is a main reason for 'dyslexic students' to fail to associate graphemes to phonemes, a crucial ability in reading. A study conducted by Morais, Cluytens and Alegria (1984) on segmentation ability of 'dyslexic students' and 'non-dyslexic students' is one example of the research referred to by Miles (2000) and provides evidence of the correlation between phonological awareness deficits, segmentation abilities and reading problems among 'dyslexic students'. The correlation among these three factors was instrumental in building the assessment and the reading intervention programme for the dyslexic participants of my research.

Habib (2000) agrees that the phonological disorder, mentioned above, has a central role in dyslexia. He goes on to say that one of the most robust discoveries in the domain of cognitive mechanisms leading to dyslexia is the repeated demonstration that the core deficit responsible for impaired learning to read is phonological in nature and has to do with oral language rather than visual perception.

> The deficit is in the ability to manipulate in an abstract form the sound constituents of the language, so called phonological awareness. Whereas most children are able to perform tasks requiring segmenting words in smaller units (syllables and partly phonemes) well before reading age, dyslexic children are still unable to do so even after several months of reading and writing (Habib 2000, p 2384).

In addition Lundberg *et al* (1988) showed improved reading abilities in children previously trained in phonological exercises and these observations are the basis of the widespread use of oral language exercises for the rehabilitation of reading and spelling disorders. This research incorporates Lundberg's findings, as each of the 36 sessions of the intervention begins with oral training. Furthermore, Manis *et al* (1997)

concluded that inadequate representations of phonemic units resulting from such perceptual deficits could prevent dyslexic children from using and manipulating phonological information, thus impairing their ability to acquire phonological prerequisites to learning to read.

This research is underpinned by Horwitz *et al*'s (1998) definition of dyslexia as a disconnection syndrome, which was first suggested by Wernicke in 1874. They investigated cross-model integration and the link between mapping heard sounds on to the visual representations of the letters and subsequently articulating them successfully. They believed that this area may be closely involved in phonological processing.

A study by Rumsey *et al* (1992) using PET (Positron Emission Topography) scans showed differential activation patterns in the left hemisphere during rhyming tasks. The dyslexic participants also showed significantly increased activation in one right temporal region, a region which revealed no activation in the 'non-dyslexic' control group. Horwitz *et al* (1998) determined that while dyslexic subjects were engaged in tasks involving phonological processing, they activated the same brain area as control subjects but did not activate them simultaneously. This finding may help to explain the phonological difficulties which characterise 'dyslexic students'.

Robertson (2000) also found that when 'non-dyslexic students' are required to detect all descending letters in a written text, activation is found in the region of the brain which is in charge of the auditory input processing, in addition to the areas required for the visual analysis. 'A conclusion of this study was that dyslexic subjects could activate Broca's area for segmented phonology and Wernicke's area but they did not activate them in concert' (Robertson, 2000, p 24). Robertson (2000) goes on to say that tasks which are heavily dependent upon inner language and

the physiological interaction between various areas of the brain in 'non-dyslexic students', are not similarly activated in dyslexic subjects. This may impact on the performance of certain, more demanding, phonological tasks such as reading in a foreign language.

Paulesu *et al* (1996) found in their research that weak connectivity would certainly impact upon the learning of an alphabetic code, which depends on correct redundant mapping between graphemes, phonemes and the spelling of sounds and whole words. Stanovich (1988) claims that the deficient phonological awareness skills observed in some children is related to a basic deficit in a highly specialised, or modular, language-processing system.

Tunmer and Rohl (1991) note that the inability of disabled readers to segment phonologically is thought to be one of several verbal processing deficiencies, each of which stems from an underlying deficit in phonological processing in working memory. This general deficiency in the ability to maintain and operate on verbal material in working memory provides a unified account of the various verbal processing difficulties observed in reading-disabled children. Poor readers perform less well than good readers on tasks requiring the processing of phonological information such as phonological recoding, phonemic segmentation or object naming, as well as on tasks that stress verbal working memory such as short-term verbal recall, understanding complex spoken sentences or sentence correction. While Tunmer and Rohl (1991) relate to native speakers, their findings are particularly evident in EFL 'dyslexic students' in Israel.

Lundberg's and Hoien's (1991) conclude that, 'without phonological insight, there is no way to use the alphabetic system productively in reading and spelling. The mere exposure to print and the development of

adequate concepts of print functions do not seem to be sufficient' (1991, p 89). This conclusion served as a springboard in the search for a solution to enhance phonological insight for 'dyslexic students', as Backman *et al* (1984) claim that phonological deficits are a major cause of reading disabilities. Stanovich (1992) also supports the claim that phonological awareness deficits may be a cause of reading disabilities on the basis of studies that have shown that measures of phonological sensitivity predict reading ability even when these measures are assessed very early in development (Lundberg and Hoien, 1989).

Stanovich reports that 'early development of phonological sensitivity leads to superior reading achievement' (1992, p 316) and that several studies show that where phonological skills were manipulated by means of training, significant advances in reading, word recognition and spelling resulted. However, he notes that there may be other factors which account for reading disabilities (p 315). Indeed, many of the researchers who argue for the possibility of visual deficits do not rule out the possibility of visual deficits coexisting with phonological deficits.

Seidenberg (1992) claims that reading consists of a large number of perceptual and cognitive processes which involve a broad range of human skills. 'Given the complexity of the task and the kinds of capacities it involves, it would be very surprising if reading disability did not have multiple causes' (1992, p 260). He notes that there is broad variability among dyslexic individuals, indicating that dyslexia could derive from impairments in different components of the system. Seidenberg (1992) lists different components that could cause reading impairment. These include the encoding of a letter string as a pattern of activation across the orthographic units. Impairment in this component would result in a failure to activate appropriate orthographic representations. This could result because of anomalies in visual-perceptual processes. Second, he refers to

the hypothesis that at least some forms of developmental dyslexia 'may derive from a limitation in terms of the computational resources available for mastering word recognition' (1992, p 264). Support for this hypothesis can be found in reported data from magnetic resonance imaging (MRI) studies of 'dyslexic children' showing smaller amounts of cortical tissue in areas thought to participate in reading.

Another important hypothesis about dyslexia is that at least some 'dyslexic students' are impaired in their ability to analyse speech into underlying components such as phonemes. There is support for this hypothesis in Adams' (1990) review, which states that the ability to relate spoken and written language is strongly related to the achievement of reading skill. Damage to phonological codes relevant to both reading and listening would produce deficits in both modalities. These deficits would limit the capacity to encode spelling-sound correspondences, causing a deficit in word naming. It would also impair access to meaning from phonology. Such deficits would also limit performance on auditory language comprehension tasks that require access to phonological representations - tasks such as riming or counting phonemes that have been observed to be deficient in many 'dyslexic students'. Adams' (1990) research served as the impetus for including riming and phoneme counting tasks in pre- and post-intervention assessment in this research.

This section dealt with reading disabilities in L1 whereas the following one aims to show that FL oral and written language learning depends, among other things, on native language skills. Furthermore, it suggests that learners with native language learning difficulties are likely to experience comparable difficulties in FL learning.

### 2.7.2 Reading Disabilities in Modern Foreign Languages

Modern Foreign Languages are languages which are currently spoken in the world. In the case of my research, where Hebrew is the native language, English is taught as a modern foreign language.

Though children with a history of language difficulties may eventually learn to speak and understand their native language, their FL aptitude profile may be related to or affected by these earlier problems. The dyslexia literature strongly supports the position that early problems in acquiring oral language lead to written language difficulties and that language difficulties, both written and oral, may continue into adulthood, thereby affecting the learning of a foreign language.

Skehan and Ducroquet (1988) aimed to trace the origins of foreign language aptitude and individual differences in the rate at which children acquire their first language by investigating whether a greater rate of progress in first language development is associated with higher foreign language aptitude (1988, p 6). The results showed that children who had developed more quickly in their first language had higher foreign language aptitude.

This premise had already been researched in the 1950s and 1960s by Carroll and Sapon (1959) who developed the core of the Modern Language Aptitude Test (MLAT). The MLAT was based on several predictive variables proposed by Carroll which make an important contribution to learning a foreign language. One of them is the phonemic coding ability, which is the capacity to analyse sounds in such a way that they can be retained and remembered later. Another is inductive language ability, which is the capacity to infer patterns and relationships involving form and meaning from linguistic material and make generalisations about how other linguistic material would be encoded.

The first predictive variable mentioned above was also identified in Pimsleur's (1966) research. Pimsleur developed a second test of foreign language aptitude - the Language Aptitude Battery (LAB). He identified 'auditory ability', measured by sound discrimination and sound-symbol association tests, as the critical factor in foreign language learning which differentiated 'underachieving' learners from those who exhibited no difficulty (Pimsleur, Sundland and McIntyre, 1964, cited in Javorsky, Sparks and Ganschow, 1992). Ganschow and Sparks say that

> …evidence from the foreign language aptitude research seem to indicate that poor 'auditory ability' or 'phonetic coding' has the potential to cause foreign language learning problems, just as deficits in phonological coding - the ability to take apart and put together the sounds and their representative letters in words - can cause problems in learning to read and write one's native language (1991, p 385).

Based on the foreign language aptitude tests established by Carroll (1959) and Pimsleur (1964) and later research by Ganschow and Sparks (1991), it would seem reasonable to anticipate that some of the difficulties faced by dyslexic learners when learning to read their first language will affect their ability to learn to read a foreign language. As Sparks and Ganschow (1991) conclude, 'A link exists between native language and FL learning potential' (1991, p 4). In other words, students with dyslexia have difficulties when learning to read a foreign language as those they have had when learn to read their first language.

### 2.7.3 Effects of Strategies and Learning Styles

Strategies and learning styles are the methods of learning particular to a student which are presumed to allow that student to learn best. In this context, Oller and Perkins (1978) found that L1 and FL proficiency are substantially correlated, meaning that students with dyslexia use the same

strategies to master reading in a foreign language that they use for mastering reading in their first language.

In this context Oxford (1989) claims that it is important to assess learning styles because the role of style and strategies may be crucial in determining learners' success, while Sparks and Ganschow (1991) found that students, who have significant problems in FL learning, had difficulties with one or more aspects of their oral and written native language. They concluded that 'ability in native language may have an impact on learning an FL' (1991, p 4); that is, students with FL learning difficulties may have underlying native language problems that impact on their learning another language as mentioned before.

Chall (1983) states that both phonological awareness and phoneme segmentation play a role in the acquisition of written language and in the development of oral language. Chall's (1983) research indicates that reading-disabled children have limited awareness and sensitivity to the speech-sound structure of the language. They also have word-finding and naming problems and poor verbal short-term memory. Some of these children have difficulty comprehending long oral sentences or carrying on conversations. Based on Chall's (1983) claim it seems clear that specific difficulty at the phoneme level can cause difficulties in the acquisition of both native and foreign oral and written language which according to Sparks and Ganschow (1991) explains why secondary or post secondary students who appear to have learned their native language adequately, in fact have problems acquiring a foreign language. They base their conclusion on the 'Linguistic Coding Deficit Hypothesis' and its emphasis on the specific components of language; that is, phonological, syntactic and semantic (1991, p 9). These students experienced difficulties in L1 in problem areas such as relatively weak spelling or a slow rate of reading which went unnoticed because of means of compensation. 'For the most

part, the compensatory strategies used by these students mask their linguistic coding deficits in the native language, and they often succeed well in academic settings' (1991, p 10). Most of these students were identified as learning disabled because of foreign language learning difficulties.

In Sparks and Ganschow's (1991) view, what happens to these students is that their compensatory strategies and learning styles become unworkable when they must learn a totally new linguistic coding system. Sparks and Ganschow (1991) agree with the hypothesis which assumes that FL learning is enhanced or limited by the degree to which students have control over the phonological, syntactic and semantic components of the linguistic code, as suggested by Snowling (1996). A deficiency in one or more of the components is likely to affect the students' ability to learn an FL. They conclude 'that native language factors are likely to be implicated as the main variable in FL learning' (Sparks and Ganschow, 1991, p 10).

### 2.7.4 Effects of Phonological Awareness Deficits on Learning to Read in English as a foreign language

In another paper, Ganschow, Sparks and Javorsky (1998) present an empirically based theory that has diagnostic, pedagogical and policy implications for students with FL learning difficulties:

> Empirical evidence has been generated to support the positions that FL learning performance is related to native language learning, that most poor FL learners have overt or subtle problems with the phonological / orthographic (and syntactic) components of language, that affective differences are likely to be a consequence of successful or unsuccessful FL learning, and that direct and explicit instruction of the language codes holds promise for these students (1998, p 254-5).

Indeed, among 'dyslexic students' learning EFL in Israel, difficulties in learning to read in English were preceded by difficulties in acquiring written language skills in L1, and in many cases additional difficulties with the phonological components of L1. In other words, phonological awareness deficits that hindered the learning of reading in their first language (Hebrew) appear to have affected the acquisition of a foreign language (English), despite the fact that these students were able to overcome those deficits or compensate for them in their L1.

In many cases, students learn about their being learning disabled when they encounter difficulties in acquiring a foreign language. According to Fuste-Herman *et al* (2006) these students may have been at enhanced academic risk because of undetected language impairment. Learning disabilities in L1 are caused by various factors. Ganschow *et al* (1998) concluded that the same difficulties students have had acquiring their first language will affect their acquiring of a foreign language.

As this research deals with dyslexic Hebrew speakers studying English, there is a need to provide the reader with a brief contrastive analysis of English and Hebrew. The following section discusses some areas in which these two languages differ from one another.

## 2.8 Contrastive Analysis of English and Hebrew

Hebrew is a modern version of an ancient Semitic language and is written from right to left. Most of its graphemes do not resemble the Latin alphabet. Five Hebrew letters have two graphic representations one of which is used only when the letter comes at the end of a word, a concept that does not exist in English. Most of its vowels are represented by diacritical marks, which appear above or below the consonants but after the third year of primary school, most children can read and write without them, and are required to do so. There are no capital letters in Hebrew.

Because of the existence of upper-case letters in English, students have to learn fifty two English graphemes as compared to twenty seven Hebrew ones.

From the phonological aspect, sounds like: /j/, /q/, /w/, /th/, /ch/, /ou/ exist in English but not in Hebrew and cause difficulty for Hebrew speakers in both spoken and written English. L1 Hebrew speakers also experience difficulties with the short vowels in English, particularly the short /a/ and the short /e/, which are almost indistinguishable for the Hebrew speaker.

In terms of orthography, some graphemes, like /p/ and /f/, which in Hebrew are represented by identical graphemes, are very often confused when reading and writing in English. Consonants in Hebrew remain constant and do not change their sounds in new combinations, whereas in English, letters may change their sound depending on the word and/or phoneme in which they appear, as in the letter /c/ in 'came', 'centre', 'chemist', or 'chips'. The same is true for the letter /w/ which is particularly difficult because of its inconsistency, as in 'water', 'wrote', 'how' and 'saw'. Silent letters do not exist in Hebrew, so words like 'know', 'scissors', 'height', and countless others cause difficulty.

Another difference between Hebrew and English is that Hebrew is based on roots which are manipulated to change the meaning of words, whereas English has no such system. For example the Hebrew root ש.מ.ר (shamar) which means kept is manipulated into ר.ש.מ (rasham) which means wrote. In research which dealt with morphology, Bentin and Frost (1995) showed that Hebrew is decoded from the root outwards, as opposed to English, which is decoded linearly. Another study by Frost, Forster and Deutsch (1997) suggests that Hebrew readers, in their printed word recognition model, may access the printed word via two channels:

either directly from the orthographic structure or via recognition of the root, or a combination of both. Hebrew-speakers learning to read English may require different word recognition strategies.

English and Hebrew differ from each other in their origins, phonology, orthography and morphology. These differences which add difficulty to already existing ones for dyslexic Hebrew speakers learning English as a foreign language were taken into consideration when constructing the research combined reading intervention programme.

## 2.9 English as a Foreign Language Curriculum in Israel

As mentioned in the introduction to this study the role of the English language in Israel is quite essential due to the fact that on the verge of the 21st century English has become the main language in the world (Abbot, 1999), and has based its status in Israel as the first official foreign language (Ministry of education in Israel, 1996). English, as a language, is considered as the most valuable possession for an Israeli. The Israeli student cannot be accepted to any of the universities in Israel without being granted a matriculation certificate. In order to be granted such a certificate it is a must to pass the matriculation examination in English.

Klein (2001) claimed that curriculum leaders should consider the role of technology, academic studies, cognitive processes, societal needs, student self-actualisation, and subject content for future generations, when planning a curriculum. Consequently, the State of Israel Ministry of Education (2001) and the English Inspectorate developed a new national English curriculum to set standards for English as a foreign language (EFL). The new curriculum took into consideration Posner's (2004) constructivist perspective on curriculum and learning, information

processing; aligned with brain-based learning theories, and the special needs of Israeli students, English being their foreign language (State of Israel Ministry of Education, 2001). The new EFL curriculum is based on principles and standards which support different learning styles, multiple intelligences, inquiry and problem-based learning, and technology. Its target is to enhance all student performance by supporting brained-based learning (State of Israel Ministry of Education, 2001).

The new EFL curriculum was designed to incorporate cognitive and constructivist approaches to learning, on the one hand, while catering to the needs of the Israeli learner, society, the universities, and teachers, and setting the standards for writing course books, course syllabi, lesson plans, and teaching material, on the other (State of Israel Ministry of Education, 2001). Orland-Barak, Kemp, Ben-Or and Levi (2004) claimed that in comparison to the previous EFL curriculum (State of Israel Ministry of Education, 1998) in the new one the terminology changed but the goals remained the same, which are actually to create an effective and efficient language learning environment that encourages students development and achievements (State of Israel Ministry of Education, 2001).

Orland-Barak, Kemp, Ben-Or and Levi (2004) claimed that the Ministry of Education's English curriculum focuses on social interaction, appreciation of literature and other cultures, and recognition of language learning as 'a communicative skill reflecting cognitive processes' (Schunk, 2004, p 393). The 2001 EFL curriculum program provides a detailed list of principles underlying language learning and teaching, the choice of material and content, and classroom assessment that incorporate constructivist, motivational, and brain-based learning theories, 'developing sensitivity to people of various cultural backgrounds' (State of Israel Ministry of Education, 2001, p 8).

Baker, Jensen, and Kolbe, (2005) agree with Mcloughlin's (1999) claim that a constructivist learning approach views students as active learners who construct knowledge. According to constructivism, and Piaget's developmental psychology as Iran-Nejad (1995) pointed out, learning should take place in a natural environment which is safe and encouraging to learning. Caine and Caine (1994) and Winters (2004) explained that developing natural learning environments can facilitate reading and writing skills in learning English skills as a foreign language.

The new EFL curriculum in Israel considered brain research findings which indicate that learners have one hemisphere that is more prevalent than the other (Goswami, 2006). Therefore, activities should be provided to cater to both hemispheres of the brain (Goswami, 2006) as it is done in the research combined reading intervention programme.

## 2.10 Reading Disabilities in English as a Foreign Language for 'Dyslexic Students' in Israel

There is a basic assumption that the difficulties dyslexic Hebrew speakers experience when learning to read in their L1 will be similar to the difficulties they experience when learning to read in English as an FL, as suggested by Sparks and Ganschow (1991) earlier in this chapter. Moreover, their difficulties in learning to read in English will be more severe, because, as Miles (2000) remarks that English, as a language to read and write, is heavily dependent on fine phonemic discrimination.

In addition, English is a language which has been influenced by other languages through invasion, particularly French and German, which has resulted in different spelling varieties, especially in vowel sounds, and makes the fundamental phonemic simplicity difficult to discern, especially by a person with dyslexia. This is even more the case for a dyslexic

Hebrew L1 speaker, as the origin of the Hebrew language is mainly Semitic and its phonemic system is more transparent than the English one; that is, for the most part it does not have varied phonemes for one grapheme or varied graphemes for one phoneme.

Another difficulty a dyslexic Hebrew speaker faces when learning English is that English orthography is from left to right, while Hebrew orthography is from right to left. This difficulty becomes even more pronounced when trying to differentiate among the letters; b, d, p, and q. In these letters, the dyslexic learner needs to differentiate directionality in order to discern the phoneme represented.

### 2.10.1 Phonological Awareness Deficits in Learning to Read a Foreign Language

From a longitudinal study, Ganschow *et al* (1991, 1998) concluded that phonological awareness deficits are one of the main causes for reading disabilities among a majority of 'dyslexic students'. This conclusion is in agreement with research performed during the last decade (e.g. Stanovich, 1988; Liberman and Shankweiler, 1989; Adams, 1990; Siegel, 1993; Torgesen, Wagner and Rashotte, 1994; Sutherland and Gillon, 2005; Anthony and Francis, 2005 and Gathercole *et al*, 2006).

Though Ganschow *et al* (1998) studied Spanish and German native speakers learning English as L2, and not Hebrew speakers, it is probable that their conclusions hold irrespective of the L1 and FL involved. Therefore, it is also likely that if Hebrew speaking 'dyslexic students' have phonological awareness deficits in their L1, these deficits will cause a reading disability when learning to read in English as an FL. Support for this belief can be found in Goodman (1967), Morais (1984), Tunmer and Rohl (1991), and Treiman (1991).

## 2.11 Combining the Two Approaches to Reading, the Top-Down and the Bottom-Up

The definitions and assumptions of the two complementary approaches to reading which were mentioned earlier in this chapter, guided me in the creation of the research combined reading intervention programme of English as a foreign language to 'dyslexic students' in Israel whose L1 is Hebrew.

Some reading theories mentioned above support the view of teaching reading through a bottom-up approach, that is, teaching grapheme-phoneme correspondence (Gough, 1972, 1985; Carmine, 1977; Broughton *et al*, 1978; Stanovich, 1988; Hohn and Ehri, 1983; Tunmer and Bowey, 1984; Frith, 1985; Goswami, 1991; Ehri, 1992; Ganschow *et al*, 1998; Robertson, 2000). The bottom-up approach to reading is utilised in traditional phonics programmes, where the child is taught to make connections between symbols and sounds (grapheme-phoneme correspondences). The child is encouraged to blend these into a word (e.g. the child is taught the sound of the letters c-a-t which together form the word 'cat'). With experience, children learn to decode more complex grapheme-phoneme correspondences on their own.

An example of a traditional bottom-up programme for teaching reading to 'dyslexic students' is the Orton-Gillingham approach. Mercer and Mercer (1987) explain that this approach is an alphabetic synthetic multisensory phonetic approach developed for students who have dyslexia. It concentrates on fusing smaller units (letters, sounds, and syllables) into more complex wholes (words). Similar to the Orton-Gillingham approach, is Walton's (1998) phonics method. The phonics method of teaching is also based on the sounds of the letters (which are different from their

names), the teaching of which enables a child to build words by putting together the sounds of the individual letters or letter combinations.

Other scholars claim that phonological awareness can be improved with the help of the top-down approach – whole-word instruction (Kolers, 1966; Broughton *et al*, 1978; Frith, 1985; Manis and Morrison, 1985; Tunmer and Rohl, 1991; Ehri, 1992; Smith, 1994;). In methods which utilise the top-down approach, children are introduced to a word, learn to recognise it by sight, and slowly expand their reading vocabulary. Children using this approach are expected to pick up the rules of decoding grapheme-phoneme correspondences on their own, and be able to apply them to new unfamiliar words (e.g. the words 'car', 'tar', and 'far' are taught, and the child is expected to read 'bar' independently). P.A.T. (Phonological Awareness Training) Syllables designed by Jo Wilson (1996) is one example of a programme designed according to the top-down approach to reading. Wilson bases the method on research performed by Goswami (1990) and Treiman (1991) that suggests that children's development of phonological awareness follows 'a rather different pattern to that outlined in traditional phonics programs' (Wilson, 1996: 1).

The effectiveness of the two different approaches to reading, the top-down and the bottom-up, is not questioned in this research. However, when teaching the reading of English as an FL to dyslexic Hebrew speakers in Israel, there are many students who do not achieve fluency and accuracy through the use of one of these approaches only. This claim is with accordance to Lovett *et al*'s (1990) finding after training children with severe reading disabilities in word recognition skills by using two different methods. One group was taught by whole-word methods (top-down), another was taught letter-sound correspondences (bottom-up). They found that neither group of children generalised what they had learned to uninstructed reading vocabulary. Thus, even the children who

received letter-sound training appeared to have acquired specific lexical knowledge rather than sub-lexical, letter-sound knowledge, which could then be used to decode unfamiliar words. This finding was reinforced by a subsequent study conducted by Lovett *et al* (1994).

Lovett *et al*'s (1990, 1994) findings and the fact that many of my private students, in the course of my years of practice, have been exposed to both the top-down and the bottom-up approaches to reading English as an FL, in different contexts and at different times, but still were unable to reach fluency and accuracy in their reading in English, led to my believe that a combined method of the two approaches might be more effective in enhancing phonological awareness and improving reading skills rather than either approach on its own. This is supported by a number of scholars who have found that the combination of the top-down and bottom-up approaches to teaching reading to students at risk due to a learning disability is effective (Stanovich, 1980; Frith, 1985; Eskey, 1988; Goswami, 1991).

### 2.11.1 Effectiveness of a Combined Approach to Reading in English-FL for Dyslexic Hebrew Speakers in Israel

Rumelhart (1997) claims that for reading to be effective not only in the first language, but also in the foreign language, both top-down and bottom-up reading strategies are required and must operate interactively.

Both Rumelhart (1997) and Ganschow *et al* (1998) believe that the same methods used for improving reading disabilities in the first language, can be applied in the foreign language as well. While Ganschow *et al* (1998) believe that a bottom-up approach to reading should be used, Rumelhart (1997) recommends the use of a combination of the bottom-up and the top-down approaches to reading.

Although some studies have reported significant gains after bottom-up approaches and phoneme-based training (Bradley and Bryant, 1985; Alexander *et al*, 1991), others have found that a sizeable number of students with reading disabilities benefit only minimally from such training (Torgesen and Davis, 1996). It may be that some learning disabled students respond better to alternative strategies that use larger phonological units (words), that reduce the memory demands involved when readers must sequentially blend together sounds to pronounce unfamiliar words (Goswami and Bryant, 1990; Snowling, 1996).

In addition, a number of scholars have concluded that children at risk for reading failure because of learning disabilities have difficulty understanding and applying the 'alphabet principle'; i.e. grapheme-phoneme correspondence (Adams, 1990; Stanovich and Siegel, 1994; Wagner, Torgesen and Rashotte, 1994), which in turn, enables a child to develop word recognition, reading fluency and reading comprehension skills.

Based on these assumptions and Rumelhart's (1997) recommendation that both top-down and bottom-up approaches to the teaching of reading in L2 and FL be used, the purpose of my research is to estimate the effects of an intervention reading programme in English as a foreign language for native dyslexic Hebrew speakers in Israel, which is based on the combination of the top-down and the bottom-up approaches to reading, has on these 'dyslexic students'.

The bottom-up approach (grapheme-phoneme correspondences) in the research intervention aims to increase the phonological awareness of the student through reading activities directed at the level of phonemes. The top-down approach aims to increase the phonological awareness of the student through reading activities on the level of whole words. In whole-

word instruction, the student is taught to identify words as whole units rather than as a sequence of phonemes.

The goal of a combined reading intervention is to help the 'dyslexic students' acquire a deeper awareness of the sounds of speech and an improved understanding of the connection between the sounds of speech and the letters of the alphabet (the bottom-up approach) or the sounds of whole words and frequent spelling patterns (the top-down approach).

## 2.12 Effectiveness of Short-Term Remedial Programmes

In recent years, there has been evidence of significant remediation of specific reading disabilities after short term intervention programmes. Gillon and Dodd (1997) published a study which investigated the learning of programme content and the effects of training spoken language on reading accuracy and reading comprehension ability. The intervention programme lasted for twelve hours of training over a six week period (two hours per week) and its results suggested that remediation of students with underlying phonological processing deficits had a dramatic effect on both reading accuracy and reading comprehension performance.

> Training in phonological processing skills appeared to have a great impact on reading accuracy performance. The transfer of phonological processing skills to the spelling of untaught real words and nonwords was evident after the phonological training programme. This suggests that the subjects had acquired knowledge of grapheme-phoneme conversion rules, as well as rules for the segmentation and manipulation of phonemes, as a result of their participation in the phonological training programme and in a short period of time (1997, p 66).

Bus and IJzendoorn (1999) showed, in a quantitative meta-analysis of phonological awareness training studies, that training of phonological

awareness improves young children's reading skills and that these gains are more consistent and robust when phonological awareness has been trained together with letter-sound correspondence; that is, the use of a bottom up approach to reading. In agreement with Bus and IJzendoorn (1999), Gonzales *et al* (2002) claim that phonological awareness plus letter-sound correspondence are a necessary training component, however, they are not in themselves sufficient. They claim that the role of speech perception has an impact on word reading and showed that a short-term remedial programme of four weeks, which trained phonological awareness and speech perception, was more effective in improving reading skills and that as a component of a phonological training programme, speech perception showed promise for use with reading-disabled students.

Simos *et al* (2002) obtained magnetic source imaging scans in order to examine changes in both brain hemispheres' activation profiles as a result of a successful short-term, two-month intervention programme with dyslexic children. The magnetic source imaging scans were obtained during a pseudo word reading task before and after the short-term programme.

Simos *et al* (2002) considered that their findings showed that

> Successful completion of an intensive remediation programme in reading is associated with dramatic changes in brain activation profiles in children with very severe reading difficulties' (2002, p 1213).

Completion of an intense short-term phonologically-based reading programme resulted in marked improvement in phonologic decoding abilities and normalisation of the brain activation profiles in all the reading-disabled subjects who participated in Simos *et al*'s (2002) research.

Simos *et al*'s (2002) conclusion is reinforced by Temple *et al*'s (2003) research which examined with the help of functional magnetic resonance imaging (fMRI) changes in brain function in children with dyslexia after a short-term intensive remediation of twenty-eight days. Remediation resulted in improved language, reading performance and increased activation in multiple brain regions during phonological processing.

Alyward (2003) supports Simos *et al*'s (2002) and Temple *et al*'s (2003) research results stating that after only three weeks of reading instruction, brain scans in children with dyslexia develop activation patterns which match those of average readers. In her study, an experimental group of dyslexic children and a control group of children of the same age with average reading levels underwent a pre- and post-intervention functional magnetic resonance imaging (fMRI) to map their brain activation patterns during reading tests. 'After the three week reading programme the levels of brain activation were essentially the same in the two groups', concludes Alyward (2003, p 1).

Swanson *et al* (2005) conducted research whose goal was to examine post-treatment outcomes of a short term intervention treatment (twelve week period) for seventh-grade poor readers, most of whom had English as their foreign language. The treatment emphasised phonological awareness at the phoneme level and incorporated explicit linkages to literacy. The post-treatment scores of the treatment group were higher and significant in comparison to the control group.

Therrien *et al* (2006) studied the effect of a combined repeated reading and question generation intervention on reading achievement of students with learning disabilities. They reported that students who received intervention significantly improved their reading.

Anthony and Francis (2005) have concluded that

> Basically, individuals who have difficulty detecting or manipulating sounds in words will struggle with learning to read. Four decades of research have established this relation, and it is evident in all alphabetic languages studied to date. Moreover, randomised intervention studies demonstrate that there is a casual relationship as intensive instruction in phonological awareness improves literacy (2005, p 255).

## 2.13 Behaviourism

My research question attempts to study the effects of the research combined reading intervention programme in EFL, on the six 'dyslexic students' of the research. So far I discussed the cognitive theoretical perspectives of my research; however, the conceptual framework of my research will not be comprehensive without discussing the behavioural and emotional aspects of 'dyslexic students' which emerged from the research. Therefore, a literature review on behaviourism and emotional aspects is presented hereafter.

Bandura (1969) claimed that behaviourism, which preceded cognitivism, views the world as if operating on a principle of 'stimulus-response' as Skinner (1957, 1969), one of the originators and important contributors of behaviourism referred to it. According to Skinner (1957, 1969) all behaviour is caused by external stimuli and can be explained without the need to consider internal mental states, meaning cognition. Pavlov (1927) a Russian psychologist and contributor of behaviourism, claimed that a learner is basically passive and responds to environmental stimuli, where behaviour is shaped through positive or negative reinforcement. Both 'positive' reinforcement and 'negative' reinforcement increase the probability that the antecedent behaviour will occur again. On the other hand, 'positive' or 'negative' punishment decreases the likelihood that the antecedent behaviour will happen again. Pavlov (1927), whose work was

conducted on dogs and generalised to humans, explained that 'positive' indicates the application of a stimulus and 'negative' indicates the withholding of a stimulus. Thus, learning is a change in behaviour in the learner. Skinner (1957, 1969) defined learning as the acquisition of new behaviour based on environmental conditions.

Baum (1994, 2003) claimed that experiments by behaviourists identify two different types of conditioning as a universal learning process where each yields a different behavioural pattern. The first one is the classic conditioning which occurs when a natural reflex responds to a stimulus, that is, a certain stimulus will produce a specific response. A frequent example of classical conditioning in the educational environment is in situations where students exhibit irrational emotions of fear and anxiety such as; fear of failure or fear of future consequences. This type of conditioning underpins the discussion, conclusions and propositions of my study where I suggest combining an emotional intervention which will encompass the cognitive research one. The second type of conditioning, referred as behavioural or operant occurs when a response to a stimulus is reinforced by a feedback system. This type of conditioning underpins the conclusions of the present study as the improvement sensed by the six research participants might be seen as the reinforcement behaviourists referred to where the research combined reading intervention programme is the external stimulus.

In the second half of the 20th century, behaviourism was largely eclipsed as a result of the cognitive revolution. Radical behaviourism stops short of identifying feelings as causes of behaviour, however, while behaviourism and cognitive schools of psychological thought may not agree theoretically, they have complemented each other in practical therapeutic applications, such as in cognitive-behavioural therapy which has demonstrable some success in treating certain pathologies, such as

anxiety and frustration among 'dyslexic students'. The concept of cognitive-behavioural therapy will be discussed later on in this chapter.

## 2.14 Emotional Problems of 'Dyslexic Students'

So far I have discussed literature in perspective of cognitive and behavioural aspects of learning and learning to read in particular. However, when dealing with dyslexia and learning to read, it is vital to provide theoretical perspectives on emotional problems of 'dyslexic students'.

Research over the last few decades has stated that dyslexia is a complex disorder seen from cognitive aspects, which have a negative impact on the behavioural aspects of those who have it. That is, dyslexia, which is a chronic disorder with reading difficulties, bears behavioural consequences linked to emotional aspects which go beyond learning to read (Bartlet, Moody and Kindersley, 2010). Moreover, brain research has shown that learning takes place in the neocortex, which does not function well when learners are under strong emotional aspects, such as stress or anxiety (Goswami, 2006; Wilson, 1993).

Orton (1925) was one of the first researchers to describe the emotional aspects of dyslexia. He explained that the 'dyslexic students' emotional problems begin to develop when early reading instruction does not match their learning style. Over the years, the frustration increases as classmates surpass dyslexic student in reading skills. According to Wong and Donahue (2002) merely three decades ago researchers started to focus more on the aspects beyond the academic problems of children and adolescents with learning disabilities. One of the emotional problems of 'dyslexic students' is frustration. Ryan (2004) explains that the frustration of students with dyslexia often focuses on their inability to meet expectations; other people expectations and their own ones. Moreover,

the pain of failing to meet other people's expectations is surpassed by the 'dyslexic students' inability to achieve these expectations. This is particularly true of 'dyslexic students' who are afraid of future consequences of negative social evaluation. Thus, they become fearful because of their constant frustration and confusion in lacking to meet school expectations. Ryan (2004) goes on to say that this constant fear or anxiety is the most frequent emotional symptom reported by 'dyslexic students'. 'dyslexic students' become anxious because of their constant frustration in school, usually anticipating failure when entering new situations, which brings about extremely anxious situations. In accordance, Carroll and Iles (2006) conducted a research demonstrating evidence that children and adolescents with dyslexia show higher anxiety levels than 'non-dyslexic students'.

In agreement with Ryan (2004) Bartlet, Moody and Kindersley (2010) among other social scientists have observed that frustration produces anger. The target of the 'dyslexic students' anger is usually not only themselves, but also others. However, perhaps because of their low self–esteem, 'dyslexic students' are afraid to turn their anger toward their environment and instead turn it more often toward themselves. Ryan (2004) goes on to say that students with dyslexia are at a higher risk for intense feelings of anxiety which consequently may cause the dyslexic student to view the world negatively without being able to imagine anything positive about the future, subsequently foreseeing a life of continuing failure.

Bartlet, Moody and Kindersley (2010) claimed that the dyslexic research participants' self–image appears to be extremely vulnerable to frustration and anxiety. When 'dyslexic students' repeatedly meet failure and frustration, they learn that they are inferior to others, and that their effort makes very little difference. Instead of feeling powerful and productive,

they learn that their environment controls them. They feel powerless and incompetent.

Next section deals with cognitive-behavioural therapies which attempt to provide a solution to 'dyslexic students' frustration studying in inclusive education. As discussed in the introduction chapter of my research, despite the fact that inclusive education is contested and generates intense debate amongst teachers, parents, researchers and policy-makers who continue to argue over the nature and extent of inclusion (Slee, 2011), inclusive education has been integrated in government education in Israel and was imposed by law in 2005. This means that the six dyslexic research participants study English as an FL in an inclusive EFL classroom and are expected to fulfil all the EFL requirements of their mainstream school. As already mentioned the ultimate aim of inclusion is to help learning disabled students to integrate into academic educational life and social life in the future. In Israel for this to happen, 'dyslexic students' need to be granted a Matriculation Examination certificate. However, in order to be granted such a certificate it is a must to pass the matriculation examination in English as an FL. Inclusive classrooms in Israel refer to any mainstream classroom, within a mainstream school; where 'dyslexic students' study and are granted pull-out hours in the school subjects they may fail due to their learning disability. However, due to budgetary problems in Israel none of the Israeli schools provide pull-out EFL hours. This means that the six students in this study did not receive pull-out EFL hours even though they studied in inclusive classes in mainstream schools, and yet, they are expected to fulfil the academic requirements of the Israeli society.

## 2.15 Cognitive-Behavioural Therapies

In agreement with Schnitzer, Andries and Lebeer (2007) my research suggests that while international educational policies, including Israeli ones, clearly favour inclusive education, it is of greatest importance to develop approaches which would help increase 'dyslexic students' chances to learn and succeed in the mainstream educational system. In an attempt to provide a solution to 'dyslexic students' studying in inclusive classrooms in the mainstream educational system, scholars and researchers have come to a similar conclusion, which underpins the further propositions of my study; cognitive intervention programmes for 'dyslexic students' would be more effective, when encompassed by emotional-behaviour intervention programmes.

Mishna and Muskat (2004) have found that, since many students with learning disabilities struggle with social problems related to low self-esteem and low sense of competence, behavioural group therapy is a useful intervention when combined with a cognitive intervention one. The notion of combining two interventions with learning disabled students, a cognitive intervention with a behavioural one, was facilitated by behaviourism which over the last three decades, has had a major and positive impact on understanding students' behaviour and subsequently creating strategies for improving it. Recent development in behaviour therapy has moved beyond Kazdin's (1978) study of observable behaviour and encouraged the inclusion of students' cognitive mediation processes.

In accord with Mishna and Muskat (2004), Zafiropoulou and Karmba-Schina (2005) conducted a study in which they presented a psycho-educational intervention using cognitive-behavioural techniques to modify and improve thinking strategies as well as facilitate behavioural adjustment in students with learning disabilities attending mainstream

schools. Zafiropoulou and Karmba-Schina (2005), whom conducted their study with one hundred and twenty learning disabled Greek students, concluded that their study demonstrated that a psycho-educational intervention programme, which activated and guided students with learning disabilities to understand the nature of their learning problems and define for themselves what is hindering their learning, is capable of increasing cognitive performance significantly and improve their psychological adjustment as learners.

Seeking for an answer to the question whether an intervention programme, which is mainly oriented at changing cognitive functioning could influence socio-emotional behaviour of students with LD as well, Schnitzer, Andries and Lebeer (2007) came to the conclusion that the results of their study do not demonstrate a clear picture of the impact of their cognitive intervention on socio-emotional behaviour of LD students. However, 'theoretically, an intervention programme which is oriented at cognitive as well as socio-emotional behaviour and which at the same time focuses on interaction, would be ideal' (Schnitzer, Andries and Lebeer, 2007, page 161). This notion is in agreement with Margalit (2000) who claimed that in order to make possible the adjustment of a dyslexic student in the inclusive classrooms in the Israeli mainstream educational system, this system should provide cognitive and emotional intervention programmes within school hours or inclusive hours, as referred by the Israeli educational system. The concept of inclusive hours in the Israeli educational system was mentioned in the introduction to this study.

A study conducted by Shechtman (2010) points to the fact that not much has been done in the Israeli educational system since Margalit's (2000) implication. Shechtman (2010) claimed that at the present time Israeli students are assisted merely by cognitive interventions which do not provide a solution to the 'dyslexic students' emotional problems, which

concern them more than their learning difficulties. Shechtman (2010), agrees with the scholars mentioned above, and suggests that in order to help 'dyslexic students' with their cognitive and emotional problems it would be ideal to combine a cognitive intervention with an emotional intervention.

## 2.16 Inclusion in Education

International organisations (UNESCO and OECD) have declared their commitment to education for all students and the principles and practice of inclusive education (Slee 2011).

In the foreword of the policy *Guidelines on Inclusion in Education* (UNESCO 2009) it is stated that

> 'From a policy perspective, inclusive education means taking a holistic approach to education reform and thus changing the way the educational system tackles exclusion'.

However, inclusive education is contested and generates disagreement amongst teachers, parents, researchers and policy-makers who continue to argue over the nature and extent of inclusion. Still, inclusive education has been integrated in government education policy around the world (Slee, 2011). In Israel, inclusion was imposed by law in 2005, a decade after it was adopted by acclamation, in the city of Salamanca, Spain in 1994.

Lamport (2012) explains that the inclusion method is a basic model where both disabled and non-disabled students are educated within the same classroom. 'Educational inclusion, then, offers education geared to include all students, even those with disabilities in the same learning environment' (Lamport, p 55). As a matter of fact, the six dyslexic research participants study in an inclusive EFL classroom. Inclusive classrooms in Israel refer to

any mainstream classroom within a mainstream school. Assessed learning disabled students study in such classrooms as well and are granted additional (pull-out) hours in academic school subjects that they may fail due to their learning disabilities.

### 2.16.1 Background of Inclusion in Education

The *Guidelines on Inclusion in Education* (UNESCO 2009) defines inclusive education as a process of reinforcing the capacity of the education system to reach out to all learners, and it can thus be regarded as a key strategy to achieve education for all, both reducing and eliminating exclusion.

Inclusion of students with special needs is widespread in many countries around the world. One of the goals of inclusion is to give students with disabilities the opportunity to participate in the least restrictive environment so that they receive as much education as possible with non-disabled students. Lamport (2012) states that inclusion seems to prove to be beneficial in areas of academic achievement and social interaction of learning disabled students.

Terzi (2007) says that the *Salamanca Statement and Framework for Action on Special Needs in Education* called for inclusion as the norm. In addition, in an attempt to provide equal opportunities to students with disabilities, the 1994 Conference in Salamanca adopted a new *Framework for Action* based upon the principle that mainstream schools should accommodate all children, regardless of their physical, intellectual, social, emotional, linguistic or other conditions. The Statement also called on the international community to endorse the approach of inclusive schooling and to support the development of special needs education as an integral part of all education programmes. The *Framework for Action* (1994) states that; 'inclusion and participation are essential to human dignity and to the enjoyment and exercise of human rights'. The educational

implications of this statement are to provide equal opportunities to students with special needs by adopting methods of teaching from which all children can benefit. The fundamental principle of inclusion is that all students should learn together. Mainstream schools have to be aware of and react to the different needs of their students; on the other hand schools must have a variety of support and services to match these needs.

The term 'inclusion' replaced all previous terminologies in the hope that the word would mean more than just placing children with special needs in the mainstream educational classroom, including a sense of belonging, social relationships, and academic development where these students participate in the same assessments as students without disabilities unless the nature of their disability is determined to be too severe to do so (Odom *et al*, 2011).

The rationale for inclusion is based on Bandura's (1977) *Social Learning Theory* which states that learning, both cognitive and behavioural, takes place through the observation, modelling and imitation of others. Miller (2011) stresses this concept and says that

> 'The main characteristic of the social learning theory, are the centrality of observational learning, a casual model that involves an environment – person - behaviour system, cognitive contributions, and self-efficacy and agency' (p 236)

Miller (2011) claims that Bandura's (1977) *Social Learning Theory* suggested that academic and behaviour modelling takes place through verbal instruction, live modelling by a person, and symbolic modelling through four steps: attention, retention, reproduction and motivation. These four steps can occur in the inclusion classes where disabled peers can observe their non disabled peers and their teachers, and then imitate them both academically and behaviourally. Advocates for inclusion took

into consideration the fact that when included in the mainstream classroom, learning disabled students have the opportunity to see their peers working habits and social interactions, and they can model those habits and behaviours to reflect their own, that is, identification through modelling for the achievement of a sense of belonging, pride and responsibility. Ntshangase *et al* (2008) claim 'that high social interaction is important not only for learners' academic achievement but also for their long-term general well-being and personal development' (p 82) concludes this concept. A study conducted by Dessemontet *et al* (2012) shows empirical support for the inclusion in general education classrooms, demonstrating it is an appropriate alternative to an education in separate settings for learning disabled students. Socially, disabled students have the opportunity to interact with their non-disabled peers in order to learn academically and behaviourally.

However, a study conducted by Lamport (2012) argues that for inclusion in education to succeed there is a need to address it accompanied with the co-teaching inclusion model on academic achievement of disabled students. Co-teaching is an instructional approach which provides disabled students with an adequate support for their achievements on standardised tests. Hang's (2009) and Simmons' (2007) studies, both on co-teaching in inclusive classrooms, support the concept that when co-teaching is practised with a correct model, students' achievements increases. Pierce's study (2004) found that teacher-mediated short term interventions, which were implemented in inclusion schools, in the academic areas disabled students were having difficulties, proved to be effective and successful for these students. However, Pierce's (2004) conclusion was that the desired direction should be to implement more teacher-mediated interventions to improve not only academic achievement, but also behavioural success of students with emotional and behaviour disorders due to their disabilities. The *Policy Guidelines on*

*Inclusion in Education* (UNESCO 2009) suggest that the commitment for the success of inclusion may include forming partnerships with outside contributors such as the private sector, which are all among the actors which can serve as valuable resources in support of inclusion. This underpins in my study the EFL reading intervention programme for the six dyslexic participants which can be considered as a teacher-mediated intervention within the private sector.

Findings of a study conducted by Dyson *et al* (2000) serve to alleviate concerns from school administrators, teachers and community members about the impact of inclusion on the general education students. The study found that learning environmental concepts alongside disabled students did not negatively affect the learning of their non-disabled peers. On the contrary there was a positive impact on the non-disabled students in the aspects of social skills and understanding of disability.

According to the *Policy Guidelines on Inclusion in Education* (UNESCO 2009) an inclusive curriculum addresses the students' cognitive, emotional and behavioural development. For inclusion to be successful, it is important to provide educators with adequate training in the core of inclusion, taking in consideration the special needs of learning disabled students in the aspects of cognition, emotions and behaviour.

### 2.16.2 Cognitive Aspects of Inclusion in Education

As mentioned before in this chapter Huitt and Hummel (2003) explained that the final stage in Piaget's (1970) cognitive development theory, which takes place between the ages of eleven and sixteen, is identified as the formal operational stage. At this stage, children develop the ability to master abstract thinking and relate symbols to concepts. Brown (2007) believes that Piaget's formal operational stage is a critical stage in the consideration of the effects of age on second language acquisition, as in

the case of my study. It is during this stage that a person becomes capable of abstraction and of formal thinking which transcends concrete experience and direct perception. The six dyslexic research participants were within Piaget's final stage of cognitive development, as all of them were between the ages of fourteen and seventeen. Research over the last decades has stated that dyslexia is a complex disorder seen from cognitive aspects, which have a negative impact on the behavioural aspects of those who suffer from it. That is, dyslexia, which is a chronic disorder with reading difficulties, bears behavioural consequences linked to emotional aspects which go beyond learning to read (Bartlet, Moody and Kindersley, 2010). Nelson *et al* (2004) studied the academic deficits of learning disabled students, concluding that these students lack social skills and want to fit in socially with their peers but many times their academic deficits in many content areas hold them back socially. Research on inclusion in education, as mentioned in the previous section, claims that an inclusive surrounding provides the adequate environment for learning disabled students to overcome their learning difficulties, as stressed by the *Policy Guidelines on Inclusion in Education* (UNESCO 2009).

### 2.16.3 Emotional Aspects of Inclusion in Education

As previously mentioned, Orton (1925) was one of the first researchers to describe the emotional aspects of dyslexia. He explained that the dyslexic emotional problems begin to develop when early reading instruction does not match their learning style. Over the years, the frustration increases as classmates surpass dyslexic student in reading skills. According to Wong and Donahue (2002) merely three decades ago researchers started to focus more on the aspects beyond the academic problems of children and adolescents with learning disabilities. One of the emotional problems of 'dyslexic students' is frustration. Ryan (2004) explained that many of the

emotional problems caused by dyslexia occur out of frustration due to academic failure in school. Bartlet, Moody and Kindersley (2010), among other social scientists have observed that frustration produces anger. Ryan (2004) believes that students with dyslexia are at a higher risk for intense feelings of sorrow and pain which might turn the dyslexic student into a depressed person.

In addition a sense of shame due to feelings of inferiority of having dyslexia and being different, shared by 'dyslexic students', shows 'dyslexic students' self–image might be extremely vulnerable to frustration and anxiety. Thus, it is important that inclusion in education provides the adequate environment for the 'dyslexic students', as expected by the *Policy Guidelines on Inclusion in Education* (UNESCO 2009). This provision is vital for the emotional difficulties 'dyslexic students' experience in the inclusive EFL classroom in Israel.

### 2.16.4 Behavioural Aspects of Inclusion in Education

Behaviourism, as already discussed in this chapter, explains how learning occurs due to a change in behaviour, as opposed to cognitivism which claims that learning can be described in terms of a change in the mental state (Ormrod's, 1999). As mentioned above Bandura's (1977) *Social Learning Theory* states that learning, both cognitive and behavioural, takes place through the observation, modelling and imitation of others. This concept underpins the rational of inclusion in education. Behaviorists emphasise the role that external behaviour plays in learning, rather than cognitive internal mental processing (Ellis, 1990; Ormrod, 1999). Yet, both theories of learning, the cognitive and the behaviour one, state that for learning to happen, a change needs to take place. Advocates of inclusion such as Dessemontet *et al*, (2012), claim that inclusion in education can provide an atmosphere for a behavioural change for

'dyslexic students' dealing with negative emotions as a result of learning difficulties. However, when dealing with foreign language acquisition, as in the case of my study, the 'dyslexic students' anxiety and frustration increases due to their awareness of the important role, the English language plays in the Israeli society, as already mentioned before. Djigunovic (2006), who studied English acquisition as an FL in Poland, claims that 'language anxiety is a distinct complex of self-perceptions, beliefs, feelings, and behaviours related to language learning arising from the uniqueness of language learning process' (Djigunovic, 2006, p 10). In agreement with Sparks and Ganschow (1991, 2000), Djigunovic (2006) claimed that 'dyslexic students' language ability causes difficulties in linguistic coding in their L1, particularly in the coding of phonological and syntactic aspects, which causes FL learning difficulties. These difficulties give rise to a surpassed anxiety, as in the case of this research participants.

As mentioned in the introduction to the present study, at the beginning of the twenty-first century, it seems that English is the major language around the globe (Ministry of Education in Israel, 2001). English is at the present solidly well-established in Israel as the 'first foreign language', as defined in the *Policy on Language Education in Israeli Schools* (Ministry of Education in Israel, 2001, 2007). The English language, after Hebrew, is considered the most valuable asset of an Israeli citizen. For all these reasons, it is the foreign language which is privileged. Thus, in Israel, the mastering of English as a foreign language is almost as important as the mastering of Hebrew, the L1 of the country, and people who do not know the language feel excluded and incompetent knowing that without English an Israeli student cannot go on to higher education. As a matter of fact, learning English as a foreign language in Israel has socio-economic implications which affect individuals' perceptions of their future, especially of 'dyslexic students'.

The role of English as an FL in Israel as discussed above is problematic for 'dyslexic students', as without the matriculation examination in the English subject a student is not accepted to the university. This unique role of English as an FL in Israel causes, in my opinion, an increased sense of frustration and anxiety among 'dyslexic students' in Israel in comparison to other countries worldwide, and was expressed by all the research participants of this study, who are well aware of this reality. Thus, it is important that 'dyslexic students' study in an inclusive education surrounding which can cause the desired change Bandura's (1977) *Social Learning Theory* referred to. As mentioned above, Pierce's study (2004) found that teacher-mediated short term interventions in inclusion schools proved to be effective and successful. But, the desired direction should be to implement more teacher-mediated interventions to improve not only academic achievement, but also behavioural success of students with emotional and behaviour disorders due to their disabilities.

### 2.16.5 Inclusion in Education in Israel

Avissar (2012) states that

> 'As we are entering the fourth decade of including children with special educational needs into mainstream education settings, we strive to make our schools more inclusive and more accepting of differences and diversity' (p 35)

and more concerned with issues of social justice and equality. In Israel only five years after the Salamanca Statement, Kol-Tuv (1999) published an article much in favour of inclusive education in Israel. The purpose of his article was to increase awareness among Israeli government members and society in general on the subject of inclusion. Kol-Tuv (1999) explained that inclusion is a term which expresses the commitment to educate each child to the maximum extent appropriate, in the school and

classroom he or she would usually attend. It involves bringing the support services to the child, rather than moving the child to the services, and requires only that the child benefit from being in the class, rather than having to keep up with the other students. A fundamental aim of inclusion is to help learning disabled students to be able to function in the academic educational life and social life in the future. In Israel for this to happen, learning disabled students need to be granted a Matriculation Examination certificate. As mentioned above in order to be granted such a certificate it is a must to pass the matriculation examination in English as an FL.

Being aware that 'dyslexic students' struggle to cope with their difficulties in inclusive classes, the Ministry of Education in Israel recommends that

> 'In addition to regular English studies, hours should be allotted for remedial instruction, by specially trained English teachers, for pupils who have difficulties learning English'. (English Curriculum, 2001, State of Israel, Ministry of Education, p 36)

This recommendation was not followed by schools in Israel as necessary economic provisions to support it were not an integral part of the recommendation. And in point of fact, all six 'dyslexic students' of my research studied in an EFL inclusive classroom without any additional tutoring of pull-out EFL hours.

Due to this lack of budgetary provision, it took the Israeli government three more years after Kol-Tuv's article was published (1999), to adopt as a matter of policy the principle of inclusion in education, whose aim is to enrol all children in mainstream schools unless compelling reasons exist for doing otherwise. In 2002, The Director's Annual Circular of the Ministry of Education in Israel stated that any disabled student who has been granted the right for inclusion will study in an inclusive classroom

within the premises of a mainstream school. As already explained above, inclusive classrooms in Israel refer to any mainstream classroom, within a mainstream school; where 'dyslexic students' study and are granted pull-out hours in the school subjects they may fail due to their learning disability. In Israel, each school is granted pull-out hours by the Ministry of Education. Pull-out hours are hours in which specially-trained teachers provide additional tuition to 'dyslexic students' outside of the inclusive classroom in which they generally study. The right for pull-out hours is granted by each individual school committee in charge of inclusion. The pull-out hours for learning disabled students consist of remedial lessons in the academic school subject disabled students fails to grasp. However, due to budgetary problems in Israel none of the Israeli schools provide pull-out English as a foreign language hours. This means that the six participants in this study did not receive pull-out EFL hours even though they studied in inclusive classes in mainstream schools, and were assessed as learning-disabled students, as stated by the Israeli educational inclusion law (The Director's Annual Circular of the Ministry of Education in Israel, 2005).

In order to provide 'dyslexic students' with equal opportunities to those of their peer students who do not have learning disabilities, The Director's Annual Circular of the Ministry of Education in Israel (2003) mandated the possibility of granting one or more of five different regulations on special testing accommodations to learning disabled students:

1) Learning disabled students are allowed twenty-five per cent more time during class tests.

2) Learning disabled students are permitted to use an electronic English – Hebrew dictionary, while the rest of the students are permitted a paper-based English – Hebrew dictionary.

3) Spelling mistakes of learning disabled students are ignored in the calculation of the test grade.

4) The teachers read tests aloud to learning disabled students, rather than requiring them to read them on their own.

5) In severe cases of dyslexia, where learning disabled students cannot read at all, they are tested orally.

These five testing accommodations are granted only to learning disabled students assessed for learning disabilities by a professional assessor or an educational psychologist, who are specialists in assessing learning disabilities and are officially approved and licensed by the Ministry of Education in Israel as an authority for granting tests accommodations.

Only in 2005 did the Israeli government adopt as a matter of law the principle of inclusion in education (The Director's Annual Circular of the Ministry of Education in Israel, 2005). Since 2005, inclusion in the Israeli educational system is required by law and is compulsory for each mainstream school in Israel. However, as mentioned above, in Israel none of the Israeli schools provide pull-out English as a foreign language hours for 'dyslexic students'. Moreover, none of the Israeli schools provide Hang's (2009) and Simmons' (2007) recommendation on co-teaching in inclusive classrooms, which when practised with a correct model, students achievement increases. Neither do any of the Israeli schools provide Pierce's (2004) proposition that teacher-mediated short term interventions in inclusion schools, which proved to be effective and successful throughout all academic areas disabled students were having difficulties. Pierce's (2004) conclusion was that the desired direction should be to implement more teacher-mediated interventions to improve not only academic achievement but also behavioural success of students with emotional and behaviour disorders due to their disabilities. My

research EFL reading intervention programme for dyslexic Israeli students, studying in an inclusive EFL classroom, might be considered as a teacher-mediated intervention as recommended by Pierce (2004) within the private sector as suggested by the *Policy Guidelines on Inclusion in Education* (UNESCO 2009).

## 2.17 Summary

The purpose of my research is to estimate the effects of an intervention reading programme in English as a foreign language for native dyslexic Hebrew speakers in Israel, which is based on the combination of the top-down and the bottom-up approaches to reading. The intervention is unique as it systematically combines the two complementary approaches to reading in each session for the same duration of time, thus equally involving the different parts of the brain in charge of reading. The goal of the intervention is to enhance the six research 'dyslexic students' phonological awareness and to improve their reading in English in the inclusive EFL classroom in the mainstream educational system.

In order to generate improvement in phonological awareness, I created the combined intervention reading programme. The programme is based on cognitive processes in learning to read, foreign language acquisition and inclusion theories. The reading intervention was implemented in thirty-six sessions. In each session, methods utilised in each of the two complementary approaches to reading were incorporated for the same duration of time.

The rationale for the development of the combined reading intervention programme has its roots in my years of teaching reading in English as a foreign language to dyslexic Hebrew speakers in Israel. During this time, I used both of these approaches individually, and discovered that many of my students did not learn to read using either approach independently.

This claim is in accordance with Lovett *et al*'s (1990, 1994) findings, which are mentioned earlier in this chapter. My decision to combine the two complementary approaches is supported by a number of scholars who have claimed for nearly thirty years that the best way to teach reading to students at risk, due to their learning disability, is the combination of the top-down and the bottom-up approaches to reading (Stanovich, 1980; Frith, 1985; Eskey, 1988; Goswami, 1991).

In the following chapter, I will discuss the research design and methodology which are based upon the theoretical foundations presented in this chapter, and provide the structure through which to answer the research question:

What effects a systematically combined reading intervention programme in EFL had on 'dyslexic students' in Israel studying in an inclusive classroom?

# 3 Research Design and Methodology

## 3.1 Introduction: grounds for a qualitative design

This study is an action research using a case study design of a combined reading intervention programme in English as a foreign language (EFL) for 'dyslexic students', who are native speakers of Hebrew in Israel. It examines the effects of the reading intervention programme, informed by a combined theoretical approach, on the six students studying English in the inclusive EFL classroom in Israel.

As mentioned in the introduction to this study, based on the knowledge gained from my 32 years of professional practice in formal education and private practice in the field of teaching English as a foreign language (TEFL) to 'dyslexic students', together with the ample literature in the domains of both cognitive theories of dyslexia and cognitive theories of reading, I have constructed a systematically combined reading intervention programme in EFL, for 'dyslexic students' in Israel. The intervention is developed from a method combining the two complementary approaches to reading, as I have witnessed over years of practice that the combined intervention is more effective in enhancing phonological awareness and improving reading in the EFL inclusive classroom of my private Hebrew-speaking 'dyslexic students' in Israel, than either individual approach used on its own.

The goal of the research intervention was to enhance the six 'dyslexic students' phonological awareness and to improve their reading in English in the inclusive EFL classroom in Israel. However, the research question studies the effects of the combined reading intervention programme in EFL, on the dyslexic research participants. The reading intervention is based on the combination of the top-down and bottom-up approaches to reading. The intervention is unique as it systematically combines the two

complementary approaches to reading in each session for the same duration of time, thus equally involving the different parts of the brain in charge of reading.

As described in the previous chapter, research has shown that phonological awareness and improvement in reading of 'dyslexic students' can be obtained by either the top-down approach to reading, the bottom-up approach or a combination of the two, most of which was conducted in relation to native language (L1) of 'dyslexic students'. Though some research has been conducted in relation to phonological awareness and improvement in reading in a foreign language (FL) of 'dyslexic students', little, if any, has examined the effects of a reading intervention for these students, beyond improvement in phonological awareness and reading in EFL, particularly in Israel. The methodological choices made in this action research enable the surfacing of behavioural and emotional aspects beyond the initial cognitive ones, to the acquisition of reading EFL by 'dyslexic students' speakers of Hebrew in the inclusive EFL classroom in Israel.

No specific theory directly related to the effects of a cognitive EFL reading intervention, on behavioural and emotional aspects of Hebrew-L1 'dyslexic students' in Israel, can be used to explore these effects. Therefore, qualitative inquiry provides the appropriate methodological design to study the effects efficiently, as well as the tools through which to present it clearly. The inductive nature of data collection, analysis and interpretation in qualitative inquiry of the six 'dyslexic students' of my research, not only allows the voice of each to be heard, but also facilitate the foundation for creating propositions which can lead to further research.

## 3.2 Qualitative Research: an Overview

Denzin and Lincoln (2005) explain that the word qualitative 'implies an emphasis on the qualities of entities and on processes and meaning that are not experimentally examined or measured in terms of quantity, amount, intensity, or frequency' (p 10). Quantitative studies emphasise the measurement and analysis of casual relationships between variables, not processes. Whereas qualitative studies provide answers to questions that put emphasis on how social experiences are created and how processes are given meaning.

Denzin and Lincoln (2005) describe qualitative research as 'a situated activity that locates the observer in the world' (p 3). The world becomes visible through a set of interpretive material practices which change the world. Qualitative research involves an interpretive, naturalistic approach to the world, where qualitative researchers study effects in their natural surroundings, trying to interpret facts in terms of the significance people bring to them, hoping to get a better understanding of the subject matter at hand. This concept underpins my choice of a qualitative paradigm for the present study. As a researcher, I wished to study the effects of the research reading intervention in a natural surrounding for the research students; that of a one-to-one teaching ambience. Hence, trying to interpret facts in terms of the significance the students bring to them, hoping to get a better understanding of my practice and my EFL 'dyslexic students' difficulties.

Diaz Andrade (2009) advises that there is a difference between qualitative research and an interpretative approach. These terms are not identical or interchangeable. Qualitative research is a broader term, it refers to a study process which examines a social human problem where the researcher conducts the study in a natural setting and builds a

representation by a rich description and explanation using carefully the examination of participants' words and views. The interpretive approach provides a deep insight into the complex experiences of the research participants. The interpretive approach assumes that reality is socially constructed and that the researcher is the vehicle by which this reality is discovered. The researcher's interpretations play a key role in this kind of study presenting quality arguments rather than statistical precision, thus enabling the construction of the social world distinguished by the interaction between the researcher and the participants. Diaz Andrade (2009) emphasises the role of the researcher in qualitative and interpretative case studies, where they are directly involved in the process of data collection and analysis, thus becoming a 'passionate participant' as referred by Diaz Andrade (2009, p 45). To concur with Andrade, my direct involvement as a tutor and as a researcher was one of the advantages of the interpretive approach to this action research study. The fact that my research provided me with a chance to get a profound insight into the case in study, made it possible to present my own construction as well as those of the 'dyslexic students' participating in it.

According to Flick (2007), qualitative research claims to describe the world from the point of view of the people who participate in the research, in other words, a bottom-up process from the micro to the macro. By so doing it seeks to contribute to a better understanding of social realities and to draw attention to processes. This approach to the phenomena under investigation is often more open to the world of experience, its internal design and the principles of its construction which are for qualitative research, not only an end in themselves giving a scenery of small life-worlds, but also the starting point for the contribution to the understanding of the processes of social realities.

Taking into consideration the previously explained assumptions, my research can be identified as qualitative and I as an interpretative researcher applying an action research, using a case study design, which can be seen as the starting point, where its conceptual conclusions and further propositions may lead to a further action research.

## 3.3 Action Research Design

Harkavy *et al* (2000) and Fleming (2000) pointed out the fact that action research has grown in popularity throughout the past two decades. It has become a research design accepted by practitioners in education, to assess their own practice strategies and reflect upon their effectiveness, as a form of self-evaluation. McNiff (1988, 1999, 2002) and McNiff and Whitehead (2006) stated that action research is a substitute to the idea that research has to be carried out by theorists, and is a tool for teachers to improve practice and as such it should be conducted by those directly concerned. In agreement Elliott (1991) stated that 'the fundamental aim of action research is to improve practice rather than to produce knowledge' (p 49).

Cohen *et al* (2007, 2013) claimed that action research is a powerful design for personal change and improvement. Its integration of action and research contributed to my choice of this kind of study design, as my research focuses on a specific intervention in a specific setting. Somekh (1995) stated that action research is designed to bridge the gap between research and practice in order to improve the late. As in the case of my study where I, as a practitioner, wanted to find out what were the effects of my cognitive EFL reading intervention for 'dyslexic students', in an attempt to reflect and improve my practice.

My research suits the definition of action research by Kemmis and McTaggar (1992) who said that action research is carried by teachers on

their own practice so as to help them improve it. Waters-Adams (2006) supports this point and claims that in education teachers should use action research when they have a concern about their practice and are seeking for practical solutions, where those derive from the specific circumstances of their practice. Waters-Adams' (2006) claim qualifies my study as an action research due to the fact that the act of finding an optional solution made me understand the effects of my practice better. As in action research, discussed by MacNaughton and Hughes (2009), I had to evaluate the issue of the effects of my practice and to be ready to create a change as an optional solution. From the point of view of action research, practice means the way and the reasons for a teacher to carry their professional actions. Waters-Adams (2006) goes on to say that the aim of an action researcher is to develop their practice by analysing existing practice and identifying elements for change, by collecting evidence on which to make judgements and conclusions.

Even though action research did not originally arise in education, it was applied to the development of teaching when its potential was identified. Stenhouse (1975) advocated that 'it is not enough that teachers' work should be studied: they need to study it themselves' (p 143). Action research is about comprehending professional action from the inside, researched by practitioners on their own practice. This fact underpins my choice of action research design, as I wanted to understand the effects of my intervention on the 'dyslexic students' where I played the role of both, the teacher and the researcher as well. Both elements of action and research are equal important in the approach, in other words, 'research on action by using action as a tool for research' as defined by Waters-Adams (2006, p 4).

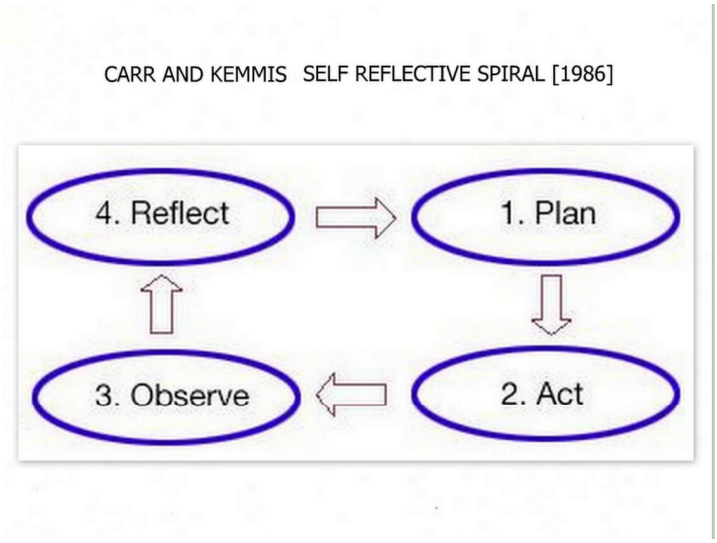
Sagor (2011) claimed that action research involves examining data on one's work so as to improve the performance. Although there is not an

agreement on a single set of processes or steps that constitute action research design, it is a straightforward four-stage process. Both Jester (2010) and Sagor (2011) discussed that the four generic steps of an action research cycle include

- what we really want to accomplish,
- how are we going to accomplish it?
- what kind of data are needed,
- what have we learned from it.

Following Sagor's (2011) discussion, the action research cycle of my study included planning, action, monitoring and self-reflection. Carr and Kemmis (1986) discuss the cycle as: plan, act, observe and reflect which is presented in diagram no. 3.1 below. The self-reflection is a key element within action research and allows researchers to plan what changes can be made, implement these changes, and then reflect once again in a further research. Planning meant what I wanted to accomplish, that is, the understanding of the effects of the research intervention. Action was the applying of the intervention by me. The monitoring was the qualitative tools for data collection used while applying the intervention. And the reflection was the understanding and conclusions of what I have learned through the process. This was allowed in my study due to the fact that I was both, the practitioner and the researcher as well. It allowed me to better understand the effects of the EFL reading intervention on the 'dyslexic students' and to draw conclusions for a change so as to improve the present situation. The study's action research allowed the opportunity to reach the conclusion that there was a need for a change in my practice. This could only be achieved by the person doing this specific research, that is, myself. As Elliot (1991) stated that 'action research is concerned with practical problem solving and improvement in practice' (p 49).

**Diagram 3.1: Carr and Kemmis self reflective spiral.**




Kemmis (1993) claimed that action research design is eclectic in its choice of investigative techniques; however, the inductive case study approach is most often used. In agreement, Meyer (2000), Mettetal (2001) and Robson (2002) claimed that action research is often written up as a case study. Cohen *et al's* (2007, 2013) claim that when integrating action and research the case study approach is most suitable underpins my choice of case study approach for the action research present study.

As mentioned above, and as Cohen *et al* (2007, 2013) have concluded, in integrating action and research a case study design is most suitable. In conclusion, my study is an action research using a case study design of a combined reading intervention programme in English as a foreign language (EFL) for 'dyslexic students', who are native speakers of Hebrew in Israel. This study includes only one self reflective spiral (Carr and Kemmis, 1986), however, over my teaching years I have, in effect, undertaken many reflective spirals whilst refining my combined reading intervention programme. A discussion of case study design is introduced hereafter.

## 3.4 Case Study Design

In the introduction to her book *Case Study; Research in Practice* Simons (2009) states that a 'case study is a study of the singular, the particular, the unique', where the case could be a person, a classroom, an institution, a programme, a policy, a system' (p 4), as in my research the case is a study of a reading intervention programme. Simons (2009) goes on to say that the 'primary purpose for undertaking a case study is to explore the particularity, the uniqueness, of the single case' (p 3) and to generate in-depth understanding of a specific topic or programme in order to generate knowledge. Simons' claim is in agreement with LeCompte's and Preissle's (1993) argument that a case study is a specific instance which illustrates a more general principle. It provides a unique example of real people in real situations, as in the case of the present study where the real people are the dyslexic research participants dealing with their real situation that of struggling with reading in English as a foreign language. This is in agreement with Stake (1995) who prefers to see the case study as an integrated system focusing on specifics rather than generalities. Simons (1996, 2009) believes that the main contribution of case studies is that as genuine creative encounters, they create new forms in which to understand education. This underpins the purpose of my research which is to find out what effects an EFL reading intervention programme has on 'dyslexic students' Hebrew speakers in Israel.

Cohen *et al* (2007,2013) state that one of the advantages which make case studies attractive to educational research is that a case study is

> … a step to action. They begin in a world of action and contribute to it. Their insights may be directly interpreted and put to use; for within – institutional feedback; for formative evaluation; and in educational policy making. (2000, p 184)

On the other hand, we cannot ignore that one of the potential weaknesses of the case study is its lack of generalisability. Cohen *et al* (2007, 2013), however, conclude that despite this, case studies

> …in not having to seek frequencies of occurrences, can replace quantity with quality and intensity, separating the significant few from the insignificant many instances of behaviour. Significance rather than frequency is a hallmark of case studies, offering the researcher an insight into the real dynamics of situations and people (2000, p 185)

Yin (2003) explains in the preface to his book *Case Study Research, Design and Methods* that the case study has always been stereotyped as a weak sibling among social science methods. Moreover, investigators who do case studies are regarded as having downgraded their academic disciplines. Yin (2003) goes on to say that 'case studies have similarly been denigrated as having insufficient precision (namely quantification), objectivity or rigor' (p xiii).

Yet case studies are used extensively in social science research such as in the discipline of education and occur with some frequency in estimation research, as in the case of my research where I wished to estimate the effects of the research intervention programme.

Yin (2003) goes on to say that a case study is 'an empirical inquiry that investigates a contemporary phenomenon within real life context; …and relies on multiple sources of evidence' (2003, p 13-14). Indeed, this study examines the effects of the intervention relying on multiple sources of evidence which will be discussed as this research tools.

## 3.5 Case Studies – an Overview

Yin (2003) claims that there are three main types of case studies and identifies them according to their outcomes:

1. Exploratory – serves as a pilot to other studies or research questions.
2. Descriptive – provides narrative accounts.
3. Explanatory – tests theories.

Yin (2003) explains that the explanatory case study is the most important type as it is supposed 'to explain the casual links in real-life interventions that are too complex for the survey or experimental strategies' (p 15).

Tellis (1997) and Stake (1995) distinguish three types of case studies; however, they refer to the three types differently from Yin (1994, 2003):

1. The intrinsic case study occurs when we are interested in a case, not because by studying it we can learn about other cases or about a general problem, but because we need to learn about that particular case.
2. The instrumental case study is used when we employ a case in order to understand a general problem.
3. The collective case study is used when we choose several identical cases to gain a fuller picture. Each case study is instrumental by itself but there will be important coordination between the individual studies. The last type of case study might be used to modify an existing generalisation.

Simons (2009) differentiates between three types of case study as follow:

1. Theory-led or theory-generated case study refers to generating theory arising from the data itself.
2. Evaluation case study needs to discern the value of the programme or project which composes the case.
3. Ethnographic case study which has its origins in an anthropological or sociological tradition.

Following the classification of the different case studies mentioned above, my qualitative research can be identified as an interpretive one in nature as its approach provides a deep insight into the complex experiences of the dyslexic research participants (Diaz Andrade, 2009). In addition, my research can be seen as the starting point, where its conceptual conclusions and further propositions may enable a potential additional action research. Even though my research does not test theories, it can be seen as the explanatory case study Yin (2003) refers to as it explains the casual link of a real-life EFL reading intervention for 'dyslexic students' in Israel. On the other hand, the present case study can be accepted as the intrinsic case study Tellis (1997) and Stake (1995) distinguished, as I was interested in learning about the effects of the particular present research combined reading intervention programme. My concern was not to learn about other cases or about a general problem, but to learn about the specific reading problem of my 'dyslexic students'. The next section discusses the selected research methods for conducting the present qualitative case study.

## 3.6 The Research Methods

As mentioned before, my aim as a reflective practitioner, using action research is to bring about development in my practice. This can be done by analysing the present practice and identifying elements for change. The identification is based on gathering of evidence on which to make solid judgements and decisions. Thus, in an attempt to provide an answer to the research question, which seeks what effects the research combined reading intervention programme has on the research participants, on the one hand, and trying to maintain triangulation, on the other, multiple data collection methods are used in the present qualitative case study.

The case in study is the EFL combined reading intervention programme for 'dyslexic students' Hebrew-L1 speakers in Israel which is discussed hereafter. The multiple research methods consist of pre- and post-intervention in-depth research participants' interviews, research participants' intervention diaries, practitioner's intervention journal, pre- and post-intervention students' assessment and documentation from the six professional assessors who assessed the six research participants as being learning disabled. As already mentioned in Chapter 2, these professional assessors are specialists in assessing learning disabilities and are officially approved and licensed by the Ministry of Education in Israel as an authority for granting tests accommodations. The multiple research methods are commonly used in qualitative action research case study (Mettetal 2001, Waters-Adams 2006, Jester 2010). The research methods are discussed respectively later on in this chapter.

## 3.7 The Case in Study – The Combined Research Intervention

Before discussing the reading intervention programme I would like to clarify the need in Israel to adapt existing EFL materials for 'dyslexic students', as well as the need to adapt materials for dyslexic learners that were originally created for native English speakers, and to provide a brief review of improvement following intervention programmes.

## 3.8 Adapting Materials

In Israel, there is massive exposure to English, so much so, that people who do not know the language feel excluded and incompetent. Schools in Israel cater to the growing demand for knowledge of English. Today English is taught from age 8, in the third year of primary school, as previously mentioned.

Israel has two main local resources for TEFL materials for Hebrew speakers (Eric Cohen Books LTD and University Publishing Projects LTD), but lacks resources specially designed for Hebrew speakers who are learning disabled. Due to this, English teachers in Israel often have to use available resources from other countries.

However, books and materials which were developed to teach English as L1 to learning disabled students are not suitable for teaching English as a foreign language to learning disabled students who are speakers of Hebrew, as they were not developed for the needs of this audience. As a result, teachers often need to create new materials or adapt existing resources in order to make them appropriate for these students' needs.

Adaptation can be effective only if it develops from an understanding of the materials and an awareness of learners' specific needs. On this basis, I adapted materials for creating the intervention reading programme based on the combination of the top-down and bottom-up approaches to the teaching of reading.

## 3.9 The Research Combined Reading Intervention Programme

The combined reading intervention programme, which falls into the category of short-term remedial reading intervention programmes (Gillon and Dodd, 1997; Bus and IJzendoorn, 1999; Gonzales *et al*, 2002; Simos *et al*, 2002; Alyward, 2003; Temple *et al*, 2003; Swanson *et al*, 2005; William *et al*, 2006), is meant to improve the six research 'dyslexic students' phonological awareness by acquiring a better awareness of the sounds of speech, an improved understanding of the connection between the sounds of speech and the letters of the alphabet and an increased ability to analyse words. Anthony and Francis (2005) maintain that '…

children refine phonological awareness skills they have already acquired while they are learning new phonological awareness skills' (2005, p 256).

Slavin's (2003) claim that the understanding of the progression of cognitive development enables teachers to better cater to the unique needs of each student, a claim supported by the educational inclusion theory (Terzi, 2007), is the foundation of the present reading intervention programme. My research is based on cognitivism as it studies change in phonological awareness, reading in English in the inclusive EFL classroom of the six dyslexic participants as the result of a reading intervention programme. The structure of the intervention follows Ormrod's (1999) belief in reinforcement where the learner is reinforced through a process of retrieving existing knowledge and presentation of new information, on the one hand, and scaffolding which involves instruction, encouragement and assistance to aid a student in mastering a new concept on the other (Slavin, 2003).

My research combined reading intervention programme also reflects constructivism which, as already mentioned in Chapter 2, is the approach to teaching and learning based on the premise that cognition is the result of 'mental construction'. 'Mental construction' is achieved in this research as in each of the thirty six sessions of the intervention programme; the six research participants are required to integrate new information with information taught in the previous session (Gredler, 1997).

Gredler (1997) explains that cognitive theories of learning focus on the mind and attempt to comprehend how information is received, assimilated, stored, and recalled. Gredler's (1997) explanation was taken into account in constructing the present combined reading intervention programme. Understanding the procedure of the reading process in the human brain informed the decision to combine the two complementary

approaches to reading in each of the thirty six sessions for the same duration of time, thus involving equally the different brain structures in charge of reading.

The reading intervention programme was implemented in my practice which is located in the central part of Israel where all the six students' schools are located as well. My practice resembled the environments used for pull-out hours for students in inclusive classrooms, therefore making it comparable to that in which EFL support hours would take place, if the Ministry of Education in Israel had the budget to implement them. The participants are familiar with environments in which pull-out hours in Hebrew school subjects take place, and are also accustomed to participating in support lessons in a one-to-one teacher–student environment such as that in which this research was implemented, turning my private practice into real situation scenery for the research participants. Thus, the reading intervention programme was applied to the six students individually and in different times so the six participants never met each other and did not know of the existence of one other.

Reading is not a natural human ability, as discussed in Chapter 2; it needs to be taught and trained, and most human beings respond mechanically to the training of reading and eventually master it whether being taught and trained through a bottom-up approach, based upon grapheme-phoneme correspondence (Gough, 1972, 1985; Carmine, 1977; Broughton *et al*, 1978; Stanovich, 1980; Hohn and Ehri, 1983; Tunmer and Bowey, 1984; Frith, 1985; Goswami, 1991; Ehri, 1992; Ganschow *et al*, 1998; Robertson, 2000), or being taught and trained through a top-down approach, based upon whole-word instruction (Kolers, 1966; Broughton *et al*, 1978; Frith, 1985; Manis and Morrison, 1985; Tunmer and Rohl, 1991;Ehri, 1992; Smith, 1994).

The present reading intervention programme takes into consideration the effectiveness of these two complementary approaches to acquiring reading skills in a foreign language. However, when teaching reading English as an FL to dyslexic Hebrew speakers in Israel, either approach is often insufficient on its own to bring students to accurate and fluent reading in English, as I have witness over my years of practice. The fact that many of my private students had been exposed to both the top-down and the bottom-up approaches to reading English as an FL, in different contexts and at different times, but still were unable to reach accuracy and fluency in their reading in English, led me to conclude that a combined method of the two approaches is more effective in enhancing phonological awareness and improving reading skills rather than each approach by itself. This has been supported by a number of researchers for nearly thirty years (Stanovich, 1980; Frith, 1985; Eskey, 1988; Goswami, 1991 and Lovett *et al*, 1990, 1994).

A second point taken into consideration in the present intervention is Bradey and Shankweller's (1991), Broomfield and Combley's (1997) and Mather and Goldstein's (2001) recommendation to include multi-sensory methods in intervention reading programmes for 'dyslexic students'. These integrate visual, aural and kinaesthetic activities to strengthen the learning experience. Mather and Goldstein (2001) say that content generally needs to concentrate on phonic skills, as these are usually the weakest aspect for 'dyslexic students'. They also suggest that well-structured, phonics-based multi-sensory teaching is fundamental for any reading intervention programme and that reading-while-listening and repeated-reading are useful techniques for developing fluency approaches to improve 'dyslexic students' reading skills.

As already mentioned, Brown (2007) claims that in cognitive theories of learning, repetition and rote (students' practice and imitation) play an

essential role. These are meaningful activities, when contextualised and purposeful, for the teaching of word identification, a skill identified with the top-down approach to reading. Repetition and rote are also meaningful for the explicit instruction of combining phonemes and segmenting and blending speech sounds, skills identified with the bottom-up approach to reading.

A third point taken into consideration is the primary reading and spelling characteristics of dyslexia which are discussed in *The Dyslexia Handbook Revised* (2007, 2010). These include difficulty in reading real words in isolation, difficulty in accurately decoding pseudo words, lack of reading fluency and accuracy, and difficulty with learning to spell.

As already mentioned in Chapter 2, the reading and spelling characteristics are the result of difficulty with the development of phonological awareness, including segmenting, blending and manipulating sounds in words, and difficulty with learning the sound/symbol association of the letters of the alphabet. These activities were included in the top-down or bottom-up intervention activities of this research.

Another point which I took into consideration in creating the reading intervention programme was the success of short term intervention programmes in the improvement of reading through the training of phonological awareness (Gillon and Dodd, 1997; Bus and IJzendoorn, 1999; Gonzales *et al*, 2002; Simos *et al*, 2002; Alyward, E., 2003 and Temple *et al*, 2003; Swanson *et al*, 2005; William *et al*, 2006).

In conclusion, the reading intervention programme was implemented in 40-minute sessions, twice a week for 18 weeks, for a total of 36 sessions based on the number of phonemes of the English language phonological system (Brand, 1984; Davies and Ritchie, 1998). In order to achieve a real combination each session consisted of twenty minutes of top-down

reading approach activities and of twenty minutes of bottom-up reading approach activities.

For the twenty minutes of top-down activities I used activities which I constructed, based upon my experience as an EFL teacher for 'dyslexic students' speakers of Hebrew in Israel, top-down activities suggested by Brand (1984) in her book *Spelling Made Easy* and top-down computer activities suggested by Davies and Ritchie's (1998) *THRASS.IT*.

For the twenty minutes of bottom-up reading approach activities of each session, I used activities which I constructed, based upon my experience as an EFL teacher for 'dyslexic students' speakers of Hebrew in Israel, bottom-up activities suggested by Hornsby and Shear (1993) in their book *Alpha to Omega* and bottom-up computer activities suggested by Davies and Ritchie's (1998) *THRASS.IT*.

Each session began with five minutes of self-constructed oral activities (Appendices 2 and 3) based on both my own experience and research of others in the areas of the effects of spoken language training on word reading, reading accuracy and reading comprehension ability (Gillon and Dodd, 1997 and Gonzales *et al*, 2002).

The activities below are typical multi-sensory cognitive activities used in each of the 36 lessons:

- presentation of new information through the introduction of a new phoneme, providing scaffolding first orally and then in print, in order to teach the phoneme/grapheme correspondence of the new phoneme (Ormrod 1999; Slavin 2003)
- teaching the grapheme/phoneme correspondence rule of the new phoneme and connecting it to previously presented phonemes (Gredler 1997).

- enhancement of the participants' vocabulary in English and practising the reading of words out loud in order to enhance the ability to connect the sound of the words with their meanings through the use of reading-while-listening and repeated-reading (Mather and Goldstein 2001).
- repeated practice reading sentences constructed from new words (Brown 2007).
- additional oral repetition of phonemes or whole words to improve the understanding of the connection between the sounds of speech and the letters of the alphabet, or alternately the sounds of whole words and frequent spelling patterns, focusing on difficulty in segmenting, blending and manipulating sounds in words, and difficulty learning the sound/symbol association of the letters of the alphabet.
- practice in detection of phonemes or whole words through the use of computer programmes as a multi-sensory method, integrating visual, aural and kinaesthetic activities in order to strengthen the learning experience (Brady and Shankweller 1991; Broomfield and Combley 1997; Mather and Goldstein 2001).

A sample of a typical top-down approach followed by bottom-up approach session can be seen in Appendix 2. A sample of a typical bottom-up approach followed by top-down approach session can be seen in Appendix 3.

## 3.10 Pre- and Post- Intervention In-Depth Interviews

Simons (2009) explains that the three methods most commonly used in qualitative research are; interviewing, observing and documentary analysis. The present section discusses the reasons for choosing

interviews as a method for data collection for the present action research case study.

Interviewing is a common method of collecting information, which utilises the interaction between the interviewer and the participant to research a greater depth of information than any other research method allows (Oppenheim, 1992). Moreover, Tellis (1997) says that interviews are one of the most important sources of case study information. In the present case study I conducted two interviews. One was conducted before the reading intervention and the other one was conducted after the reading intervention. In addition, I also conducted a practitioner's journal and participants' diaries which were conducted throughout the reading intervention.

Cohen *et al* (2007, 2013) say that interviews allow research participants to discuss their interpretations of the world in which they live, and to express how they regard situations from their own point of view. By researcher participants they refer to the researcher or the participants as well.

Simons (2009) says that interviews facilitate the researcher to get to the core problem of the study in greater depth than other methods.

> Interviews enable to probe motivations, to ask follow-up questions and to facilitate individuals telling their stories. Transcripts of interviews offer a basis for a deep analysis of the investigated situation (Simons, 2009 p 43).

Wengraf (2001) claims that the purpose of the research interview is to improve knowledge by dealing with matters in-depth. Going into something in-depth means getting more detailed knowledge about the subject matter and try 'to figure how the apparently straight-forward is actually more complicated of how the surface appearances may be quite misleading about depth realities' (Wengraf, 2001 p 6). In other words to

examine a subject matter in-depth means to get a deep understanding of how little the researcher knew about it. This concept underpins the choice of the in-depth interviews for the present case study. As a practitioner I wanted to get a deep understanding of the effects the cognitive combined reading intervention had on the research participants. The interviews enabled having objective data for my reflection as a practitioner (McNiff and Whitehead, 2006). Following the in-depth research interview data analysis I realised how little I knew about the research intervention effects beyond the cognitive ones.

Simons (2009) claims that the in-depth interview, also referred to as the unstructured or open-ended interview, maintains four major purposes. The first one is to document the research participant's perspective on the research subject matter. The second purpose is to promote the bind between the researcher and the participants in identifying and analysing the research subject matter. The third purpose is to probe a topic so to get engaged in a kind of dialogue with the research participants. The fourth is to uncover unobserved feelings and events which cannot be observed. Indeed, all four purposes influenced the choice of the in-depth interview as a method for data collection for this research. However, the fourth purpose was the most dominant in my choice, due to the fact that while teaching and implementing the combined reading intervention programme it is almost impossible for me, as a researcher, to conduct an observation on the participants so to depict the effects of the research intervention. For this I did not choose the observation as a research method.

As mentioned above, in the present case study the two interviews were pre- and post- by nature. That is, one interview was conducted before the reading intervention programme and the other one after the reading intervention programme. These two interviews were in-depth interviews

by nature. The students' interviews took place in my private practice where the research combined intervention was implemented. I conducted the interviews with the students in a one-to-one ambience.

In order to get the utmost data as possible from the research participants, I adopted the single-question interview technique (Wengraf, 2001) for the present case study in-depth interviews. In the single-question interview the researcher asks one open-ended question and where necessary probes the interviewee with comments.

For the pre-intervention in-depth interview, following Wengraf (2001) single-question technique, the single-question was as follow:

'I would like you to tell me about your English studies from when you first began until today. Start whenever you like. Please take the time you need. I will listen and will take some notes for afterwards'.

Example of probing questions whenever needed for additional information:
1. Oh really, well can you tell me a little more?

2. That's interesting; can you give me an example of that?

For the post-intervention in-depth interview, following Wengraf (2001) single-question technique, the single-question was as follow:

'Do you remember that you told me about your English studies from when you first began? Well, I would like you to tell me about your English studies now. Start whenever you like. Please take the time you need. I will listen and will take some notes for afterwards'.

The probing questions, which were needed for additional information, were identical to those used in the pre-intervention in-depth interview and were mentioned above. Naturally, the questions for the pre- and post-

intervention in-depth interviews differ from one another, as they are meant to investigate the effects, following the research combined reading intervention programme, on the six research participants. The qualitative data of the pre- and post-intervention in-depth interviews were analysed using thematic analysis and code development, which is discussed in some depth latter on in this chapter.

## 3.11 Practitioner's Journal

The use of qualitative methods presents many possibilities for in-depth understandings of research outcomes particularly where they are supposed to bring about development in the practice of a reflective practitioner in an action research, as in the case of my study. One of these possibilities is keeping a practitioner's journal. In this research I decided to carry on my own practitioner's journal, throughout the reading intervention process of the six research participants. The journal in my study is referred to as the 'practitioner's journal' or 'my journal'. My decision of carrying a practitioner's journal was based on the fact that being the practitioner, thus teaching the reading intervention to the six participants, it would be difficult to keep a record of observations during the sessions. The aim of the journal was to create transparency in the research process, and imply the impact of critical self-reflection on the research design, that is as MacNaughton (2001) explains, to make the process of data analysis as visible and transparent as possible. Mruck and Breuer (2003) in agreement with Harrison, MacGibbon, and Morton (2001) say that reflective practice such as this aims to make clear the constructed nature of research conclusions which were influenced by the various choices and decisions researchers make during the process of the research and the ways they choose to represent their research findings. Thus, my diary contained not only the six students' quotations, but also my own thoughts and insights along the process of the research intervention.

At the end of each of the thirty six sessions I asked the students two questions as feedback of that day session:

1. How was today's session good for you?

2. In what way was today's session enjoyable for you?

In an attempt to examine the effects of the research combined reading intervention programme, the target of the two questions of the practitioner's journal was different. The aim of the first question was to find out what the research participants thought the contribution of that session was for them, cognitively targeted. The aim of the second question was to find out what the research participants' feeling were during that session, emotionally targeted. Thus, allowing the collection of objective data for my reflection as a practitioner (McNiff and Whitehead, 2006).

The qualitative data of the practitioner's journal were analysed using thematic analysis and code development, which is discussed in some depth latter on in this chapter.

## 3.12 Participants' Diaries

The fourth qualitative method used in my research was a participants' diary (or students' diary) which was used throughout the intervention. Lewis and Massey (2004) say that research participant diaries as a method for collecting data has increased steadily throughout the twentieth century, where the interviewee independently records data in a diary as a follow-up of research interviews. According to Toms and Duff (2002) the different types of participants' diaries reflect the fact that diaries can contain different information, take different forms and can be used for different purposes.

Symon (2004) is very much in favour of using participants' diaries as a method for data collection in qualitative case studies. Symon (2004) claims that participants' diaries are a useful means of collecting information about behaviour that cannot be easily observed, as in the case of the present case study where the students were asked to weekly report back in their diaries aspects connected with their functioning in the EFL inclusive classroom in school, as a result of the combined reading intervention programme.

Symon (2004) goes on to say that in a qualitative approach, participants reflexively report and question their experiences, thoughts and feelings and their interpretations of these. Thus, diaries enable to develop insight into the participants' interpretations which are not easily accessible by methods that involve interaction with them, such as the pre- and post-intervention in-depth interviews conducted in the present case study. Moreover, the diaries made possible the collection of data on the students' observations, thoughts and behaviours, in relationship with the research intervention and its effects. Furthermore as my study involved reflection, the research participants recorded in their diaries their thoughts and feelings which helped me to understand the research participants' learning process and the effects of the reading intervention, so as to identify elements for change. I made it clear to the participants that their diaries would be seen only by me and would be collected in by me as data. The participants were also told that their diaries would not be returned to them but would be retained by me.

Taking into consideration the aspects discussed above, my previous experience using the combined reading intervention and the refining of it during the years, at the end of each week of the intervention, the students were asked to fill in a weekly form where they answered two questions:

1. How did the intervention help you in the English lessons in school last week?

2. In what aspects do you feel improvement in the English lessons in school last week?

In an attempt to examine the effects of the research combined reading intervention programme, the target of the two questions of the participants' diary was to find out what the research participants thought the contribution of the intervention was for them, cognitively and emotionally targeted, which permitted the collection of objective data for my reflection as a practitioner (McNiff and Whitehead, 2006).

The qualitative data of the participants' intervention diaries were analysed using thematic analysis and code development, which is discussed in some depth latter on in this chapter.

## 3.13 Thematic Data Analysis in the Present Case Study

In the present case study the data analysis of the per- and post-intervention students' in-depth interviews, the practitioner's journal and the students' diaries was thematically analysed. Thematic analysis, according to Boyatzis (1998), enables the different research qualitative methods, used in the research, to converse with each other so as to assist the researcher in search for profound insight. Indeed, the 'conversation' between the different qualitative research methods used in the present study, helped me not only as a researcher but also as a practitioner to gain deep understanding of the effects of the study in case – the EFL combined reading intervention programme – on the research 'dyslexic students'. The weaving of the research methods, which was facilitated by

the theme analysis, helped in constructing the research conceptual conclusions and further propositions.

Following the advice of a number of scholars (Boyatzis, 1998; Stake, 2005; Simons, 2009 and Diaz Andrade, 2009; Cohen *et al*, 2007, 2013) on conducting thematic data analysis and code development, the two in-depth interviews used in this research were carried out while being recorded. Next step was to transcribe them. The practitioner's journal and the students' diaries were originally conducted in written, so there was no need for a transcription. In order to make sense of the mass of written data which emerged from these four qualitative research methods, so to produce findings and an overall understanding of the case study, there was a need for an inductive thematic analysis process which involved sorting, refining and refocusing in order to find themes in the data. Boyatzis (1998) names this process as 'encoding qualitative information' (p vi). The encoding requires an explicit 'code' or 'category' a term referred by Simons (2009) and preferred by myself. A category is a list of related themes, where the theme is a pattern found in the data which describes possible observations and interprets aspects of the case in study, thus enabling the examination of connections between the themes that make possible the clarification of the data.

Strauss and Corbin (1990) explain that thematic analysis is a manner of recognising patterns in the apparently random qualitative gathered data. It took me long hours of engagement processing and analysis the gathered information before I could interpret the data into themes and categories. The process was of reducing the raw information, identifying the themes within sub themes, comparing these themes across the sub themes and creating the category, which resulted in themes and sub themes listed under three categories; cognition, behaviour and emotions,

all of which are presented in Chapter 4 of the present study –Theme Analysis and Discussion.

Example of a pre- and post-intervention interview script in Hebrew highlighted according to the three different categories: cognition, behaviour and emotions can be seen in Appendix 6. Example of a pre- and post-intervention interview script in Hebrew classified according to the different themes can be seen in Appendix 7. Example of a practitioner's journal script in Hebrew highlighted according to the three different categories: cognition, behaviour and emotions can be seen in Appendix 8. Example of a participant's diary script in Hebrew highlighted according to the three different categories: cognition, behaviour and emotions can be seen in Appendix 9.

## 3.14 Document Analysis of Pre- and Post-Intervention Assessment

Simons (2009) states that formal document analysis tends to be less used in case study research than interviews and observations. However, being aware of the great value for adding depth to the analysis so as to identify elements for change (Mettetal 2001, Waters-Adams 2006, Jester 2010) of the present case study, I decided to take advantage of the pre-and post-intervention students' assessment scores as important evidence to the effects of the research combine reading intervention programme.

My research combined reading intervention programme is based on cognitivism (Ormrod, 1999) as it studies the possibility of causing a change in the phonological awareness and reading English in the inclusive EFL classroom of the six dyslexic participants, with the help of the reading intervention programme. The role of the assessment is to assess the post-intervention cognitive change.

In Israel there is no standardised, Ministry of Education approved assessment instrument for assessing English as a foreign language in learning disabled students, as there is no requirement for such after learning disabled students have been assessed in Hebrew-L1. The Ministry assumes that if a person was found learning disabled in his/her L1 and requires test accommodations in Hebrew, the same need exists in the testing of English as a foreign language (The Director's Annual Circular of the Ministry of Education in Israel, 2003).

In Israel, professional assessors or educational psychologists, who are specialists in assessing learning disabilities, use their own assessment in English as a foreign language as well. Their assessment is used with learning disabled students in addition to their assessment in Hebrew-L1 and it is based upon the *HICKEY multi-sensory language course* (1991) which is frequently used in remediation in English. The *HICKEY multi-sensory language course* (1991) is based solely on a bottom-up approach to reading. For this reason, I did not use it in my research pre- and post-intervention assessment where my purpose is to assess a combined method based of top-down and bottom-up approaches to reading. I, therefore, developed a pre- and post-intervention assessment instrument specifically for the combined reading intervention programme, testing the phonological awareness and the reading of the student in English as a foreign language from both bottom-up and top-down perspectives. In so doing, the same assessment is used in both pre- and post-intervention students' assessment, so to evaluate the change of phonological awareness deficits and reading deficits in English as a foreign language of the six dyslexic research participants Hebrew speakers in Israel.

My research assessment therefore, is the combination and adjustment of four already existing and well known assessments (*The Bangor Dyslexia Test*, Miles; 1982, *Phonological Awareness Procedure*, Gorrie and

Parkinson; 1995, *The Dyslexia Screening Test*, Fawcett and Nicolson; 1996 and *The Phonological Assessment Battery*, Frederick, Frith and Reason.; 1997), all of which are supported in Anthony and Francis' (2005) idea of a valid assessment for phonological awareness.

The assessment follows the claim of Cohen *et al* (2007, 2013) that 'in tests, researchers have at their disposal a powerful method of data collection, an impressive array of tests for gathering data of a numerical rather than verbal kind' (2000, p 317). In agreement with Cohen *et al* (2007, 2013) the data collected by this method serves as important evidence on the participants' phonological awareness deficits and their proficiency in reading in English as an FL, where the level of difficulty of the test is identical in the pre-test and post-test.

The assessment in this research reflects the *Dyslexia Handbook Revised* (2007) discussion of the primary reading characteristics of dyslexia. These include a difficulty in reading real words in isolation, a difficulty in accurately decoding pseudo words, a lack of reading fluency and accuracy, and difficulty with learning to spell. As already mentioned in Chapter 2, the reading and spelling characteristics are the result of difficulty with the development of phonological awareness, including segmenting, blending and manipulating sounds in words, and difficulty with learning the sound/symbol association of the letters of the alphabet. All these are included in the different parts of the students' assessment.

Parts one to eight of the pre-test and post-test of my research assess phonological awareness (Appendix 4) and parts nine and ten assess segmentation skills which are also associated with phonological awareness (Appendix 4). Fawcett and Nicolson (1996) claim that 'one of the most clearly established difficulties in dyslexia is in terms of phonological skill' (p 3). This is supported by Miles (1982), Gorrie and Parkinson (1995),

Fawcett and Nicolson (1996), Frederick, Frith and Reason (1997) and Habib (2000), underpinning the pre-test and post-test of my research, in assessing the phonological awareness and reading proficiency of the six participants of the study.

The various parts of the pre- and post-intervention assessment include:

**Part 1 – Oral Repetition of words**:

The six 'dyslexic students' were asked to repeat ten words with meaning, whereby the students' comprehension was verified in advance in order to avoid the possibility that the real words would function as pseudo words for these students (Appendix 4). 'Dyslexic students' generally do as well as 'non-dyslexic students' of the same age when repeating real words (Snowling; 1996, Goswami; 1990).

**Part 2 – Oral Repetition of pseudo words**:

The six 'dyslexic students' were asked to repeat ten pseudo words; that is words that can be read aloud but have no meaning (Appendix 4). 'Dyslexic students' have more difficulty than 'non-dyslexic students' in repeating pseudo words. Specific difficulties repeating pseudo words indicate of phonological awareness deficits (Snowling; 1996, Goswami; 1990).

**Part 3 – Oral Detection of Alliteration**:

The six 'dyslexic students' were asked to detect one word out of three in ten items, each of which contains a different initial phoneme or onset (Appendix 4). Difficulty in detecting onsets indicates difficulty in phonological awareness according to Frederick, Frith and Reason; (1997), Habib (2000) and the Dyslexia Handbook Revised (2007).

**Part 4 – Oral Detection of Rime**:

The six 'dyslexic students' were asked to detect one word out of three in ten items, each of which has a different ending phoneme or rime (Appendix 4). Difficulty in detecting rimes also indicates difficulty in phonological awareness according to Adams (1990), Frederick, Frith and Reason (1997),Habib (2000) and the Dyslexia Handbook Revised (2007).

**Part 5 – Oral Sound discrimination**:

15 pairs of words were read to the six 'dyslexic students' and each was asked to state if the paired words sounded alike or different (Appendix 4). Difficulty in detecting differences between sounds indicates difficulty in phonological awareness, especially difficulty in differentiating between /b/ and /d/, /d/ and /p/, /d/ and /t/, /b/ and /p/ according to Gorrie and Parkinson (1995), Fawcett and Nicolson (1996) and Habib (2000).

**Part 6 – Oral Omission of syllables**:

Ten two-syllable words were said aloud and the six 'dyslexic students' were asked to omit the stated syllable (Appendix 4). Frederick, Firth and Reason (1997),Habib (2000) and the Dyslexia Handbook Revised (2007) claim that 'dyslexic students' often display impairment in this skill, suggesting that an activity such as syllable omission can predict difficulty in phonological awareness.

**Part 7 – Oral Omission of first phoneme**:

The six 'dyslexic students' were asked to omit the initial phoneme in ten words they heard (Appendix 4). Miles (1982), Fawcett and Nicolson (1996) and the Dyslexia Handbook Revised (2007) suggest that difficulty in detecting and omitting initial phonemes indicates difficulty in phonological awareness.

**Part 8 – Oral Omission of last phoneme**:

The six 'dyslexic students' were told a word and asked to omit the last phoneme in ten words (Appendix 4). As with initial phonemes, difficulty in detecting and omitting last phonemes indicates difficulty in phonological awareness, according to Miles (1982) Fawcett and Nicolson (1996).and the *Dyslexia Handbook Revised* (2007).

**Part 9 – Oral Blending of Phonemes**:

The six 'dyslexic students' were read ten sequences of phonemes and asked to blend them in into words (Appendix 4). Phoneme segmentation has been found by Miles (1982), Gorrie and Parkinson (1995), Fawcett and Nicolson (1996) and Frederick, Frith and Reason (1997) to correlate with failure in reading. According to Habib (2000) and the Dyslexia Handbook Revised (2007) difficulty in segmentation skills indicates difficulty in phonological awareness.

**Part 10 – Oral Phoneme segmentation**:

The six 'dyslexic students' were read ten words and asked to break them down into phonemes (Appendix 4). Here too, difficulty in segmentation skills correlates with failure in reading (Miles 1982, Gorrie and Parkinson 1995, Fawcett and Nicolson 1996, and Frederick, Frith and Reason 1997), as well as difficulty in phonological awareness (Habib, 2000 and the Dyslexia Handbook Revised, 2007).

**Part 11 – Single word reading test**:

The six 'dyslexic students' were asked to read aloud 20 single real words (Appendix 4) in order to assess their reading proficiency using a top-down approach or whole word method, as is recommended by Fawcett and Nicolson (1996) and the Dyslexia Handbook Revised (2007).

**Part 12 – Single pseudo word reading test**:

The six 'dyslexic students' were asked to read aloud 20 single pseudo words (Appendix 4) in order to assess their reading proficiency using a bottom-up approach that is, the grapheme/phoneme correspondence method, as is recommended by Fawcett and Nicolson (1996) and the Dyslexia Handbook Revised (2007).

**Part 13 – Passage reading**:

The six 'dyslexic students' were asked to read aloud a reading comprehension passage (unseen). The passages were at the reading level at which each student was expected to be functioning in his/her EFL inclusive classroom in school (Appendix 1) so as to assess his/her reading comprehension (the Dyslexia Handbook Revised, 2007). Following the reading of the passage, the students were asked to answer English matriculation style questions, each student according to the expected level they should be functioning in school (Appendix1). This part was included, as reading comprehension is the ultimate goal of acquiring reading skills (Eskey 1988).

The students' pre- and post-assessments did not take place in the premises of the research participants' schools, but in my private practice where the research combined intervention was implemented. I conducted the assessments with the students in a one-to-one ambience.

The pre- and post-assessments scores (Appendix 10) were not subjected to statistical analyses in view of the small sample size of six research participants, however, as document analysis they were a helpful antecedent and an important evidence providing a context for interpretation of the emergent data analysis from the qualitative research

methods used in this research; the pre- and post-intervention students' interviews, the practitioner's journal and the students' diaries.

## 3.15 Documentation of the Six Participants' Learning Disabilities Assessments

All six participants were referred to me for remedial work in English by members of their school staff. All of them are learning disabled, having been assessed as having dyslexia by a professional assessor or an educational psychologist, who are specialists in assessing learning disabilities and are officially approved and licensed by the Ministry of Education in Israel as an authority for granting tests accommodations. The same assessment in Hebrew-L1 was used for all six participants in addition to the Wechsler Individual Scale for Children (WISC) IQ tests. All six participants fall within the average scale regarding their IQs.

Even though the Ministry of Education in Israel does not demand an additional assessment for learning disabilities in English for students who have already been assessed in Hebrew, the six participants were assessed for learning disabilities in English as well, by the same professional assessor or educational psychologist, who as mentioned above, assessed them in Hebrew-L1.

As already mentioned, the rationale for not demanding an additional assessment in English as a foreign language is based upon Ganschow and Sparks' (1991) and Sparks *et al*'s (1999) claims that students with learning disabilities face the same difficulties when learning to read a foreign language as those they face when learning to read in their first language.

Following Simons (2009) advice that it is worth to consider already existing documents which may be relevant to the case study, I asked the parents of each of the six research participants to present a copy of the

conclusions of the professional assessor or educational psychologist, who assessed the research participants for learning disabilities in Hebrew-L1 and English as an FL, and the granted tests accommodations. The rationales were to ensure that the case in study, the combined reading intervention programme for 'dyslexic students', would be applied to a dyslexic person. Secondly, to compare the values of my pre-intervention assessment with those of the professional assessor or educational psychologist, so as to guarantee the first rationale mentioned above. Thirdly, to ensure the fact that all six research participants were entitled by law to inclusion as defined by the Ministry of Education in Israel.

## 3.16 Ethical Considerations in this Research

> Ethical issues commonly arise in the planning, execution and reporting back of research involving human subjects. (Anglia Ruskin University, *Research Student Handbook* 2010, p 83).

Polit and Beck (2004) claim that ethics is a system of moral values that concerns the degree to which research procedures adhere to professional, legal and social obligations to the study subjects. They stress that in educational research, humans are usually used as study subjects. Therefore, special care must be exercised in making sure that the rights of those humans are protected.

In order to protect the rights and welfare of the participants of this research several measures were taken to comply with the ethical requirements of research according to the *Ethics Committee Procedures for Conduct of Research* which appear in the Anglia Ruskin University*, Research Student Handbook* (2010). Those are with agreement with Cohen *et al* (2007, 2013) who claim that

> Social scientists generally have responsibility not only to their profession in its search for truth, but also for the

> subjects they depend on for their work. Whatever the specific nature of their work, social researchers must take into account the effects of the research on subjects, and act in such a way as to preserve their dignity as human beings. Such is ethical behaviour (p 56).

The ethical measures implemented in the present study were as follows:

1) The participants and the participants' parents were given an explanation of the procedures of the research and its purposes.

2) The participants and the participants' parents were given a description of the benefits to be expected.

3) The participants and the participants' parents were given instruction that the participants were free to withdraw consent at any time.

4) All participants were told that they would remain anonymous.

5) All participants were informed in advance that the information gathered by me for the study (pre- and post-intervention interviews, practitioner's journal and participants' diaries) would be read by me and would be treated with the strictest confidentiality. In addition, as mentioned in section no. 3.12, the participants knew that their diaries would be seen only by me and would be collected in by me as data and would not be returned to them but would be retained by me.

6) All participants' parents gave their written consent.

## 3.17 The Sample – The Participants: Who Are They?

In selecting the sample of the present study I took into consideration the fact that the present qualitative research is thematically analysed, which as Boyatzis (1998) explains, is sensitive to the quality of the collected raw

data or information. Boyatzis (1998) goes on to say that sampling decisions not only affect to some degree the level of reliability and validity achieved, they also determine the concerns of generalising from a sample to a population.

Having in mind Boyatzis (1998) explanation and due to the fact that my research purpose is to examine the effects of the combined reading intervention programme in English as a foreign language in Israel on the six research 'dyslexic students', these were chosen through purposeful comparable background, exposure to similar EFL methodologies, comparable deficits in phonological awareness and comparable difficulties in reading English as a foreign language.

All six participants are learning disabled students having been assessed, in different periods of their academic lives, as having dyslexia. The assessment was carried by a professional assessor or an educational psychologist, who are specialists in assessing learning disabilities, and are officially approved and licensed by the Ministry of Education in Israel as an authority for granting tests accommodations. The same Ministry of Education in Israel standardised assessment was used for all six participants in addition to the Wechsler Individual Scale for Children (WISC) IQ tests. All six participants fall within the average scale regarding their IQs.

The six participants were assessed for learning disabilities in English as well, even though the Ministry of Education does not demand an additional assessment for learning disabilities in English for students who have already been assessed in Hebrew. The rationale for not demanding an additional assessment in English as a foreign language is based upon Ganschow and Sparks' (1991) and Sparks *et al*'s (1999) claims that students with learning disabilities face the same difficulties when learning

to read a foreign language as those they face when learning to read in their first language.

All six participants were first taught to read in English as a foreign language in their third year of primary school, through the use of a top-down, 'whole language' approach to reading, used in Israel at that time (Israeli Ministry of Education in Israel, 1988), the same approach used in Hebrew – L1.

In order to provide 'dyslexic students' with equal opportunities to those of their peer students who do not suffer from learning disabilities, The Director's Annual Circular of the Ministry of Education in Israel (2003) mandated the possibility of granting one or more of five different regulations on special testing accommodations to learning disabled students:

1) Learning disabled students are allowed 25% more time during class tests.

2) Learning disabled students are permitted to use an electronic English - Hebrew dictionary, while the rest of the students are permitted a paper-based English - Hebrew dictionary.

3) Spelling mistakes of learning disabled students are ignored in the calculation of the test grade.

4) The teachers read tests aloud to learning disabled students, rather than requiring them to read them on their own.

5) In severe cases of dyslexia, where learning disabled students cannot read at all, they are tested orally.

As already mentioned in Chapter 2 of this study, these five testing accommodations are granted only to learning disabled students assessed for learning disabilities by a professional assessor or an educational psychologist, who are specialists in assessing learning disabilities and are officially approved and licensed by the Ministry of Education in Israel as an authority for granting tests accommodations.

All six participants were granted the first four regulations on special testing accommodations to learning disabled students after being assessed for learning disabilities.

All six participants were referred to me for remedial work in English by members of their school staff. The reading intervention programme was conducted in my private practice in a one-to-one environment. None of the participants' schools provided pull-out EFL hours. As explained in the previous chapter pull-out EFL hours are not provided in any school in Israel due to budgetary problems, even though inclusion is implemented in the participants' schools.

The next sections introduce separately each one of the six participants.

**Yuval**

Yuval is fourteen years old and lives in Bat Hefer an urban environment in the east-central part of Israel. She lives with her mother and her younger brother. Her father died when she was eight years old in her third grade of elementary school. Her mother is an educational assistant in the local kindergarten of their town.

Yuval started learning English as an FL when she was in second grade of elementary school, which is unusual in Israel as the regulations of the Ministry of Education in Israel state that English as an FL subject should be taught from third year of elementary school onwards. Yuval did not

face difficulties in acquiring English at the beginning as it was taught solely orally. However, when written English started to be taught in third grade, Yuval started to face difficulties in acquiring written English.

Even though Yuval was aware of the importance of succeeding in English in Israel she gave up trying to study the language. She neither listened during the English lessons nor did she do her homework or studied for the English tests. She was frustrated, disappointed and angry at the English teachers and at herself. This frustration led to a lot of arguments with her mother. She finished sixth grade of elementary school with a very low level of oral and written proficiency of English. At the beginning of grade seven in junior high school Yuval was assessed for learning disabilities by a licensed professional assessor, found to be dyslexic. She was granted testing accommodations in English as an FL and her marks consequently improved. Yuval hates being tested with the assistance of the testing accommodations and is ashamed of the fact that she is different from the rest of her peer students.

When the data of this research were being collected Yuval was studying in grade eighth of junior high school, in the local school of her town, facing difficulties in reading English. Yuval was referred to me for remedial work in English by her EFL teacher.

**Kefir**

Kefir is fifteen years old and lives in Kiriat Hasharon an urban environment in the west-central part of Israel. He lives with his parents, his elder brother and his younger sister. His mother teaches mathematics in a high school near their home and his father works as an engineer in a high-tech plant in Israel.

Kefir is a basketball player in the national youth team of Israel. Kefir faced difficulties acquiring English as an FL straight from the beginning of third grade of elementary school. He never tried to learn English. He was too intimidated by the fact of studying a new language having the recollection of the difficulties he had had acquiring written Hebrew, his mother tongue. Being afraid of not succeeding he decided not to try. He was afraid that he might not succeed as well as his elder brother who masters English perfectly. Kefir's biggest fear is to try without success and be mocked by his brother, a situation which usually leads to fights between the two brothers and leaves Kefir in tears of frustration.

Kefir reached sixth grade of elementary school with a very low level of oral and written proficiency of English. That same year Kefir was assessed for learning disabilities by an educational psychologist, approved and licensed by the Ministry of Education in Israel. This educational psychologist approved the conclusions of Kefir's previous assessment, in second year of elementary school, where he was found to be dyslexic. Kefir was granted testing accommodations in English as an FL and his marks as a result improved. Kefir prefers to be tested without the assistance of the testing accommodations because he is ashamed of the fact that he is different from the rest of his friends. Much to his frustration Kefir is aware of the importance of English in Israel and worries to fail the matriculation examination in English which, he feels, will cause him to be a failure in life.

When the data of this research were being collected Kefir was studying in grade ninth of junior high school, in a school in Natanya a city in the central part of Israel, facing difficulties in reading English. Kefir was referred to me for remedial work in English by his homeroom teacher.

**Noah**

Noah is fifteen years old and lives in Kfar Yona a small town in the central part of Israel. She lives with her parents and her younger sister. Her mother is a cosmetician and works at home and her father is a truck driver.

Noah managed quite well at the beginning of her English as an FL studies in third grade of elementary school and up until her fifth grade. She started facing difficulties in English in sixth grade especially in reading and reading comprehension. Despite Noah's hard work before each English examination, she always failed. However, she never gave up and continued to try. This frustrating situation always left her in tears and anger which led to a lot of quarrels with her mother and younger sister. Noah's biggest fear is not to succeed in the English matriculation examination, which she believes is going to make her a cosmetician like her mother, a situation she compares to failure in life.

Towards the end of grade six of elementary school Noah was assessed for learning disabilities by a licensed educational psychologist, found to be dyslexic. She was granted testing accommodations in English as an FL and her marks improved. Noah is ashamed of the fact that she is tested differently from the rest of her peer students and hates being tested with the assistance of the testing accommodations.

When the data of this research were being collected Noah was studying in grade ninth of junior high school, in the local school of her town, facing difficulties in reading English. Noah was referred to me for remedial work in English by the school consultant in charge of the welfare of the learning disabled students.

**Shuval**

Shuval is sixteen years old and lives in Natanya a city in the central part of Israel. Shuval's father died when her mother was pregnant so Shuval did not get to know her father. She lives with her mother, her step father and her baby sister. Her mother is a housewife and her step father owns an electrical appliances shop.

Shuval started learning English as an FL when she was in fifth grade of elementary school, which is unusual in Israel as the regulations of the Ministry of Education in Israel state that English as an FL subject should be taught from third year of elementary school onwards. Shuval faced difficulties in acquiring English straight from the beginning. It was so difficult for her that she gave up immediately and never tried to acquire the language. When Shuval started seventh grade of junior high school she decided to have a fresh start with English and tried to learn it, but she was unable to bridge the gap of the two previous years. Her parents provided her with private lessons in English as an FL; however, these did not yield any results as stated by Shuval.

Following the advice of Shuval's school consultant in charge of the welfare of the learning disabled students; she was assessed for learning disabilities by a licensed professional assessor, found to be dyslexic. Shuval was granted testing accommodations in English as an FL and her marks improved. Shuval hates being tested with the assistance of the testing accommodations. She feels different from the rest of her peer students and is ashamed of the fact that she is dyslexic.

When the data of this research were being collected Shuval was studying in grade tenth of high school, in a school in her city, facing difficulties in reading English. Shuval was referred to me for remedial work in English

by the school consultant in charge of the welfare of the learning disabled students.

**Aviv**

Aviv is seventeen years old and lives in Beit Yitzhak a countryside environment in the east-central part of Israel. He lives with his parents, and his two younger brothers. His mother is a kindergarten teacher in a kindergarten school and his father is the headmaster of a high school in Natanya a city in the east-central part of Israel.

Aviv faced difficulties acquiring English as an FL straight from the beginning of third grade of elementary school. His parents were aware of Aviv's difficulties and arranged for private English lessons which were given to Aviv in the afternoons. These private lessons did not yield any results according to Aviv's opinion, which consequently left Aviv angry and frustrated. This situation usually led Aviv to fight with his brothers and his parents.

Aviv reached seventh grade of junior- high school with a very low level of oral and written proficiency of English. That same year Aviv was assessed for learning disabilities by an educational psychologist, where Aviv was found to be dyslexic. Aviv was granted testing accommodations in English as an FL and his marks consequently improved. Aviv prefers to be tested without the assistance of the testing accommodations because he is ashamed of the fact that he is different from the rest of his friends. Much to his frustration Aviv is aware of the importance of English in Israel and worries to fail the matriculation examination in English which, he knows, will cause him to give up his dream to become a medical doctor.

When the data of this research were being collected Aviv was studying in grade eleventh of the same high school his father administrates, facing

difficulties in reading English. Aviv was referred to me for remedial work in English by his father.

**Tal**

Tal is seventeen years old and lives in Ganot Hadar a countryside environment in the east-central part of Israel. She lives with her parents and her two younger sisters. Both her parents are engineers who work for different high-tech plants in Israel.

Tal started learning English as an FL when she was in second grade of elementary school, which is unusual in Israel as the regulations of the Ministry of Education in Israel state that English as an FL subject should be taught from third year of elementary school onwards. Tal did not face difficulties in acquiring English at the beginning as it was taught solely orally. However, when written English started to be taught in third grade, Tal started to face difficulties in acquiring written English.

Tal was aware of the importance of succeeding in English in Israel and worked very hard. She listened during the English lessons and tried to do her homework, however, she did not succeed in any of the English tests. Her frustration led to a lot of arguments with her mother. Her parents arranged for private English lessons which were given to Tal in the afternoons. These private lessons did not yield any results according to Tal. She finished sixth grade of elementary school with a very low level of oral and written proficiency of English. At the beginning of grade seven in junior high school Tal was assessed for learning disabilities by a licensed professional assessor, found to be dyslexic. She was granted testing accommodations in English as an FL and her marks consequently improved. Tal hates being tested with the assistance of the testing accommodations and is ashamed of the fact that she is different from the rest of her peer students.

When the data of this research were being collected Tal was studying in grade eleventh of high school, in the local school of her town, facing difficulties in reading English. Tal was referred to me for remedial work in English by the school consultant in charge of the welfare of the learning disabled students.

## 3.18 Triangulation in the Present Case Study

Stake (2005) claims that there is a need for the reduction of possible misinterpretation and wrong evaluative judgments of a study. The procedure for reducing the possible misinterpretation is called triangulation. Cohen *et al* (2007, 2013) claim that 'triangulation may be defined as the use of two or more methods of data collection in the study of some aspect of human behaviour' (2000, p 112). Stake (2005) explains that triangulation is considered as a process of employing multiple research methods in order to clarify meanings or confirm the repeatability of an interpretation of a case study.

Bryman (2001) states that triangulation implies that the results of an investigation employing a method associated with one research strategy are cross-checked against the results of using another method associated with the same research strategy. Thus the confidence in the findings which derived from a study using qualitative research strategy can be enhanced by using more than one method of data collection, as is done in this research.

This point is emphasised by Tellis (1997) who says that the need for triangulation arises from the ethical need to confirm the validity of the research. Tellis (1997) goes on to say that in case studies this could be done by using multiple sources of data and that

> The rationale for using multiple sources of data is the triangulation of evidence. Triangulation increases the reliability of the data and the process of gathering it. In the context of data collection, triangulation serves to corroborate the data gathered from other sources. (1997, p 9)

In agreement with Tellis (1997), Bryman (2001), Stake (2005), Simons (2009) and Cohen *et al* (2007, 2013) states that

> Triangulation is a means of cross-checking the relevance and significance of issues or testing out arguments and perspectives from different angles to generate and strengthen evidence in support of key claims.

In the case of the present qualitative case study, I employed two types of triangulation; methodological triangulation and data triangulation (Denzin, 1978). Methodological triangulation was obtained through the exploring of significant similarities between the different qualitative methods of data collection; the pre- and post-intervention students' in-depth interviews, the practitioner's journal and the students' diaries, all of which were thematically analysed. Data triangulation was obtained through the use of different data sources; the pre- and post-intervention students' in-depth interviews, the practitioner's journal, the students' diaries and the documentation of the pre- and post-students' assessments scores. The multiple research methods for data collection, which were used in the present study, are frequently used in case study research so as to gain understanding of the issues, add richness to the description and provide confirmation of the significance of issues through different methods and sources. This type of triangulation is in accordance with Yin (2003) and Williamson (2005) and is also referred to as within-method triangulation, involving the use of different data collection methods within the same paradigm. My research uses five different qualitative data collection methods, as listed above, within the same qualitative paradigm.

## 3.19 Trustworthiness and Authenticity of the Present Case Study

Guba and Lincoln (1989) developed a range of research validity criteria which they believed was more suitable to qualitative inquiry. In agreement with Guba and Lincoln (1989) Simons (2009) claims that qualitative researchers tend to use different criteria and terminology in evaluating the quality of a qualitative research which is different from the terminology in evaluating the quality of a quantitative research. Qualitative researchers tend to use the introduced concept of trustworthiness by Guba and Lincoln (1989) who also suggested a parallel set of criteria to the traditional one of internal validity, external validity, reliability and objectivity. Respectively, these were credibility, transferability, dependability and confirmability. Being a qualitative researcher myself, I decided to use these criteria for my research as well.

**Credibility** refers to confidence in the accuracy of data and their interpretation. It is viewed by Guba and Lincoln (1989) as a dominant goal of qualitative research and is considered by Cohen *et al* (2007, 2013), Diaz Andrade (2009) and Simons (2009) as a major validity criterion. The methods used to preserve the credibility of my research include:

1. Prolonged engagement and determined data gathering: in accordance with suggestions by Guba and Lincoln (1989), I not only invested ample of time in the data collection through the multiple qualitative research methods used in my research, but also triangulated them on content and concept aspects.
2. Peer debriefing: following suggestions by the scholars mentioned above, a couple of peer practitioners gave a positive feedback on the construction of the research methods and a peer researcher confirmed the findings after she re-evaluated them.

3. Researcher credibility: another aspect of credibility is researcher credibility which is the confidence that can be put in the researcher. As a professional practitioner of TEFL to 'dyslexic students' with more than thirty years of experience, I conducted this research according to all the ethical and professional principles following the Anglia Ruskin University*, Research Student Handbook* (2010) as mentioned before. Due to the fact that as a practitioner I was interested in the effects of the research intervention, I conducted my research with high standards of integrity.

**Transferability** refers to the extent to which the findings can be transferred to other populations or groups. It basically refers to the generalisability of the data (Mertens and McLaughlin, 1995). Guba and Lincoln (1989, 1994) identified transferability as the qualitative parallel to external validity in quantitative research, that is, the degree to which the results of a research can be generalised to other populations or situations. Guba and Lincoln (1989, 1994) claim that in qualitative research, the burden of transferability is on the reader to determine the degree of similarity between the study site and the receiving context. Mettetal (2001) states that in action research case studies generalisability is left to the reader, and he or she can determine whether or to what extent the findings may apply to a different context. However, it is the responsibility of the researcher to provide sufficient details to enable the reader to make such a judgment. In order to enable such a judgment there is a need for extensive and careful description of the time, place, context and culture which is known as *thick description* (Mertens and McLaughlin, 1995). Thick description refers to the rich and thorough description of the research setting or context and the transactions and the process during the inquiry. The measures taken to preserve the transferability of this research include:

1. Richness of literature review which enabled the construction of the research intervention and students' assessments. The extensive and careful descriptions of these, which have been documented in this research, allow the reader to make judgments about transferability of the present case study.
2. Richness of the data sources and the extensive and careful descriptions of time and context which have been documented in this research, allow the reader to make judgments about transferability of the data or at least about applicability of some of the conclusions.

**Dependability** of qualitative data refers to the stability of data over time and conditions. Guba and Lincoln (1989, 1994) identified dependability as the qualitative parallel to reliability. The idea of reliability as Bryman (2001) sees it is very close to replication. In order for replication to take place a study must be replicable. In other words, if a researcher does not describe their procedure in great detail, replication is impossible, and that specific research lacks reliability. Cohen *et al* (2007, 2013) claim that reliability is concerned with precision and accuracy and explains that 'for research to be reliable it must demonstrate that if it were to be carried out on a similar group of respondents in a similar context, then similar results would be found' (p 117). The reliability concepts referred to by both Bryman (2001) and Cohen *et al* (2007, 2013) are part of the essence of the present case study. The thematic analysis of the qualitative research methods used in the present study (the pre- and post–intervention students' in depth interviews, the practitioner's journal and the students' diaries) resulted in comparable themes which were listed under comparable categories showing a replication across all six participants' gathered data, similar to the replication Yin (2003) claims a case study should follow so as to enhance the findings' strength. Moreover the analysis of the documentation of the pre- and post-intervention students'

assessments scores, which were important evidence, showed also a replication across all six participants, supporting the conclusions, implications and further propositions of my research.

**Confirmability** refers to the neutrality of the data, which is the potential for congruence two or more independent people about the data's accuracy, relevance or meaning. Guba and Lincoln (1989, 1994) recommended a *confirmability audit* to attest to the fact that the data can be traced to original sources, and that the process of production of data, so as to reach conclusions, can be confirmed. In order to maintain confirmability in my research, peer consultation and feedback, which helped to determine whether the conclusions were supported by the data, were used throughout the research process.

## 3.20 Delimitations of the Present Case Study

Delimitations of a research study show how it is bounded. The boundaries of this research are discussed from three perspectives; literature, methodological procedures and sample.

**Boundaries of Literature:**

The theoretical perspectives of this research are based on literature which reviews the cognitive and behavioural processes of learning reading skills in L1 and in FL by 'non-dyslexic students' and by 'dyslexic students', as it focuses on the enhancement of phonological awareness and improvement of reading English as an FL. This research also reviews literature which discusses emotional aspects of 'dyslexic students', as it attempts to find out the effects of the research cognitive combined reading intervention programme. For this reason, the scope of the research did not include the additional disabilities which people with learning disabilities may have,

such as dysnomia, dysgraphia or difficulties with sequences, and literature reflecting these issues in not reviewed.

**Boundaries of Methodological Procedures:**

My research examines the effects of an intervention programme solely on reading in English as a foreign language. Listening, speaking and writing skills are not examined. As explained in the introduction to this study, the matriculation examination in English-FL, which is necessary for acceptance to any university in Israel, consists of approximately seventy per cent reading comprehension. This is the reason for this study focusing on improving the research participants' phonological awareness, thereby eliminating deficits which hindered their reading proficiency. This point is stressed by Anthony and Francis (2005) who claim that phonological awareness is the phonological processing ability most strongly related to literacy. This premise informed the implications of the research approach for conceptualising reading particularly for the intervention implementation.

This research is based solely on a qualitative methodology, and therefore, uses only qualitative research methods. The reason for utilising qualitative research methods only is that it is imperative to thematically analyse the gathered data from the pre- and post–intervention students' in depth interviews, practitioner's journal and students' diaries, on the one hand, and analyse the documentation of the pre- and post-intervention students' assessments scores as an important evidence, on the other, for the gain of insight of the research intervention effects (Simons, 2009). This then enables cross-case analysis of the data of the six research participants, a vital step for a case study with a small sample size, where no comparative control group could be established to make sense of an experimental design.

Even though in comparison to single case designs, where the evidence from multiple cases is often considered more compelling and the overall study is, therefore, regarded as being more robust (Yin, 2003), I decided to conduct my research as a single case study with a group of six comparable dyslexic participants and not as a multiple case study with six participants. My decision was based upon Simons' (2009) advice for conducting single case studies within a qualitative-interpretative paradigm. The use of qualitative methods in particular enables the experience and complexity of programmes to be studied in depth, thus enabling the exploration and understanding of the process of change and the determination of the factors which are significant in the implementation of a specific programme.

The short-term intervention programme was implemented within four months. The delimitation of duration of the intervention programme is to make sure that all six students would fully participate during the entire period, and be less likely to drop out in the middle. Moreover my research short term intervention programme is based on other successful short-term intervention programmes (Gillon and Dodd, 1997; Bus and IJzendoorn, 1999; Gonzales *et al*, 2002; Simos *et al*, 2002; Alyward, 2003 and Temple *et al*, 2003; Swanson *et al*, 2005; William *et al*, 2006) which were already reviewed in Chapter 2.

**Boundaries of Sample:**

The reason for choosing dyslexic participants who were still students of the junior high and high school educational system in Israel was that I am a specialist teacher for EFL reading, solely to 'dyslexic students' for grades nine to twelve of junior high and high school in Israel, and these are my private students.

Only students who were assessed as learning disabled by a licensed professional assessor or an educational psychologist, who are specialists in assessing learning disabilities and are officially approved by the Ministry of Education in Israel, were chosen as research participants for the present study. In order to raise internal validity of my research, it was important to base choices of sample on a standardised by the Ministry of Education in Israel assessment, in addition to the one I used as the pre- and post-intervention students' assessment.

The reason for not choosing Arab-Israeli students is that English is a third language for these students, as Arabic is their L1 and Hebrew is their L2. The present study does not examine the effects of the combined English as a foreign language reading intervention programme on students for whom English is a third language. For the same reason I did not choose students who are new immigrants to Israel for whom Russian or Spanish, for example, is their L1 and Hebrew their L2.

## 3.21 Summary

My research is an action research, qualitative case study of a combined reading intervention programme in English as an FL for 'dyslexic students', who are native speakers of Hebrew in Israel. It examines the effects of the reading intervention programme, informed by a combined theoretical approach, on the six participants of the research studying English in the inclusive EFL classroom in Israel. This qualitative research can be identified as an interpretive one in nature as its approach provides a deep insight into the complex experiences of the dyslexic research participants. In addition, my research can be seen as the starting point, where its conceptual conclusions and further propositions may enable a potential additional action research. Even though my research does not test theories, it can be seen as the explanatory case study Yin (2003) refers to

as it explains the casual link of a real-life EFL reading intervention for 'dyslexic students' in Israel. On the other hand, this case study can be accepted as the intrinsic case study Tellis (1997) and Stake (1995) distinguished, as I was interested in learning about the effects of the particular present research combined reading intervention programme. The research design is inductive in nature. Data from in-depth pre-and post-intervention students' interviews was triangulated with the students' diaries, the practitioner's journal and the documentation of the pre- and post-intervention students' assessments. In this case study the data analysis of the pre- and post-intervention students' in-depth interviews, the practitioner's journal and the students' diaries is thematically analysed, which enabled the different research qualitative methods, used in the research, to converse with each other so as to assist me as a researcher in the search for profound insight. Indeed, the 'conversation' between the different qualitative research methods used in the present study, helped me not only as a researcher but also as a practitioner to gain deep understanding of the effects of the case in study – the EFL combined reading intervention programme – on the research 'dyslexic students'. The weaving of the research methods, which was facilitated by the theme analysis, helped in constructing the research conceptual conclusions and further propositions. The next chapter introduces the research data analysis and discussion.

# 4 Data Analysis and Discussion

## 4.1 Preface

The present chapter introduces a comprehensive understanding of the analysis and discussion of the data. The data collection of this study was in the year of 2010. I taught the combined reading intervention programme to the six research participants in the context of the regulations of inclusive education in Israel which were prevailing at that time, as mentioned in Chapter 2 of this study.

The aim of my research was to find out the effects of a combined reading intervention programme in English as a foreign language, with six 'dyslexic students' in Israel, using a case study design within a qualitative paradigm. It follows Yin's (2003), Stake's (2005) and Simons' (2009) recommendations for conducting a case study where multiple typical inductive research tools are used and analysed through a thematic analysis and code development so as 'to assist the researcher in the search for insight' as Boyatzis claims (1998, p vi).

The multiple inductive research tools used in this study which were discussed in the previous chapter, Methodology, are:

1. Pre combined reading intervention programme in-depth interview with the six participants
2. Practitioner's journal of the six participants
3. The six participants' diary
4. Post combined reading intervention programme in-depth interview with the six participants
5. Documentation of the pre- and post- combined reading intervention programme assessment scores

Yin (2003) states that the collected data, their analysis and the subsequent conclusions must link to the research question which in this study is:

> What effects does the combined reading intervention programme in English as a foreign language in Israel have on the six research 'dyslexic students'?

Mertens and McLaughlin (1995) state that analysis occurs throughout the data collection process, whereby the main analytical process is comparison. Following Mertens and McLaughlin (1995) claim, in the case of this research, comparison is obtained through:

a) The comparison of themes arising from the pre- and post-combined reading intervention programme in-depth interview with the six participants, the practitioner's journal carried with the six participants and the six participants' diary.
b) The use of documentation of the pre- and post- combined reading intervention programme assessment scores so as to gain an additional objective insight to the data analysis of the four research tool mentioned above. In trying to keep a solely qualitative research methodology to my research, the pre- and post- reading intervention programme assessment scores are only presented, however, they are not analysed statistically.

## 4.2 Background of the Six Research Participants

Due to the fact that the purpose of my research was to find out what effects the combined reading intervention programme in English as a foreign language in Israel had on the six research 'dyslexic students', these were chosen through purposeful comparable background, exposure to similar EFL methodologies, comparable deficits in phonological

awareness and comparable difficulties in reading English as a foreign language. A detailed background of the six research participants appears in the previous chapter, Methodology, section 3.16 (The Sample – The Participants: Who Are They?).

## 4.3 Data Analysis

The present chapter will relate to the analysis of the main themes arising from the pre- and post- combined reading intervention programme in-depth interview with the six participants, the practitioner's journal carried with the six participants and the six participants' diary, and the significant elements in each theme.

The quality of data analysis depends on repeated, systematic searching of the data (Hewitt-Taylor, 2001). In order to attain this quality, repeated reading was made of each transcript of the four different research tools of the six participants, until no new insights were gleaned. Polit and Beck (2004) suggest that this type of Qualitative Content Analysis is the analysis of the content of narrative data to identify prominent themes and patterns among the themes.

The interpretation process was carried out by reading word for word all of the interviews with the six participants, the entire practitioner's journal conducted with the six participants and all the six participants' diary transcripts in order to generate the themes inductively from the raw data which were related to the research question. The second step was to highlight the themes in different colours in an attempt to encode the qualitative information (Boyatzis, 1998) into different categories (Simons, 2009).

Table 4:1 illustrates the themes and sub themes which emerged from the data analysis taken from all of the six participants' in-depth pre- and post-interviews.

**Table 4:1 Illustration of the data analysis taken from the six participants' in-depth pre- and post-interviews**

| THEMES | SUB THEMES | SUB THEMES |
|---|---|---|
| Learning difficulties | Reading is the most difficult | |
| | Reading comprehension is the most difficult | |
| Improvement | 'Still not helping' - weeks 1-5 | 1. Low self esteem.<br>2. But there is a slight improvement. |
| | 'Slight improvement' - weeks 6-10 | Less afraid. |
| | 'Improvement' - weeks 11-15 | 1. Reading.<br>2. Reading comprehension. |
| | 'Significant improvement, but…'- weeks 16-20 | 1. Enhancement of self esteem.<br>2. Improvement of self efficacy. |
| Feelings | Frustration | |
| | Anxiety | |
| | Failure | |
| | Disappointment | |
| | Anger | 1. Towards oneself.<br>2. Towards others. |
| | Sorrow | |
| | Pain | |
| | Depression | |
| | Shame | |
| Test Accommodations | Positive effect | 'Improvement, but…' |
| | Being labelled | |
| | Low self esteem | |
| | Embarrassment | |
| | Getting rid of accommodations | |
| Referring to future consequences | Role of English in Israel | |
| | Fear of future consequences | |
| | Future Expectations | |

Table 4:2 illustrates the themes and sub themes which emerged from the data analysis taken from the practitioner's journal.

**Table 4:2 Illustration of the data analysis taken from the practitioner's journal**

| THEMES | SUB THEMES | SUB THEMES |
|---|---|---|
| Method of intervention | Bottom-up/Top-down | |
| | Pre knowledge of tasks enhances confidence | |
| | Repetitive exercises enhance confidence | |
| | Working with computer | |
| | No boring | |
| Improvement | 'Still not helping' - weeks 1-5 | 1. Low self esteem.<br>2. But there is a slight improvement. |
| | 'Slight improvement' - weeks 6-10 | Less afraid. |
| | 'Improvement' - weeks 11-15 | 1. Reading.<br>2. Reading comprehension. |
| | 'Significant improvement, but…'- weeks 16-20 | 1. Enhancement of self esteem.<br>2. Improvement of self efficacy. |
| Feelings | Frustration | |
| | Anxiety | |
| | Failure | |
| | Shame | |
| Test Accommodations | Positive effect | 'Improvement, but…' |
| | Being labelled | |
| | Low self esteem | |
| | Embarrassment | |
| | Getting rid of accommodations | |

Table 4:3 illustrates the themes and sub themes which emerged from the data analysis taken from the six participants' diary.

**Table 4:3 Illustration of the data analysis taken from the six participants' diary**

| THEMES | SUB THEMES | SUB THEMES |
|---|---|---|
| Learning difficulties | Reading is the most difficult | |
| | Reading comprehension is the most difficult | |
| Improvement | 'Still not helping' - weeks 1-5 | 1. Low self esteem.<br>2. But there is a slight improvement. |
| | 'Slight improvement' - weeks 6-10 | Less afraid. |
| | 'Improvement' - weeks 11-15 | 1. Reading.<br>2. Reading comprehension. |
| | 'Significant improvement, but…'- weeks 16-20 | 1. Enhancement of self esteem.<br>2. Improvement of self efficacy. |
| Feelings | Frustration | |
| | Anxiety | |
| | Failure | |
| | Disappointment | |
| | Depression | |
| Test Accommodations | Positive effect | 'Improvement, but…' |
| | Being labelled | |
| | Low self esteem | |
| | Embarrassment | |
| | Getting rid of accommodations | |

The next step in the interpretation process was to list the themes under the three categories which were encoded by me and re-evaluated by an independent peer who agreed with the encoding of the themes and the listing under three categories; 1. Cognition, 2. Emotions and 3. Behaviour. The reason for asking the independent peer to re-evaluate the themes and categories was that I was conducting an individualistic action research study, even though collaborative action research is strongly suggested by theorists (Sagor, 2011). However, Cohen *et al* (2000, 2007, 2013) claim that it is possible for action research to be an individualistic matter as well, relating action to the teacher as a researcher, as in the case of my

research. This point is discussed by Whitehead (1985) and McNiff and Whitehead (2006) who strongly support action research in individualistic terms where the process of writing involves clarifying and exploring ideas and interpretations by the practitioner researcher. Nevertheless, for the sake of the validity of the data gathered from the pre- and post-interviews, participants' diaries and the practitioner's journal, I asked for the re-evaluation of an independent peer.

Table 4:4 illustrates the summary of the whole data analysis; the three categories and their different themes and sub themes.

**Table 4:4 Illustration of the data analysis**

| CATEGORY | | THEMES | SUB THEMES | SUB THEMES |
|---|---|---|---|---|
| **COGNITION** | 1 | Learning difficulties | Reading is the most difficult | |
| | | | Reading comprehension is the most difficult | |
| | 2 | Method of intervention | Bottom-up/Top-down | |
| | | | Pre knowledge of tasks enhances confidence | |
| | | | Repetitive exercises enhance confidence | |
| | | | Working with computer | |
| | | | No boring | |
| | 3 | Improvement | 'Still not helping' - weeks 1-5 | 1. Low self esteem.<br>2. But there is a slight improvement. |
| | | | 'Slight improvement' - weeks 6-10 | Less afraid. |
| | | | 'Improvement' - weeks 11-15 | 1. Reading.<br>2. Reading comprehension. |
| | | | 'Significant improvement, but…'- weeks 16-20 | 1. Enhancement of self esteem.<br>2. Improvement of self efficacy. |
| **EMOTIONS** | 1 | Feelings | Frustration | |
| | | | Anxiety | |
| | | | Failure | |
| | | | Disappointment | |
| | | | Anger | 1. Towards oneself.<br>2. Towards others. |
| | | | Sorrow | |
| | | | Pain | |
| | | | Depression | |
| | | | Shame | |
| | 2 | Test Accommodations | Positive effect | 'Improvement, but…' |
| | | | Being labelled | |
| | | | Low self esteem | |
| | | | Embarrassment | |
| | | | Getting rid of accommodations | |
| **BEHAVIOUR** | 1 | Referring to future consequences | Role of English in Israel | |
| | | | Fear of future consequences | |
| | | | Future Expectations | |

Examples of the themes which emerged from the data analysis and were taken transversely from all of the six participants' in-depth pre- and post-interviews, the practitioner's journal and the participants' diary, can be seen in Appendix 5.

## 4.4 Documentation of the pre- and post combined reading intervention programme assessment scores

As already discussed in chapter three of the present study, which deals with research design and methodology, this research uses documentary analysis as well. Simons (2009) claims that documentary analysis tends to be used less than interview analysis in case study research, however, it enriches the context and contributes to the analysis of the case study.

Simons (2009) widely refers to documents, not only formal policy documents or public records but also anything written or produced about the context of the research which can include examination results as well as. In the case of this action research case study, where the case in study is the effects of the intervention programme, it is important to use the documentation of the pre- and post- combined reading intervention programme assessment scores which can be seen in Appendix 10.

Documentary analysis of the pre- and post- combined reading intervention programme assessment scores of this research serves as a helpful additional objective insight to the theme analysis arising from the pre- and post- combined reading intervention programme in-depth interview with the six participants, the practitioner's journal carried with the six participants and the six participants' diary.

The assessment follows the claim of Cohen *et al* (2007, 2013) that 'in tests, researchers have at their disposal a powerful method of data

collection, an impressive array of tests for gathering data of a numerical rather than verbal kind' (p 317). This data collection tool serves as an excellent instrument which gathers data on the six research participants' phonological awareness deficits and their proficiency in reading in English as an FL, where the level of difficulty of the test is identical in the pre-test and post-test.

The students' assessment, which is widely discussed in chapter three of this study, reflects the Dyslexia Handbook Revised (2007, 2010) discussion of the primary reading characteristics of dyslexia. These include a difficulty in reading real words in isolation, a difficulty in accurately decoding pseudo words, a lack of reading fluency and accuracy, and difficulty with learning to spell. As already mentioned in Chapter 2, the reading and spelling characteristics are the result of difficulty with the development of phonological awareness, including segmenting, blending and manipulating sounds in words, and difficulty with learning the sound/symbol association of the letters of the alphabet. All these are included in the different parts of the students' assessment.

Parts one to eight of the pre-test and post-test of this research assess phonological awareness (Appendix 4) and parts nine and ten assess segmentation skills which are also associated with phonological awareness (Appendix 4). Parts eleven to thirteen test the participants' reading proficiency in English as a foreign language (Appendices 1 and 4).

Fawcett and Nicolson (1996) claim that 'one of the most clearly established difficulties in dyslexia is in terms of phonological skill' (p 3). This is supported by Miles (1982), Gorrie and Parkinson (1995), Fawcett and Nicolson (1996), Frederick, Frith and Reason (1997) and Habib (2000), underpinning the pre-test and post-test of my study, in assessing

the phonological awareness and reading proficiency of the six participants of the study.

As mentioned above, in trying to keep an exclusively qualitative research methodology to my action research, the pre- and post combined reading intervention programme assessment scores are not analysed statistically but translated into percentage results, so as to have a unified measurement, which shows a comparable post intervention improvement of the six participants in all of the thirteen different parts of the assessment (Appendix 4). The percentage results are based on the pre- and post combined reading intervention programme assessment scores which can be seen in Appendix 10.

Table 4:5 shows a discrepancy between the pre- and post- combined reading intervention assessment total scores of a 48.6 percent, in favour of the latter, indicating a post intervention improvement of the phonological awareness of all the six research participants.

**Table 4:5 the pre- and post-assessment scores of the ten phonological awareness assessment tasks in a percentage mode**

| Tasks | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yuval | Pre-assessment | 80 | 45 | 50 | 40 | 40 | 80 | 30 | 20 | 10 | 0 | 39.5 |
| | Post-assessment | 95 | 90 | 100 | 90 | 100 | 100 | 90 | 90 | 80 | 90 | 92.5 |
| Kefir | Pre-assessment | 90 | 55 | 30 | 40 | 60 | 100 | 30 | 30 | 30 | 0 | 46.5 |
| | Post-assessment | 100 | 95 | 100 | 100 | 100 | 100 | 100 | 100 | 90 | 80 | 96.5 |
| Noah | Pre-assessment | 100 | 55 | 50 | 60 | 80 | 90 | 20 | 50 | 20 | 00 | 52.5 |
| | Post-assessment | 100 | 100 | 100 | 100 | 100 | 100 | 90 | 100 | 90 | 90 | 97 |
| Shuval | Pre-assessment | 90 | 65 | 60 | 60 | 86.6 | 100 | 10 | 30 | 40 | 0 | 54.1 |
| | Post-assessment | 100 | 100 | 100 | 100 | 100 | 100 | 80 | 100 | 90 | 90 | 96 |
| Aviv | Pre-assessment | 85 | 40 | 40 | 30 | 73.3 | 80 | 30 | 20 | 30 | 0 | 42.8 |
| | Post-assessment | 95 | 85 | 100 | 90 | 100 | 100 | 100 | 90 | 90 | 100 | 95 |
| Tal | Pre-assessment | 95 | 60 | 60 | 50 | 46.6 | 100 | 20 | 40 | 10 | 0 | 48.1 |
| | Post-assessment | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 80 | 100 | 98 |
| total | Pre-assessment | 90 | 53.3 | 48.3 | 46.6 | 64.4 | 91.6 | 23.3 | 31.6 | 23.3 | 0 | 47.2 |
| | Post-assessment | 98.3 | 95 | 100 | 96.6 | 100 | 100 | 93.3 | 96.6 | 86.6 | 91.6 | 95.8 |

Table 4:6 shows a discrepancy between the pre- and post- combined reading intervention assessment total scores of a 56.3 percent (assessment tasks 11 and 12 Appendix 4), in favour of the latter, indicating a post intervention improvement in the reading proficiency, in English as an FL, of all the six research participants.

**Table 4:6 the pre- and post-assessment scores of the reading proficiency assessment tasks (11 and 12) in a percentage mode**

| Tasks | | 11 | 12 | average |
|---|---|---|---|---|
| Yuval | Pre- assessment | 30 | 0 | 15 |
| | Post-assessment | 90 | 30 | 60 |
| Kefir | Pre- assessment | 50 | 5 | 27.5 |
| | Post- assessment | 90 | 80 | 85 |
| Noah | Pre- assessment | 45 | 20 | 32.5 |
| | Post- assessment | 100 | 95 | 97.5 |
| Shuval | Pre- assessment | 65 | 10 | 37.5 |
| | Post- assessment | 90 | 100 | 95 |
| Aviv | Pre- assessment | 35 | 65 | 50 |
| | Post- assessment | 100 | 90 | 95 |
| Tal | Pre- assessment | 25 | 30 | 27.5 |
| | Post- assessment | 95 | 95 | 95 |
| total | Pre- assessment | 41.6 | 21.6 | 31.6 |
| | Post- assessment | 94.1 | 81.6 | 87.9 |

Table 4:7 shows a discrepancy between the pre- and post- combined reading intervention assessment total scores of a 58.9 percent (assessment task 13, Appendix 4), in favour of the latter, indicating a post intervention improvement in the reading comprehension, in English as an FL, of all the six research participants.

**Table 4:7 the pre- and post-assessment scores of the reading comprehension assessment task (no. 13) in a percentage mode**

| Task 13 | | pace | accuracy | comprehension | average |
|---|---|---|---|---|---|
| Yuval | Pre-assessment | 20 | 20 | 20 | 20 |
| | Post-assessment | 80 | 80 | 80 | 80 |
| Kefir | Pre-assessment | 20 | 20 | 20 | 20 |
| | Post-assessment | 100 | 60 | 80 | 80 |
| Noah | Pre-assessment | 40 | 60 | 20 | 40 |
| | Post-assessment | 80 | 80 | 100 | 86.6 |
| Shuval | Pre-assessment | 20 | 20 | 20 | 20 |
| | Post-assessment | 80 | 80 | 100 | 86.6 |
| Aviv | Pre-assessment | 40 | 60 | 20 | 40 |
| | Post-assessment | 100 | 100 | 80 | 93.3 |
| Tal | Pre-assessment | 40 | 40 | 20 | 33.3 |
| | Post-assessment | 100 | 100 | 100 | 100 |
| total | Pre-assessment | 30 | 36.6 | 20 | 28.8 |
| | Post-assessment | 90 | 83.3 | 90 | 87.7 |

To conclude, as mentioned above, tables 4:5, 4:6 and 4:7 present an average discrepancy between the pre- and post- combined reading intervention assessment total scores of all the thirteen assessment tasks. This discrepancy of 54.6 percent shows a post intervention improvement of all the six research participants in phonological awareness, reading proficiency and reading reprehension of English as an FL. This improvement, not only does indicate positive cognitive effects of this research combined reading intervention programme, but also the effectiveness of the reading intervention programme in addition to the

participants' perceptions of the programme and their feelings about themselves.

## 4.5 Discussion

This section provides the discussion of the thematic analysis process divided into three already mentioned categories: **cognition**, **emotions** and **behaviour**. In addition to the thematic analysis, my thoughts, reflections and insights, which were recorded in my journal, were also taken into consideration in the process of discussion.

Cognitivism, as discussed in the theoretical perspectives chapter, explains how learning occurs due to a change in mental state, as opposed to behaviourism which claims that learning can be described in terms of a change in behaviour (Ormrod's, 1999). Cognitive theorists emphasise the role that internal mental processing, rather than external behaviour, plays in learning (Ellis, 1990; Ormrod, 1999).

## 4.6 Cognition

As mentioned in the theoretical perspectives chapter Huitt and Hummel (2003) explained that Piaget's theory of cognitive development consists of four stages. The final stage in Piaget's (1970) cognitive development theory, which takes place between the ages of eleven and sixteen, is identified as the formal operational stage. At this stage, children develop the ability to master abstract thinking and relate symbols to concepts. Brown (2007) believes that Piaget's formal operational stage is a critical stage in the consideration of the effects of age on second language acquisition. It is during this stage that a person becomes capable of abstraction and of formal thinking which transcends concrete experience and direct perception. 'Cognitively, then, an argument can be made for a critical period of second language acquisition by connecting language

acquisition and the concrete/formal stage transition' (Brown 2007, p 66). The six dyslexic research participants were within Piaget's final stage of cognitive development, as all of them were between the ages of fourteen and seventeen.

Under the category of cognition I listed three themes:

1. Learning difficulties
2. Method of intervention
3. Improvement

## 4.7 Learning Difficulties

### Reading English is the most difficult thing

> 'I did not have any difficulties with English when we started learning it. It was in second grade of elementary school and we just talked and sang in English. My troubles started in third grade when we began to learn to read English. I could not learn how to read English and I am not able to read it' (Yuval's pre-intervention interview).

Yuval was not exceptional in experiencing difficulties in reading English as a foreign language (FL) among the rest of the research participants. The rest of the five participants shared this difficulty as well and all of them expressed it in their pre-intervention reading programme interviews. 'Reading is the most difficult thing. That's why I fail all the unseen tests', Kefir said when asked to tell, in his pre-intervention interview, about his English studies from when he first began until the beginning of the research intervention reading programme. 'I have a huge difficulty with reading English,' were Noah's words in her pre-intervention interview when she was asked to tell about her experience concerning learning English as an FL. Shuval claimed in her pre-intervention interview that 'it is easier for [her] to understand a text when someone reads it to [her],

but [she] cannot read it by [herself]'. Aviv and Tal used similar words to express this concept.

It is not surprising that all of the six participants reported in their pre-intervention interviews to have reading difficulties in English as an FL, as all of them had been assessed for learning disabilities by a professional assessor or an educational psychologist, being found to be dyslexic.

As already discussed dyslexia remains a problematic classification because of the vagaries and antagonisms surrounding its definition. However, there is a consensus about statistics which show that five to ten per cent of school age children fail to learn to read in their own language in spite of average intelligence, adequate environment and educational opportunities (The US Department of Education's report, 1997; Habib, 2000; The Director's Annual Circular of the Ministry of Education in Israel, 2003; The British Dyslexia Association, 2004; Anthony and Francis, 2005 and the Dyslexia Handbook Revised, 2007, 2010). This point is supported by Shaywitz (1998) who characterises dyslexia as an unexpected difficulty in reading in children and adults who otherwise possess the intelligence, motivation and schooling considered necessary for accurate and fluent reading. Moreover, Lerner (1989) emphasises this point by saying that reading disability is the most common of the learning disabilities, affecting 80 per cent of all those identified as learning disabled.

Moreover, research conducted by Ganschow and Sparks (1991) concluded that it would seem reasonable to anticipate that some of the difficulties faced by dyslexic learners when learning to read their first language (L1) will affect their ability to learn to read a foreign language as 'a link exists between native language and FL learning potential' (Ganschow and Sparks 1991, p 4). In other words, students with dyslexia have difficulties when learning to read a foreign language which are similar to those they have

had when learn to read their first language. For this reason the six participants were not assessed for learning disabilities in English, since the Ministry of Education does not demand an additional assessment for learning disabilities in English for students who have already been assessed in Hebrew. The rationale for not demanding an additional assessment in English as a foreign language is based upon Ganschow and Sparks' (1991) and Sparks *et al*'s (1999, 2002,2003) claims.

The six research participants fit into the statistics and classifications mentioned above since all of them had reading difficulties in Hebrew, their first language, as reported by their parents and concluded in their assessments carried out by a professional assessor or an educational psychologist. Moreover, all the six participants reported, in their pre-intervention interviews, that reading English is the most difficult thing for them. This subjective participants' observation is triangulated by my documentation of the pre-intervention assessment scores of the six participants, concerning reading of words and full texts (Appendix 10).

## Reading comprehension is the most difficult thing

Deutsch (2005) conducted a study where she found that English as a foreign language 'dyslexic students', in grade nine in Israel, lacked the skills to cope with reading comprehension tests (unseen tests). These students did not have the tools to achieve high scores in reading comprehension tests as they did not have effective reading strategies to guide them on their reading comprehension. Deutsch (2005) claimed that the students in her study found reading for information easy in Hebrew, their first language; however, it was a difficult task for them in English as a foreign language. The reading comprehension tests caused anxiety and a sense of failure for the students who did not have the skills to cope with the tests and scored poorly. Deutsch (2005) concluded that reading in

English as an FL was difficult for the 'dyslexic students' in her research; moreover, reading comprehension tests (unseen tests) in English as an FL was even a more difficult task for these dyslexic Israeli students.

In her pre-intervention reading programme interview Tal commented

> 'I always fail all the unseen tests because I do not understand what I read. The problem is that almost all of the English tests are unseen tests where I need to understand what I read. That is why I fail English in school'.

Tal's comment referred to unseen tests which are the reading comprehension tests mentioned by Deutsch (2005). The six participants reported, in their pre-intervention reading programme interviews, to have a difficulty with reading English as an FL as discussed in the previous section. The reading difficulty led all of them to another difficulty - reading comprehension. Kefir in his pre-intervention interview summarised it by saying 'my biggest problem is reading and reading comprehension'.

Effective reading comprehension in the first language or in a foreign language is based on effective acquisition of basic reading skills. The former depends on the latter, where the former – reading comprehension – is the ultimate goal of reading (Eskey 1988). No wonder Aviv tied in his pre-intervention interview both difficulties in reading and reading comprehension together by saying 'It is very difficult for me to read. And if I manage to read I do not understand what I read'. Noah in her pre-intervention interview expressed the same idea by saying: ' Even if I read some words I do not understand anything. I am sure that I do not read them correctly'.

Even though the research participants were assessed as 'dyslexic students', all of them studied in an inclusive EFL classroom which meant

that they were given the same tests as the rest of the 'non-dyslexic students' in their class and took the same matriculation examination in English as all the students in Israel in order to be granted a matriculation certificate. For this reason the participants faced their reading and reading comprehension difficulty in all of the EFL lessons in school and in most of their English tests due to the fact that, as already mentioned in the introduction to this study, 70% of the matriculation examination in English as a foreign language in Israel is based on reading comprehension. To prepare the Israeli student for the English matriculation examination the English teachers have to train them for reading comprehension skills. To do so a large proportion of the English lessons are devoted to teaching and exercise reading comprehension techniques, which are later tested in most of the English tests; by doing this the English teachers follow the demands of the Ministry of Education in Israel concerning the curriculum of teaching English as a foreign language.

As mentioned in the introduction to this research, in 2001 the Ministry of Education in Israel set new national standards in English as a foreign language education. The rational for the new curriculum was that on the verge of the 21st century English has become the main language in the world (Abbot, 1999), and has based its status in Israel as the first official foreign language (Ministry of education in Israel, 1996). Israelis use the English language for global communication, international trade, tourism, internet, E-learning and research in higher education. As a language, English is considered as the most valuable possession for an Israeli (State of Israel Ministry of Education, 2001). The Israeli student cannot be accepted into any of the universities in Israel without being granted a matriculation certificate. In order to be granted such a certificate it is a must to pass the matriculation examination in English as a foreign language (FL). However, most of the faculties in the Israeli universities

demand a matriculation certificate where the level of English is at least four points. Moreover, to be accepted into medicine and law school in all of the Israeli universities students have to be granted a matriculation certificate where the level of English is five points. The matriculation examination in English as an FL in Israel is built of five modular points. Table 1 in the introduction chapter explains the structure of the English matriculation examinations in Israel.

As illustrated in table 1 at the end of the eleventh grade of high school the Israeli student has to pass module D if they are taking four points English matriculation examination or module F if they are taking the five points English matriculation examination. By the end of the twelfth grade of high school the Israeli student has to pass module E if they are taking four points English matriculation examination or module G if they are taking the five points English matriculation examination.

All of the six research participants were aware of their reading comprehension difficulty and all of them expressed their worries in their pre-intervention interviews. These data were triangulated with the participants' pre-intervention reading assessment scores (Appendix 10) which confirmed the participants' observation.

At the time the data were being collected Yuval was studying in eighth grade of junior high school still having two years ahead of her for module C, as she was planning to take the four points English matriculation examination. However, she was already failing English in school due to the fact that the tests she was given by her English teacher were mainly reading comprehension tests, as demanded by the English as an FL curriculum designed by the ministry of education in Israel. Yuval expressed in her pre-intervention interview, her reading comprehension

difficulty saying that 'Even if I try to read I do not understand anything. That is why I prefer someone to read the text for me'.

Kefir was studying in grade nine of junior high school still having a year ahead of him for module C, as he was also planning to take the four points English matriculation examination. Kefir was already worried about the matriculation examination in English and expressed it in his pre-intervention interview by saying that reading comprehension in English was his biggest problem. Kefir was failing the English tests in school which most of them were on reading comprehension in English as an FL.

Noah's situation was no different from Kefir's. Noah was also studying in grade nine of junior high school, still having a year ahead of her for module E, as she was hoping to be able to take the five points English matriculation examination. Noah wanted to be granted eventually the five points' matriculation examination in English so as to be able to study in any Israeli university without being limited in her acceptance by any faculty in the future. Much to Noah's frustration she was unable to read English at the time I was collecting the data for this study.

Shuval was studying in grade tenth of high school. Her situation was bad as she was taking module C that very same year. She was planning to accomplish the four points' matriculation examination in English; however, her difficulty in reading English was going to be an obstacle. She summarised her difficulty in reading by saying in her pre-intervention interview 'I fail all the tests because I cannot read English nor understand the texts in the English tests'.

Aviv and Tal were both in the same difficult situation regarding their reading comprehension in English. Both of them were studying in grade eleven of high school and had already failed module E in grade ten. Both of them were planning to accomplish the five points' matriculation

examination in English as Aviv was planning to become a medical doctor and Tal a lawyer. As mentioned above, in ordered to be accepted to the medicine faculty or the law one in any of the universities in Israel, a student must be granted a matriculation certificate with a five points' matriculation examination in English as an FL. Both of them were very worried that they would not be able to fulfil their dream of becoming a doctor and a lawyer, however, they were aware of their difficulty in reading and reading comprehension in English and commented in their pre-intervention interview that they 'always fail all the unseen tests because [they] do not understand what [they] read'.

As discussed in the theoretical perspectives chapter Broughton *et al* (1978) claim, when referring to reading comprehension, that reading is a complex skill which involves a series of lesser skills. The first is the ability to recognise stylised shapes, which are the letters. The second is the ability to correlate the letters with language. The third skill is the ability to correlate the words as sound with the meanings, which those words symbolise. On the other hand, to achieve fluent reading, readers bring their knowledge of the language and their knowledge of the world to bear, build up expectations and make predictions about what is to come.

When referring to reading comprehension in a foreign language, English in the case of the present study, I agree with Eskey's (1988) view and Deutsch's (2005) conclusion, which are based on the fact that the foreign language reader will have weaker linguistic competence than the first language reader and will therefore have less ability to draw on the range of cues, which are available to readers in a first language. There is no doubt that this point is supported by the research participants tying together in their pre-intervention interviews their difficulties in reading and reading comprehension in English as an FL.

## 4.8 Method of intervention

### 4.8.1 Bottom-up and Top-down Strategies

In section 2.6.3 of this thesis I discussed the importance of phonological awareness in acquiring basic reading skills in L1 and in an FL as well. This point is stressed by Anthony and Francis (2005) who claim that phonological awareness is the phonological processing ability most strongly related to literacy. Not only does it facilitate the acquisition of basic reading skills, but it is also necessary for learning to read.

Snowling (1996, 2000) claims that the core of dyslexia is a phonological processing deficit and supports the importance of the role that phonological awareness plays in acquiring reading skills by stating that dyslexic individuals perform particularly poorly on tasks requiring phonological awareness. This point is important as all six research participants were assessed by a professional assessor or an educational psychologist, who are specialists in assessing learning disabilities and are officially approved and licensed by the Ministry of Education in Israel, found to be dyslexic suffering from phonological awareness deficits and poor reading abilities. These deficits were also documented in the research participants' pre-intervention assessment scores conducted by me (Appendix 10)

Discussing reading difficulties in the theoretical perspectives chapter, Anthony and Francis (2005) and Gathercole *et al* (2006) agreed with Snowling (2000) and claimed that severity of reading difficulties is significantly associated with phonological awareness abilities. Both Snowling (1996) and Vellutino and Scanlon (1987) stressed the fact that the core of dyslexia was a phonological awareness deficit. Phonological awareness refers to the ability to rime and to segment words into syllables

and phonemes (Goswami and Bryant 1990). Phonemes are the smallest units of sound that can change the meaning of a word (Goswami 1991).

As mentioned in the theoretical perspectives chapter, research over the years has suggested that dyslexia is the result of a verbal deficit and the consensus of recent research suggests that learning disabled people have an early impairment in phonological skills which prevents them from acquiring the phonological awareness ability necessary for reading and spelling. Ganschow, Sparks and Javorsky (1998) presented an empirically based theory that has diagnostic, pedagogical and policy implications for students with FL learning difficulties. They claim that empirical evidence supports that FL learning performance is related to native language learning, and that most poor FL learners have obvious or slight problems with the phonological components of language. They also claim that affective differences are likely to be a consequence of successful or unsuccessful FL learning. This is true in the case of my research participants as they were assessed for dyslexia in Hebrew, their L1, and have reading problems in Hebrew-L1 and English- FL as well. Their reading disability is documented in their assessment carried out by a professional assessor or an educational psychologist, and their pre-intervention assessment scores done by me (Appendix 10)

Though Ganschow *et al* (1998) studied Spanish and German native speakers learning English as L2, and not Hebrew speakers, it is probable that their conclusions hold irrespective of the L1 and FL involved. Therefore, it is also likely that if Hebrew speaking 'dyslexic students' have phonological awareness deficits in their L1, these deficits will cause a reading disability when learning to read in English as an FL. Support for this belief can be found in Goodman (1967), Morais (1984), Tunmer and Rohl (1991), and Treiman (1991), and is part of the foundation of this research.

Following the findings of Ganschow (1998) and her colleagues I can assume that among 'dyslexic students' learning EFL in Israel, difficulties in learning to read in English were preceded by difficulties in acquiring written language skills in L1, and in many cases additional difficulties with the phonological components of L1. In other words, phonological awareness deficits that hindered the learning of reading in their first language (Hebrew) appear to have affected the acquisition of a foreign language (English), despite the fact that these students were able to overcome those deficits or compensate for them in their L1.

It seems that Ganschow *et al* (1998) conclusion's that the same difficulties students have had acquiring their first language will affect their acquiring of a foreign language, is true in the case of my research participants. From a longitudinal study, Ganschow *et al* (1991, 1998) concluded that phonological awareness deficits are one of the main causes for reading disabilities among a majority of 'dyslexic students'. This conclusion is in agreement with research performed during the last decade (e.g., Stanovich, 1988; Liberman and Shankweiler, 1989; Adams, 1990; Siegel, 1993; Torgesen, Wagner and Rashotte, 1994; Sutherland and Gillon, 2005; Anthony and Francis, 2005 and Gathercole *et al*, 2006).

There is agreement among researchers that phonological awareness deficits are one of the main causes of dyslexia. However, researchers and theorists do not agree on the method by which phonological awareness is best achieved. Some support the view that phonological awareness can be improved by teaching reading through a top-down approach (whole word) or a bottom-up approach (grapheme-phoneme); others claim that the combination of these two complementary approaches is more successful. It is remarkable how in my journal Shuval referred to decades of both bottom-up and top-down teaching reading strategies and improving phonological awareness research by saying: 'It helps me a lot

working first on sounds and then on words' and 'It really helps me working with words and then with sounds, not only with you but also with the computer.'

'I never knew there were so many sounds in English' Kefir said in my journal referring to the bottom-up part of one of the forty sessions of the combined reading intervention programme. Yuval stresses this point in my journal by saying 'I did not know that there are so many sounds for one letter'. I mentioned in the theoretical perspectives chapter some reading theories which support the view of teaching reading through a bottom-up approach, that is, teaching grapheme-phoneme correspondence (Gough, 1972, 1985; Carmine, 1977; Broughton *et al*, 1978; Stanovich, 1988; Hohn and Ehri, 1983; Tunmer and Bowey, 1984; Frith, 1985; Goswami, 1991; Ehri, 1992; Ganschow *et al*, 1998; Robertson, 2000). In this approach to reading the student is taught to make connections between symbols and sounds and is encouraged to blend these into a word (e.g. the child is taught the sound of the letters c-a-t, which together form the word 'cat'). With experience, children learn to decode more complex grapheme-phoneme correspondences on their own.

An example of a traditional bottom-up programme for teaching reading to 'dyslexic students' is the Orton-Gillingham approach. Mercer and Mercer (1987) approve this approach and claim that it is an alphabetic synthetic multisensory phonetic approach developed for students who have dyslexia. It concentrates on fusing smaller units (letters, sounds, and syllables) into more complex wholes (words). Similar to the Orton-Gillingham approach, is Walton's (1998) phonics method. The phonics method of teaching is also based on the sounds of the letters (which are different from their names), the teaching of which enables a student to

build words by putting together the sounds of the individual letters or letter combinations.

Tal and Aviv used very similar words in my journal when referring to the top-down part of the combined reading intervention programme; Tal said: 'I think it really helps me when you teach me the words and then you teach me the sounds of the letters of these words'.

As mentioned in the theoretical perspectives chapter, in contrast to the scholars mentioned above, other scholars claim that phonological awareness can be improved with the help of the top-down approach – whole-word instruction (Kolers, 1966; Broughton *et al*, 1978; Frith, 1985; Manis and Morrison, 1985; Tunmer and Rohl, 1991; Ehri, 1992; Smith, 1994).

'Breaking up the words into sounds helps me with the computer tasks' were Kfir words, in my journal, actually referring to the top-down approach. In methods which utilise the top-down approach, children are introduced to a word, learn to recognise it by sight, and slowly expand their reading vocabulary. Children using this approach are expected to pick up the rules of decoding grapheme-phoneme correspondences on their own, and be able to apply them to new unfamiliar words (e.g. the words 'car', 'tar' and 'far' are taught, and the child is expected to read 'bar' independently). P.A.T. (Phonological Awareness Training) Syllables designed by Jo Wilson (1996) is one example of a programme designed according to the top-down approach to reading. Wilson bases the method on research performed by Goswami (1990) and Treiman (1991) that suggests that children's development of phonological awareness follows 'a rather different pattern to that outlined in traditional phonics programs' (Wilson, 1996: 1).

As a researcher I do not question the effectiveness of the two different approaches to reading, the top-down and the bottom-up. However, as a practitioner I have come, over my years of teaching, to the conclusion that when teaching the reading of English as an FL to dyslexic Hebrew speakers in Israel, there are many 'dyslexic students' who do not achieve fluency and accuracy through the use of one of these approaches only. This claim is with accordance to Lovett *et al*'s (1990) finding after training children with severe reading disabilities in word recognition skills by using two different methods. One group was taught by whole-word methods (that is, top-down) another was taught letter-sound correspondences (that is, bottom-up). They found that neither group of children generalised what they had learned to uninstructed reading vocabulary. Thus, even the children who received letter-sound training appeared to have acquired specific lexical knowledge rather than sub-lexical, letter-sound knowledge, which could then be used to decode unfamiliar words. This finding was reinforced by a subsequent study conducted by Lovett *et al* (1994).

Lovett *et al*'s (1990, 1994) findings is supported by a number of scholars who have found that the combination of the top-down and bottom-up approaches to teaching reading to students at risk due to a learning disability is more effective (Stanovich, 1980; Frith, 1985; Eskey, 1988; Goswami, 1991). Encouraging enough this finding is also supported by the six present research participants. 'Working on words and sounds in the same lesson helps me to understand that there are sounds in words. And that there are many sounds to one letter. I enjoyed finding out' Tal reported in my journal actually referring to the combined approach to teaching reading.

As a researcher, I was reassured by Tal's observation, moreover, I was reinforced by the fact that all six participants, in my journal, referred to

the combined approach to teaching reading, which is the combined reading intervention programme applied in the present study.

Rumelhart (1997) claims that for reading to be effective not only in the first language, but also in the second language, both top-down and bottom-up reading strategies are required and must operate interactively. Noah stresses this point in my journal by saying: 'The fact that we work on sounds and then on words, and *vice versa*, is very helpful. I succeeded to write correct words on the computer'.

Aviv's statement in my journal that: 'Working on words and sounds in the same lesson helps me to understand that there are sounds in words. And that there are many sounds to one letter. I enjoyed finding out', is in agreement with Rumelhart (1997) who recommends the use of a combination of the bottom-up and the top-down approaches to reading. The bottom-up approach (grapheme-phoneme correspondences) in the research combined reading intervention programme aims to increase the phonological awareness of the student through reading activities directed at the level of phonemes. The top-down approach aims to increase the phonological awareness of the student through reading activities on the level of whole words. In whole-word instruction, the student is taught to identify words as whole units rather than as a sequence of phonemes.

The goal of a combined reading intervention is to help the 'dyslexic students' acquire a deeper awareness of the sounds of speech and an improved understanding of the connection between the sounds of speech and the letters of the alphabet (the bottom-up approach) or the sounds of whole words and frequent spelling patterns (the top-down approach). It seems that this goal was achieved during the research combined reading intervention programme as Shuval pointed out in my journal: 'Working on sounds and then on words and working on words and then on sounds, in

the same lesson, is very helpful. I even succeeded to write correct words on the computer'.

### 4.8.2 Pre-Knowledge of Tasks Enhances Confidence

When designing the combined reading intervention programme in English as a foreign language for 'dyslexic students' in Israel, I followed my years of experience as an EFL teacher for 'dyslexic students' and theorists' and researchers' discussion on the subject of cognitivism, causing a change in the phonological awareness and improving of reading English of 'dyslexic students' through the scaffolding provided by an intervention programme (Ormrod, 1999). The combined reading intervention programme is based on the combination of the two complementary approaches to reading, the top-down and bottom-up, for the same duration of time in each session, thus involving equally the different parts of the brain in charge of reading.

The reading intervention programme was implemented in 40-minute sessions, twice a week for 18 weeks, for a total of 36 sessions based on the number of phonemes of the English language phonological system (Brand, 1984; Davies and Ritchie, 1998). In order to achieve a real combination each session consisted of twenty minutes of top-down reading approach activities and of twenty minutes of bottom-up reading approach activities. For the twenty minutes of top-down activities I used activities which I constructed, based upon my experience as an EFL teacher for 'dyslexic students' speakers of Hebrew in Israel, top-down activities suggested by Brand (1984) in her book Spelling Made Easy and top-down computer activities suggested by Davies and Ritchie's (1998) THRASS.IT. For the twenty minutes of bottom-up reading approach activities of each session, I used activities which I constructed, based upon my experience as an EFL teacher for 'dyslexic students' speakers of Hebrew in Israel, bottom-up activities suggested by Hornsby and Shear

(1993) in their book Alpha to Omega and bottom-up computer activities suggested by Davies and Ritchie's (1998) THRASS.IT. Due to the systematically combination of top-down and bottom-up activities of the intervention programme the six research participants were able to predict the structure of their following session.

In the previous section I discussed the fact that all my research participants advocated the systematically combination in each session of the two complementary approaches to acquiring reading, claiming that the combination helped them to improve their phonological awareness and their reading in English as a foreign language. However, it seems that the systematically combination not only did cause a cognitive change in the students phonological awareness and reading English as a foreign language, which was also documented in their post-intervention assessment, but it also caused a change in the students self confidence, improving it. Yuval addressed this point in my journal by saying:' It was good that I knew in advance that first we would deal with sounds and then with words. It helped me with the lesson tasks, I think. It feels good to know what we are going to do next lesson'. Kefir added in my journal that 'knowing in advance how the lesson is built gives [him] a good feeling. It is a big help to know in advance what we are going to learn'.

According to Bandura and Schunk (1981) anticipation relates to students' self-efficacy and students' confidence in their cognitive skills. Student's self-efficacy is influenced by past experiences and familiarity with the task (Bandura, 1993; Schunk, 2000). Noah described this fact in my journal saying: 'The fact that the lessons are alike is very encouraging. It makes me feel good that I know in advance what we are going to do in the lesson'. Shuval felt the same about the familiarity of the tasks of the intervention programme and said in my journal: 'I knew what we were

going to do today. It feels good that I know in advance. I felt great when I told you what was going to be next task in the computer, and I was right'.

According to Eccles and Wigfield (1993) it seems that students' perceptions of self competence about their personal skills and abilities are influenced by a familiar learning environment. A familiar learning environment creates a positive learning environment which provides encouragement experiences. These encouragement experiences help students to build their self-confidence in their abilities. Thus students are able to develop their skills comfortably without the fear of failure. Eccles and Wigfield (1993) claimed that students develop a familiarity with the skills necessary to complete tasks. It is this familiarity with the tasks that builds students confidence in their self-efficacy. Aviv described this point in my journal by saying 'It is encouraging that the exercises are alike each other. It made me feel good that I knew in advance what exercises we were going to do today'. Tal was more accurate concerning self confident saying in my journal: 'It makes me feel confident that I know in advance what we are going to do in the lesson. It makes me feel more confident that the exercises are alike each other'.

Going through the students' quotations and my comments in my journal it was illuminating to find out that all six research participants shared a mutual emotional improvement in their self confidence due to the familiarity of the systematically combined reading intervention programme which was constructed systematically in the first place to achieve a merely cognitive change of the research participants.

### 4.8.3 Repetitive Exercises Enhances Confidence

In the previous section I discussed the fact that the familiarity of the systematic combined top-down and bottom-up reading intervention

programme achieved among all the participants not only a cognitive change, but an emotional one as well, increasing the participants' self confidence. It seems that the repetitive pattern of exercises used in the combined reading intervention programme achieved a similar phenomenon. Noah's claim in my journal proves right the emotional effect: 'It gives me a good feeling to repeat again and again the words and the sounds. Later I feel more confident'. Noah also refers, in my journal, to the cognitive change and improvement in reading English as an FL as a result of the structure of the intervention programme which is based on repetition as well: 'Today's lesson was good because I succeeded reading on the computer all the words. I think that repeating them again and again helped me to do so'. Noah's sense of success is supported by the results of her post-intervention assessment, carried by me, which show an improvement in Noah's reading of words (Appendix 10).

As explained in the methodology chapter of this research, the goal of the combined reading intervention programme that I built, is to help 'dyslexic students' in Israel to improve their phonological awareness by acquiring a better awareness of the sounds of speech, an improved understanding of the connection between the sounds of speech and the letters of the alphabet and an increased ability to analyse words. Anthony and Francis (2005) maintain that '… students refine phonological awareness skills they have already acquired while they are learning new phonological awareness skills' (2005, p 256). The structure of the combined reading intervention programme follows Ormrod's (1999) belief in reinforcement where the learner is reinforced through a process of retrieving existing knowledge and presentation of new information, on the one hand, and scaffolding which involves instruction, encouragement and assistance to aid a student in mastering a new concept (Slavin, 2003), on the other. This is achieved through the repetition of the structure of the sessions of

the intervention and repetition of the exercises used in each session. Kefir's claim in my journal proves correct the cognitive effect of the intervention programme but also the emotional one: 'It helps that the lessons are similar to each other. It gives me confidence. I know what to expect. I feel confident that I know what we are going to do during the lesson'.

My research combined reading intervention programme also reflects constructivism which, as already mentioned in Chapter 2, is the approach to teaching and learning based on the premise that cognition is the result of mental construction. Mental construction is achieved in the course of the combined remedial programme as in each of the thirty six sessions of it the students are repeatedly required to integrate new information with information taught in the previous session (Gredler, 1997).

Gredler (1997) explains that cognitive theories of learning focus on the mind and attempt to comprehend how information is received, assimilated, stored, and recalled. Gredler's (1997) explanation was taken into account in constructing the combined reading intervention programme. Understanding the procedure of the reading process in the human brain informed the decision to combine the two complementary approaches to reading in each of the thirty six sessions for the same duration of time, thus repeatedly involving equally the different brain structures in charge of reading.

Reading is not a 'natural' human ability, as discussed in Chapter 2; it needs to be taught and trained, and most human beings respond mechanically to the training of reading and eventually master it whether being taught and trained through a bottom-up approach, based upon grapheme-phoneme correspondence (Gough, 1972, 1985; Carmine, 1977; Broughton *et al*, 1978; Stanovich, 1980; Hohn and Ehri, 1983; Tunmer

and Bowey, 1984; Frith, 1985; Goswami, 1991; Ehri, 1992; Ganschow *et al*, 1998; Robertson, 2000), or being taught and trained through a top-down approach, based upon whole-word instruction (Kolers, 1966; Broughton *et al*, 1978; Frith, 1985; Manis and Morrison, 1985; Tunmer and Rohl, 1991;Ehri, 1992; Smith, 1994;).

The present reading intervention programme takes into consideration the effectiveness of these two complementary approaches to acquiring reading skills in a foreign language. However, as witnessed by my years of experience teaching reading English as an FL to dyslexic Hebrew speakers in Israel, either approach is often insufficient on its own to bring 'dyslexic students' to accurate and fluent reading in English. My teaching experience with 'dyslexic students' in Israel led me to conclude that a combined method of the two approaches is more effective in enhancing phonological awareness and improving reading skills rather than each approach by itself. This has been supported by the results of the pre- and post-assessments I carry out with each of my students in my private practice and by a number of researchers for nearly thirty years (Stanovich, 1980; Frith, 1985; Eskey, 1988; Goswami, 1991 and Lovett *et al*, 1990, 1994). Moreover, I decided not only to systematically combine the two complementary approaches, but also to repeatedly combine and drill them in each session of the thirty six sessions of the intervention. As already mentioned in Chapter 2, the reading and spelling characteristics are the result of difficulty with the development of phonological awareness, including segmenting, blending and manipulating sounds in words, and difficulty with learning the sound/symbol association of the letters of the alphabet. These activities were included in the top-down or bottom-up repeatedly activities of my research intervention. Yuval's and Shuval's claim in my journal demonstrate that the structure of the intervention works for them. Yuval claims that 'working on words and sounds in each session again and again helped [her] with the computer reading tasks'.

Shuval mentioned that 'it is good that today we repeated again and again the sounds and the words. Later I read all the words correctly. It made me feel confident'.

As already mentioned, Brown (2007) claims that in cognitive theories of learning, repetition and rote (students' practice and imitation) play an essential role. These are meaningful activities, when contextualised and purposeful, for the teaching of word identification, a skill identified with the top-down approach to reading. Repetition and rote are also meaningful for the explicit instruction of combining phonemes and segmenting and blending speech sounds, skills identified with the bottom-up approach to reading. Repetition and rote are achieved in the research intervention not only by a systematically combination of the two complementary approaches, the top-down and the bottom-up, but also by repeatedly drilling them in each of the thirty six sessions of the intervention. The reading intervention programme was implemented in 40-minute sessions, twice a week for 18 weeks, for a total of 36 sessions based on the number of phonemes of the English language phonological system (Brand, 1984; Davies and Ritchie, 1998). In order to achieve a real combination each session consisted of twenty minutes of top-down reading approach activities and of twenty minutes of bottom-up reading approach activities.

For the twenty minutes of top-down activities I used activities which I constructed, based upon my experience as an EFL teacher for 'dyslexic students' speakers of Hebrew in Israel, top-down activities suggested by Brand (1984) in her book Spelling Made Easy and top-down computer activities suggested by Davies and Ritchie's (1998) THRASS.IT. For the twenty minutes of bottom-up reading approach activities of each session, I used activities which I constructed, based upon my experience as an EFL teacher for 'dyslexic students' speakers of Hebrew in Israel, bottom-up

activities suggested by Hornsby and Shear (1993) in their book Alpha to Omega and bottom-up computer activities suggested by Davies and Ritchie's (1998) THRASS.IT.

All of the six research participants refer to this systematically combination and repeatedly drilling. Tal said in my journal: 'I do not mind doing the same kind of exercise. It makes me feel better because I know the correct answers'. Aviv mentioned in my journal that: 'Breaking the words into sounds again and again really helps with the computer tasks'. Shuval complained in my journal that: 'Sometimes it is a bit boring to go over and over again the words, but when I succeed with the computer tasks I feel more confident'. Noah claimed in my journal that: 'It is encouraging that the exercises are alike each other'. Kefir did not mind 'having the same exercises again and again. It makes [him] feel better when [he] knows the correct answers and Yuval felt that: 'It makes [her] feel more confident that the exercises are alike each other' as both said in my journal. Support for the research participants feeling of improvement in reading English can be found in their post-intervention assessment (Appendix 10) and in evidence of improvement of reading through the training of phonological awareness in short term intervention programmes (Gillon and Dodd, 1997; Bus and IJzendoorn, 1999; Gonzales *et al*, 2002; Simos *et al*, 2002; Alyward, 2003 and Temple *et al*, 2003; Swanson *et al*, 2005; William *et al*, 2006). However, these short terms intervention programmes show merely evidence of improvement of phonological awareness and reading, that is, a merely cognitive improvement. Interestingly enough, my research participants claimed not only of an improvement in reading English, but also of an improvement in their self confidence. Meaning the research participants referred to a cognitive and an emotional improvement as well.

Rereading the students' comments in my journal was rather interesting as I found out that all six research participants shared a mutual emotional improvement in their self-confidence due to the repetitive exercises of the combined reading intervention programme which was constructed systematically in the first place to achieve a merely cognitive change of the research participants.

### 4.8.4 Working with Computers is Fun

> 'Breaking up the words into sounds helped me with the computer tasks. It is good that I work with you and with the computer that way the session is not boring and I fail less on the computer tasks. It is fun' (Aviv's quotation from my journal).

Aviv is not the only research participant who mentioned in my journal the work with the computer during the reading intervention sessions. As a matter of fact all of the other five participants referred to the work with the computer as well addressing three issues; the combined reading intervention programme method, lack of boredom and enjoyment of success.

Wahl (1996) says that computer technology has become a universal technological influence on our lives in the last part of the 20th century. More and more uses of its unique features are found every day and it is not surprising that the field of education is also being strongly affected by this tool. Wahl believes that computer technology has various features which are important in the light of results of research into language learning difficulties in general and dyslexia in particular.

Bradford (2008) agrees with Wahl (1996) and adds that studies from the National Institutes of Child Health and Human Development have shown that for children with difficulties learning to read, a multisensory teaching

method is an effective teaching method, as it means helping a child to learn through more than one of the senses.

Bradey's and Shankweller's (1991), Broomfield's and Combley's (1997) and Mather's and Goldstein's (2001) recommendations to include multi-sensory methods in intervention reading programmes for 'dyslexic students' was taken into consideration in constructing the present intervention. These integrate visual, aural and kinaesthetic activities to strengthen the learning experience. Mather and Goldstein (2001) say that content generally needs to concentrate on phonic skills, as these are usually the weakest aspect for 'dyslexic students'. They also suggest that well-structured, phonics-based multi-sensory teaching is fundamental for any reading intervention programme and that reading-while-listening and repeated-reading are useful techniques for developing fluency approaches to improve 'dyslexic students' reading skills. They recommend the use of word processing for improving reading and spelling of 'dyslexic students'.

As already mentioned the reading intervention programme, was implemented in 40-minute sessions, for a total of 36 sessions. To achieve a real combination of the top-down and bottom-up approaches to reading, each session consisted of twenty minutes of top-down and twenty minutes of bottom-up reading activities. When the session commenced with twenty minutes of top-down activities implemented by me, it followed bottom-up computer activities suggested by Davies and Ritchie's (1998) THRASS.IT, and vice versa, when the session commenced with twenty minutes of bottom-up activities implemented by me, it followed top-down computer activities suggested by Davies and Ritchie's (1998) THRASS.IT. This was done in order to achieve practice in detection of phonemes or whole words through the use of computer programmes as a multi-sensory method, integrating visual, aural and kinaesthetic activities

so to strengthen the learning experience (Brady and Shankweller 1991; Broomfield and Combley 1997; Mather and Goldstein 2001).

Apparently integrating multi-sensory computer activities; visual, aural and kinaesthetic, in the combined research intervention, stimulated three dimension reactions among all the research participants; lack of boredom, reflection to the combined reading intervention programme method, and enjoyment of success.

Referring to the students' reflection to the intervention method Yuval said in my journal that 'working first with [me] on sounds and words really helps [her] with the computer tasks on sounds and words'. 'The computer program with the sounds and words helps me to write the words correctly' was Shuval's comment on the subject in my journal. Kefir was even clearer on the matter saying in my journal that 'it helps that [he] repeats the sounds and words on the computer and not just with [me]. It helps [him] to read the words '. Noah was enthusiastic telling me in my journal that 'it was very good that today we worked on words and then on sounds on the computer. [She] knows that next time it is going to be the other way around. It also helps [her] in reading the words'. Tal shared the same feeling in my journal: 'Combining also exercises on the computer helped me a lot today. It helped me in reading and writing the words'.

Without exception all of the six research participants referred, in my journal, to the essence of the combined reading intervention programme, that is, the systematic combination of the top-down and bottom-up approaches to improving reading in English as an FL to 'dyslexic students' in Israel and enhancing their phonological awareness. As already mentioned in this chapter (section 4.8.1) the research participants advocated the research combined intervention carried out by me. Moreover, their advocacy here is discussed in the linkage of combining

computers as a means of additional alternately exercising the top-down and bottom-up approaches to reading. The sense of improvement in reading English shared by all research participants is documented as well in the students' post intervention assessment carried out by me.

Another aspect referred to by all participants, in my journal, is the lack of boredom working with the computer as a simultaneous multisensory support. Covington (2000) claims that if students perceive a task as boring or too difficult, they will avoid it. However, students will approach tasks they believe are fun, require a moderate amount of effort, and are reasonably challenging. Thus, the nature of the task and student perception of the importance of the task becomes key factors influencing student motivation for approaching or avoiding the task. This aspect is reinforced by the research participants themselves. For example Noah said in my journal that '[she] enjoys working also with the computer. It is less boring like this'. I like exercising with the computer. It is less boring' were Shuval's words in my journal addressing the simultaneous computer drills. Kefir and Tal claimed in my journal that it was good that they repeated the sounds and words also with the computer and not just with me. They said it was less boring. Yuval agrees in my journal with them and said that: 'Today I really enjoyed working with the computer. I always enjoy it. It is not boring'.

The research participants addressed unanimously, in my journal, the contribution the combined reading intervention programme method and lack of boredom working with the computer as a simultaneous multisensory support, had on their sense of improvement and enjoyment of success. As mentioned before (sections 4.8.2 and 4.8.3) the pre-knowledge of tasks and repetition of exercises enhanced the students' confidence. It seems that working with the computer had the same reaction on all of the students. Aviv expressed this fact in my journal by

saying: 'I was so excited to succeed on the computer tasks. I knew in advance what the exercises were going to be. I was so thrilled that I was right about the type of exercises and the fact that I succeeded in all of them'. In agreement with Aviv's feelings, Covington (2000) advocates the use of technology as a means to motivate students by engaging them in the learning process with the use of a familiar instructional tool that improves the students' self-efficacy and self-worth.

My years of teaching experience have taught me that the concept of anticipation represents a key determinant in deciding whether students will or will not choose to do a task or, will or will not continue to engage in a task which they believe confines their capabilities, but students will take on tasks and activities which they believe they can handle and experience success. That is, if students expect failure, they will avoid the task; and on the other hand, if students anticipate success, they will willingly approach the task. This concept was well expressed by Shuval in my journal saying that '[she] enjoys a lot to work with the computer because [she] knows she will not fail the exercises. It gives [her] a good feeling'.

According to Heafner (2004) a key role of students' perception of classroom achievement is their need to protect their sense of worth or personal value. This need derives from the desire to come close to success which invokes social recognition and a feeling of competence and to avoid failure which causes a sense of worthlessness and social disapproval. Covington (2000) goes on to say that high ability signifies worthiness. Since ability is tied to worthiness which is related to accomplishments, then self-perceptions of ability are significant to the way students interpret their personal success. Noah expressed the correlation between ability, accomplishments and worthiness in my journal saying that: 'I really enjoy studying with the computer. I like computers and I am very good at them. It makes me feel good about myself that I

succeed with something that I am good at'. Tal referred in my journal to the same concept saying that '[she] enjoyed working on the computer. The drills are familiar and it gives [her] a sense of success'.

Both Wahl (1996) and Susan van Alsenoy (2011) are in concurrence with the idea of using computers as a simultaneous multisensory support for overcoming 'dyslexic students' reading difficulties. Both of them advocate the use of structured and systematic teaching of reading with the help of the computer, as it is done in the research combined reading intervention programme. Moreover, Wahl (1996) and Susan van Alsenoy (2011) say that the fact that the work on the computer is predictable it decreases frustration and improves self-esteem, as reported by the research participants.

Wahl (1996) says that dyslexic people might develop symptoms which can also contribute to their difficulties. One of these symptoms is poor self-esteem. According to her computers can motivate students at previously conventional failed tasks as the non-judgmental computer feedback improves self-esteem. Susan van Alsenoy (2011) agrees that a computer is non-judgmental and that many 'dyslexic students' respond well to working and learning with computers because the students compete against themselves rather than others. This point of view was reported by the research participants, and well expressed by Kefir in my journal: 'It is fun working with the computer. Even you cannot see my failures'.

Examining what the students said in my journal on the theme of method of intervention, I found that all of the six research participants shared the same observation on the systematic combined reading intervention programme relating to the systematic combination of the two approaches to reading; the top-down and the bottom up, the fact of pre-knowledge of

tasks and repetitive exercises, not only working with me but also with the computer work.

Next section deals with the students' perception of improvement achievement.

## 4.9 Improvement

In section 2.12 (Effectiveness of Short Term Remedial Programmes) I discussed the fact that in recent years, there has been evidence of significant remediation of specific reading disabilities after short term intervention programmes similar to my research short term combined reading intervention programme. Gillon and Dodd (1997), Bus and IJzendoorn (1999), Gonzales *et al* (2002), Simos *et al* (2002), Alyward (2003), Temple *et al* (2003) and Swanson *et al* (2005), all reported that remediation resulted in improved language, reading performance and increased activation in multiple brain regions during phonological processing interventions..

My research intervention programme, which can be classified as a short-term intervention programme, was implemented in merely twenty weeks, twice a week, that is, for forty sessions. All of the short-term intervention programmes mentioned above and in section 2.12 reported an end product improvement as a result of the short-term intervention. However, none of them reported a division of the steps of improvement observation shared by the research participants.

The following sections will demonstrate the improvement division shared by all six research participants of my research. Interestingly enough, the improvement reported by the research participants in my journal, students' diary and post-intervention interview, which was documented in the students' post-intervention assessment as well, is divided into a four

steps sense of improvement. The twenty weeks intervention programme was equally divided by all research participants into four steps where each step occurred exactly after five weeks of intervention, a total of twenty weeks.

### 4.9.1 'Still not Helping' – Weeks One to Five

From my experience, as a practitioner teaching reading in English as a foreign language to 'dyslexic students' in Israel and research I have conducted on the subject, I can claim that it is not surprising that the six research participants reported a mutual feeling of lack of improvement during the first five weeks of the remedial intervention programme. From my work teaching reading in English to 'dyslexic students' individually, I can state that the students usually do not sense the improvement during the first period of the intervention, even if I point it out to them.

Thus, it was not surprising that all the research participants expressed their feelings in their diaries saying: 'I still do not feel any improvement at all' or 'I have not felt any improvement this week. I hope I will next week'. Surprising enough is the fact that all the students equally referred to the lack of improvement, as a result of the research intervention, within the period of five weeks.

Another significant point was the fact that all the research participants neither questioned the quality of the research combined reading intervention programme, nor doubted my professional teaching abilities. All of the students blamed themselves for not sensing any improvement. 'I am probably dumb because I still do not feel any improvement at all' were Yuval's words in her diary referring to this matter. 'It is not surprising that I still do not feel any improvement because I am a failure' Kefir said in his diary. Noah and Shuval added their worries of not being able of getting rid of the tests accommodations for 'dyslexic students', in

the English matriculation examination in their diaries by saying that they have not felt any improvement and would probably not be able to get rid of the accommodations which they really wanted to get rid of. Aviv said in his diary 'I am very disappointed at myself that I have not felt any improvement yet. I want to be like my non dyslexic classmates'. And Tal concluded in her diary by saying: 'I am probably stupid because I still do not feel any improvement at all. I must be such a failure because I don't feel any change'.

The notion of lack of sensing improvement, during the first five weeks of the intervention, shared by all participants and the mutual low self esteem expressed by all of them in my journal, as a result of the deficiency of improvement, brought me about to realise that a cognitive intervention programme is not sufficient. I started to think that a mental intervention programme, which enhances the 'dyslexic students' self esteem, combined with a cognitive one might be more efficient. This concept of combining cognitive and mental interventions is not novel in the education field; however, it is not applied in conjunction with teaching English as a foreign language to 'dyslexic students' in Israel. The idea of combining cognitive and mental interventions, which sprouted in my journal, will be discussed in more depth in the following sections.

### 4.9.2 'Slight Improvement' – Weeks Six to Ten

According to my journal and the students' diaries all of the six research participants reported of a slight improvement within 'weeks six to ten' of the combined reading intervention programme. Interestingly enough all the participants reported the slight improvement with a cautious restriction using the term 'but' in a positive connotation. As if being afraid of admitting any improvement Yuval said in her diary: 'I still do not feel any improvement, but during the last English lesson at school I listened

better to my English teacher'. Kefir reported in his diary that: 'I still do not feel any improvement, but I find it easier to listen to my English teacher'. Shuval was even more cautious in her diary when she said: 'There isn't any improvement, maybe a very small one'. Noah was also cautious in her diary with her report and said: 'There is not any improvement, yet. However, I decided that I was going to listen to the teacher and I understood some words that she said. These were words that we worked on here with you'.

From my experience as a practitioner implementing the combined reading intervention programme for the last fourteen year to 'dyslexic students' in Israel, I can claim that it is not surprising that the six research participants reported a mutual feeling of improvement during this period of 'weeks six to ten' of the remedial intervention programme. From my work teaching reading in English individually, with the aid of the combined intervention to 'dyslexic students', I can state that the students usually do sense an improvement at this point of the intervention. This improvement sensed by the research participants is in accordance with other scholars' reports on improvement as a result of a short term intervention programme within approximately the same period of time. As mentioned above Gillon and Dodd (1997) reported of an improvement after a six weeks intervention programme. The same did Gonzales *et al* (2002) after four weeks, Swanson *et al* (2005) after 12 weeks. Both Temple *et al* (2003), who reported an improvement after only twenty eight days and Alyward (2003), who reported an improvement after three weeks of intervention, supported their findings with the help of functional magnetic resonance imaging (fMRI) which showed changes in brain function in children with dyslexia after the short-term remediation. Remediation resulted in improved reading performance and increased activation in multiple brain regions during phonological processing.

The improvement reported by the scholars mentioned above advocates the improvement sensed by the research participants. However, it was surprising that at the beginning of period 'weeks six to ten' the research participants expressed a cautious feeling of improvement as if being afraid to admit it.

Towards the end of period 'weeks six to ten' of the combined intervention programme the students expressed a linkage between the slight improvement reported by them and the feeling of being less afraid of the English subject at school, as Yuval put it in her diary by saying: 'I am less afraid to listen to the teacher'. In concurrence with Yuval, Kefir said in his diary: 'There is a slight improvement, I think. I noticed that I understand some words the teacher was saying'. 'I feel that I am less afraid of the English lessons. I find it easier to listen to the teacher. I think that I understand more words my English teacher is saying, I understand more words than before' were Noah's words in her diary addressing this matter. Aviv and Tal used similar words in their diary, where Shuval was more cautious by saying that [she] does not know if it is an improvement but [she] is less afraid of the English lessons'.

As a result of the students' connecting between sensing a slight improvement in English as a foreign language and feeling less afraid of the English lessons in school, as reported in my journal, and the thought that a mental intervention programme, which enhances the 'dyslexic students' self esteem and self confidence, combined with the cognitive one might be more efficient, became at this point even more compelling.

### 4.9.3 'Improvement' – Weeks Eleven to Fifteen

At this point of the combined reading intervention programme, according to my experience of implementing it for the last fourteen years, the students should feel an improvement in their reading English and in their

reading comprehension as well. Thus, I was not surprised when the six research participants reported a common feeling of improvement during this period of 'weeks eleven to fifteen' of the remedial intervention programme. This improvement usually witnessed by myself and sensed by the research participants is in accordance with other scholars' reports on improvement as a result of short term intervention programmes within approximately the same period of time. As mentioned before both Bus and IJzendoorn (1999) and Therrien *et al* (2006) reported a significant improvement in reading achievement of students with learning disabilities as an effect of a short term intervention programme. They reported that students who received the intervention significantly improved their reading and their reading comprehension. Yuval expressed this improvement in her diary by saying: 'I have started to feel an improvement in my reading. This week I succeeded to read better'. Kefir and Noah were more specific on the nature of the improvement and both of them reported in their diaries 'I have started to feel an improvement in reading English. I feel an improvement in reading words especially when I break them into sounds as we do here with you. I feel an improvement in reading words and sentences'. Aviv, Tal and Shuval said in their diaries that there was an improvement in reading; they could feel it in my practice and also in school.

In agreement with Bus and IJzendoorn (1999) and Therrien *et al* (2006) the research participants reported on an improvement in reading comprehension as well. Kefir was very enthusiastic when he said in his diary: 'Last week I read aloud in class and I also understood what I read'. Yuval and Noah used almost the same words to describe their improvement in their diaries: 'I can feel an improvement not only in reading words and sentences, but also in reading a passage and understanding it, and also the questions of the passage. I feel an

improvement in understanding what I read'. Tal was precise put clear and said in her diary that she reads better and understands better.

Aviv's observation summarises the concept of the improvement in reading and reading comprehension in English as an FL sensed by all of the six research participants as a result of the combined reading intervention within 'weeks eleven to fifteen' by saying in his diary: 'I read better. I understand better. Today during the English lesson in school I even answered some questions by myself. Not all of them were correct but more than before'. Thinking about this aspect I found it interestingly enough that the students' reports on their improvement in reading and reading comprehension did not include a psychological aspect as well, as they did when reporting on the fact that the intervention was still not helping or that there was a slight improvement. For this reason I was surprised at the absence of the students' comments on a psychological aspect at this point of the intervention. The fact that on the first stage of the intervention ('weeks one to five') the students reported of a mutual feeling of low self esteem and on the second stage of the intervention ('weeks six to ten') they reported of a mutual feeling of being less afraid of the English subject, caused me to anticipate an enhancement to the psychological aspect of self confidence and self esteem on the students account of the improvement in reading and reading comprehension of English as an FL, as reported by all of them ('weeks eleven to fifteen'). The concept of self confidence was mentioned before by the students in connection to the fact that pre-knowledge of tasks of the combined reading intervention programme and the repetition of exercises enhanced their self confidence. It was almost required that also here, in connection to the improvement of their reading and reading comprehension in English as an FL, the students would feel the same enhancement in their self confidence. The fact that the students did not mention it in their diaries, strengthen the thought that a mental intervention programme, which

enhances the 'dyslexic students' self esteem and self confidence, combined with the cognitive one might be more efficient.

### 4.9.4 'Significant Improvement, But...' – Weeks Sixteen to Twenty

From my experience teaching English as an FL to 'dyslexic students' in Israel and implementing the combined reading intervention programme I can state that, at this point of the intervention ('weeks sixteen to twenty'), that is, the last five weeks of the programme, 'dyslexic students' do improve their reading and reading comprehension of English. Thus, it was not surprising that all of the six research participants reported on a significant improvement in their reading and reading comprehension of English as an FL, in my journal and their participants' diaries.

My teaching experience of students' improvement as a result of the research combined reading intervention and the mutual sense of improvement reported by all the research participants are in concurrence with Simos *et al*'s (2002), Alyward's (2003) and Temple *et al*'s (2003) studies which obtained magnetic source imaging scans in order to examine changes in both brain hemispheres' activation profiles as a result of successful short-term intervention programmes.

Simo*n et al*'s (2002) considered that their findings showed that an intensive remediation programme in reading is associated with dramatic changes in brain activation profiles in children with very severe reading difficulties. Moreover, completion of an intense short-term phonologically-based reading programme, similar to the research combined reading intervention, resulted not only in marked improvement in phonologic decoding abilities, but also in normalisation of the brain activation profiles in all the reading-disabled subjects who participated in Simos *et al*'s (2002) research. Simos *et al*'s (2002) conclusion is reinforced by Temple

*et al*'s (2003) research which examined with the help of functional magnetic resonance imaging (fMRI) changes in brain function in children with dyslexia after a short-term intensive remediation. Remediation resulted not only in improved reading performance, but also in an increased activation in multiple brain regions during phonological processing. Alyward (2003) supports Simos *et al*'s (2002) and Temple *et al*'s (2003) research results stating that after only three weeks of reading instruction, brain scans in children with dyslexia develop activation patterns which match those of average readers. In her study, an experimental group of dyslexic children and a control group of children of the same age with average reading levels underwent a pre- and post-intervention functional magnetic resonance imaging (fMRI) to map their brain activation patterns during reading tests. Alyward (2003) stated that after the reading programme the levels of brain activation were essentially the same in the research group and the control one.

As already mentioned my research combined reading intervention programme systematically combines the complementary approaches to teaching reading, the top-down and the bottom-up, for the same duration of time in each of the intervention sessions, thus equally involving the brain regions involved in reading. Simos *et al*'s (2002), Temple *et al*'s (2003) and Alyward's (2003) studies outcomes reinforced my personal experience witnessing students' improvement of reading as a result of the research intervention, which was supported by the documentation of the research participants' post-intervention assessment, and the research participants' reports of an improvement as well. For example Yuval said in her diary:

> 'There is a real improvement in reading English. I also participate in the lessons. Last week I read the unseen alone and answered the questions. I

> felt more confident about English when I saw that most of them were correct'.

Similarly Noah also referred in her diary to her self confidence and said that now after four months [she] can really say that [she] has improved in English. [She] reads and understands what [she] reads, [she] feels more confident knowing that [her] English is much better. Kefir claimed in his diary that [he] understands much more English than [he] did before the programme with [me]. He also mentioned feeling more confident during the English lessons in school. Shuval's words in her diary resemble the other students:

> 'I participate much more in the English lessons. I have more confidence to participate in the class because I read better and I know more words so I understand better the unseen'.

Aviv and Tal used almost the same words in their diaries expressing their improvement after four months. Both claimed that it was easier for them to read the text and that they felt more confident during the English lessons in school rather than before the programme. Tal concluded in her diary: 'I have more confidence to raise my hand and participate in the English lesson. I really enjoy the English lessons now that I can read much better'.

After the absence of mentioning an improvement in their self confidence as a result on an improvement in reading, in the previous phase of the intervention ('weeks eleven to fifteen') by all research participants, I was pleased to see that all the students reported on an enhancement in their self confidence, in my journal and in their diaries, by this stage of the programme ('weeks sixteen to twenty'). Moreover, I was pleased to find out that all research participants have also commented on an improvement in their self efficacy as a result on an improvement in reading and reading comprehension of English as an FL. Yuval reported in

her diary that her marks in English have improved and that she has not failed tests in English lately. Shuval, Noah, Tal and Aviv also reported in their diaries on the improved ability to read better and understand what they read. Shuval concluded in her diary: 'I feel that I have a better ability to take the matriculation test in English because my marks in English have improved as a result of your programme'.

It seems that at this stage of the combined reading intervention programme the students have acquired tools to cope with their difficulties in reading English as an FL, and as a result their self confidence has enhanced. The aspect of improvement in reading English was reported by all the students in my journal and in the students' diary, and was supported by the documentation of the students' post-intervention assessment when I crossed referenced the two kinds of data collection. The aspect of enhancement of self confidence witnessed by the students was also reported in my journal and the students' diary.

Going through my comments in my journal as a practitioner I was pleased to observer the encouraging change in the students' ability to read and understand English as an FL and the positive change in the students' ability to cope with English, as a result of the combined reading intervention programme. Moreover, as a teacher I was pleased to see that the students reported, in my journal and their diaries, an optimistic change in their feelings of self confidence as well, as a result of the combined reading intervention programme, as quoted above by the students. However, to my dismay, it seems that at this final stage of the programme, the combined reading intervention has not equipped the research participants with tools to cope with the acceptance of the fact of being 'dyslexic students'. In spite of the improvement in reading English and the improvement in their self confidence the students did not report

any change in their feelings regarding the fact of being a 'dyslexic student'.

As mentioned in the Methodology chapter of this research, in the pre-intervention programme in-depth students' interview, the participants were asked to tell about their English studies from when they first began until present times. All of the research participants reported a situation where their marks in the English subject in school improved as a result of being granted tests accommodations in the English subject in school, by the Ministry of Education in Israel, due to the learning disabilities assessment carried by a professional assessor or an educational psychologist. Yuval, Kefir and Noah reported in their pre-intervention in-depth interview, using almost the same words: 'My marks in the English tests improved after I got the accommodations, but it does not count because it was with accommodations'. Shuval refers to this aspect and says: 'My marks in English improved after I got the accommodations, but the improvement is not worth it because it was with accommodations'. Aviv explained in his pre-intervention programme in-depth interview:

> 'If I take a test in English with the accommodations I succeed better. But it does not count because it is with accommodations and I am still different from my classmates. When I got the accommodations in English in the 9th grade, my marks improved but it did not count because I was different from my friends who succeeded without accommodations. I wanted to be like them'.

'The fact that I get higher marks in English does not worth anything because it is with accommodations. I want to succeed without the accommodations. I want to be like all my classmates,' was Tal's remark in her pre-intervention programme in-depth interview.

As can be seen from the students' reports in their pre-intervention interviews, all of them held responsible the improvement in the marks in the English subject in school only to the tests accommodations, i.e. all the students attributed the improvement in the marks to an external factor. I was very curious to find out if there would be a change in the students' attitude to the tests accommodations, as a result of the improvement in their reading of English, due to the research intervention programme i.e. an internal factor. Even though there was a change in the students' self confidence as a result of the improvement in reading English, the students did not report of a change in their attitude to the tests accommodations.

As mentioned in the Methodology chapter of this research, in the post-intervention programme in-depth students' interview, the participants were asked to tell about their English studies after they started the intervention programme until the end of it. Yuval said in her post-intervention programme in-depth interview that: 'There is an improvement in my English marks, but I want to reach the situation where I do not use the accommodations at all. Then I will know that I have succeeded'. Kefir told me in his post-intervention programme in-depth interview that: 'There is an improvement in English. I read better and I understand better what I read. My marks have improved. But I want to succeed without the accommodations otherwise it does not count'. Noah was even more precise and said: 'I read English and understand better now after the lessons here. My marks in English have improved but it does not count because I still have the accommodations. I hoped to get rid of them after I finished the programme with you'. Agreeing with Noah, Shuval said: 'Even though I got better in reading English, unseen tests and I have less spelling mistakes; these do not count because it is still with accommodations and it means that I am still different, I am still a 'dyslexic student'. Aviv stated in his post-intervention programme in-depth interview that: 'My English has improved. My reading has

improved. The marks of my English tests have improved. But all this does not count because I still have the accommodations. With accommodations I will not be able to become a doctor and everything is useless if I do not become a doctor'. Tal declared that: 'My reading in English improved. My marks improved as well. Thanks to the improvement I am going to take the five point's matriculation examination. But I am disappointed from your programme because it did not cause me to get rid of the accommodations. I really wanted to get rid of the accommodations, to be like everybody else. Not to be different'.

Interestingly enough all the students reported in their diaries of a remarkable improvement in their functioning in the English subject in school, however, none of them reported of a change in their attitude towards the test accommodations or the fact of being different and dyslexic. They devalued the improvement in reading English and devalued the positive achievement of improvement in the English subject in school. They even expressed in their diaries a disappointment in the research intervention programme because it did not make their dyslexia disappear, as mentioned above by Tal. Thus, the notion that an emotional intervention programme combined with the research cognitive one would be more effective to help these 'dyslexic students' became even more evident to me.

The next section, which discusses the second category of the research themes analysis and deals with emotions, will shed light to the lack of change in the students' attitude towards test accommodations and the fact of being different and dyslexic, despite their reports of improvement in the English subject in school, as a result of the research combined reading intervention programme.

## 4.10 Emotions

Section 2.15 of my thesis discussed the fact that research over the last decades has stated that dyslexia is a complex disorder seen from cognitive aspects, which have a negative impact on the behavioural aspects of those who suffer from it. That is, dyslexia, which is a chronic disorder with reading difficulties, bears behavioural consequences linked to emotional aspects which go beyond learning to read (Bartlet, Moody and Kindersley, 2010). Moreover, brain research has shown that learning takes place in the neocortex, which does not function well when learners are under strong emotional aspects, such as stress or fear (Goswami, 2006; Wilson, 1993).

Orton (1925) was one of the first researchers to describe the emotional aspects of dyslexia. He explained that the 'dyslexic students' emotional problems begin to develop when early reading instruction does not match their learning style. Over the years, the frustration increases as classmates surpass the 'dyslexic student' in reading skills. According to Wong and Donahue (2002) merely three decades ago researchers started to focus more on the aspects beyond the academic problems of children and adolescents with learning disabilities. One of the emotional problems of 'dyslexic students' is frustration. Ryan (2004) explains that the frustration of students with dyslexia often focuses on their inability to meet expectations; other people expectations and their own ones. Moreover, the pain of failing to meet other people's expectations is surpassed by the 'dyslexic students' inability to achieve these expectations. This is particularly true of 'dyslexic students' who are afraid of future consequences of negative social evaluation. Thus, they become fearful because of their constant frustration and confusion in lacking to meet school expectations.

Indeed, all the research participants referred to their anxiety, in their pre-intervention interview. Yuval said that she was really afraid that she would not be able to succeed in the English matriculation examination. Yuval just expressed her anxiety without mentioning any future consequences, but Kefir did and said; 'I am afraid of being my eldest brother's shadow without being able to manage by myself in life because I do not know English'. Noah was afraid of ending up like her mother, as 'a simple cosmetician'. Shuval reported that: 'I am afraid to be just nobody if I fail doing the English matriculation examination'. Tal was so afraid not to succeed in life as a result of not succeeding in the English matriculation examination, and Aviv was concerned not to be able to fulfill his dream of becoming a doctor in the future if he fails the English matriculation examination.

Ryan (2004) explained that many of the emotional problems caused by dyslexia occur out of frustration due to academic failure in school. Without exception the research participants felt that they were a failure because of failing in English, as some of them said in their pre-intervention interview: 'Because of failing in the English subject in school I feel a total failure, I am such a failure'.

The sense of being a total failure shared by all research participants seems that has resulted in a mutual feeling of disappointment as stated by Yuval in her pre-intervention interview: 'I was very disappointed in myself for being a failure in English'. Kefir, Noah and Tal were even harsher on them and said: 'I was really disappointed in myself for not succeeding in English and I felt a huge failure'. Shuval's disappointment in her was accompanied by frustration: 'I was very disappointed in myself. Why is it that I cannot study English like all the 'non-dyslexic students'?', whereas Aviv's disappointment in himself was accompanied by fear of future consequences: 'Failing again and again in English was a huge

disappointment and I was afraid that I might not become a doctor eventually'.

Bartlet, Moody and Kindersley (2010), among other social scientists have observed that frustration produces anger. This phenomenon existed in all the research participants and was reported by all of them. 'I was angry at myself for being such a failure' reported Yuval in her pre-intervention interview. Kefir said: 'I was angry at myself for not knowing English'. Noah mentioned that every time she failed an English test she became angry at herself for being a failure. Shuval reported: 'I get so annoyed with myself every time I get a bad mark in English'. Both Aviv and Tal mentioned anger but also sadness. Aviv said that every time he failed an English test he became angry and cried a lot whereas Tal reported 'I feel so sad and angry at myself because I don't know English'.

The target of the students' anger was not only themselves, but also others as expressed by Yuval, Shuval and Tal who said that they were angry at their English teacher who did not teach them properly and never helped them with the English subject in school. Noah was angry at her mother 'because I failed English and quarrel with her a lot'. Tal was angry at both her parents for pushing her to succeed in English but she just could not do any better. Kefir was angry at his brother 'because he knew English better than I do'. In Kefir's and Tal's reports the link between anger and frustration is quite obvious.

Ryan (2004) believes that students with dyslexia are at a higher risk for intense feelings of sorrow and pain which might turn the 'dyslexic student' into a depressed person. As a matter of fact, all six research participants reported of feelings of sorrow, pain and depression. Maybe Aviv's words in his pre-intervention interview describe this shared-by-all feeling of sorrow best,

> 'I was really down because I was doing badly in English. I was always sad when I got a bad mark in the English subject; I was so down when I realised that I have failed again in English. I was really very sad and I cried a lot when I understood that I need the accommodations in English, and that meant that I am different from my peer students and friends. I was really down because I want to study at the university and I felt such sadness when I thought that I will not became a doctor eventually'.

The students' pre-intervention reports on feelings of sorrow and depression have similar characteristics. They all tend to view the world negatively and have great trouble imagining anything positive about the future. In concurrence with Ryan's (2004) and Bartlet, Moody and Kindersley's (2010) studies, all the research participants not only experienced great pain in their present experiences in the English subject in school, but also foresaw a life of continuing failure.

Another feeling all the research participants share is shame, as Yuval said: 'I am so ashamed of being dyslexic and different from the other students'. Noah expressed her shame by saying: 'Maybe I will not have to use the accommodations in English anymore because it is a huge shame to be different from all the other 'non-dyslexic students'. Tal also mentioned being so ashamed of being different of all the other students who do not have to use accommodations in English. Shuval referred to this feeling saying: 'I am so ashamed of being dyslexic because people think that you are a retarded person', and Aviv claimed that even though he had good marks in all the other subjects in school, he was so ashamed of failing the English subject. In accordance with Ryan (2004), and following the students' reports on their feelings, I observed that this sense of shame due to feelings of inferiority of being dyslexic and different, shared by all the research participants, shows that the dyslexic research participants' self–image appears to be extremely vulnerable to frustration and anxiety.

The aspect of shame was reinforced by the research participants' reports on the fact of the research intervention being applied in a one-to-one ambience. All the students complimented the fact that they studied English intervention programme alone in my practice so there was no audience to witness their dyslexia and failure in English. For example Yuval said in my journal,

> 'Today's session was a bit difficult for me. But I was glad that I study alone here so no one else can see my failures. I like it here because I study alone and no one from my classmates sees that I fail in English'.

As if agreeing with Yuval, Kefir said in my journal: 'It was good that I was alone here and nobody could see that I am a failure. I am happy that all my classmates do not see that I need special tutoring'. Approving with Kefir's feelings of shame, the rest of the students used in my journal similar phrases: 'It is so good that nobody can see when I fail', 'I hate failing but at least nobody can see it here. And today I failed a lot', 'I am alone here so others cannot see that I do not know English' and 'I hate it when my classmates see my failures that is why I am happy here just with you'.

Moreover, the aspect of shame was mentioned as well in the research participants' reports on the test accommodations in the English subject in school. As already mentioned in the introduction to this study, in order to provide 'dyslexic students' with equal opportunities to those of their peer students who do not suffer from learning disabilities, The Director's Annual Circular of the Ministry of Education in Israel (2003) mandated the possibility of granting one or more of five different regulations on special testing accommodations to learning disabled students:

1) Learning disabled students are allowed twenty-five per cent more time during class tests.

2) Learning disabled students are permitted to use an electronic English - Hebrew dictionary, while the rest of the students are permitted a paper-based English - Hebrew dictionary.

3) Spelling mistakes of learning disabled students are ignored in the calculation of the test grade.

4) The teachers read tests aloud to learning disabled students, rather than requiring them to read them on their own.

5) In severe cases of dyslexia, where learning disabled students cannot read at all, they are tested orally.

These five testing accommodations are granted only to learning disabled students assessed for learning disabilities by a professional assessor or an educational psychologist, who are specialists in assessing learning disabilities and are officially approved and licensed by the Ministry of Education in Israel to grant these accommodations.

In the students' pre-intervention interviews all the research participants similarly reported of an improvement in the English as an FL school subject as a result of the test accommodations they were granted by the Ministry of Education in Israel. For example the students said that after they were granted the accommodations for the English school subject their marks improved. They explained that 'when [their] English teacher reads the passage for [them] and then also the questions, it is easier for [them] to answer these questions' or that 'using the electronic dictionary helps [them] a lot in the English tests' and that 'it helps [them] to know that [they] have more time than others for [their] English tests', they feel less stressed.

Even though all the research participants acknowledged in their pre-intervention interviews the aid of the test accommodations for the English school subject and accredited the improvement of the marks in the English subject to these, they all reported of feelings of shame and low self-esteem, for being socially labelled as 'dyslexic students' and different from their peer students, by the accommodations.

Yuval expressed the feelings of shame and low self-esteem by saying:

> 'In grade seven I was granted accommodations in the English subject. But, I am very ashamed to take the English tests in my class using the accommodations because then everybody can see that I am different. I want to be like everybody else without the accommodations'.

Kefir also referred to the same feelings:

> 'I want to improve in English but without having to be different from my classmates by using the accommodations. Maybe there is a chance to get rid of the accommodations and then I will stop being dyslexic and different from others'.

Noah reported that;

> 'I do not want the accommodations because I study English in an inclusive class and it is such a shame that I am with accommodations and the rest of the students in my class are not. I do not want the accommodations because I feel different'.

Shuval was even more dramatic on this subject;

> 'I hate the accommodations. I want to be like everybody else. I am waiting for the day when I know English perfectly. Then I will not have to use the accommodations anymore and I will not be dyslexic any more'.

I could observe pain in Aviv's words when he said;

> 'Everybody knows that I am a failure and that is why I need the accommodations in English. I want to be like everybody else. I want to be able to read and write a test without the accommodations. The accommodations are an awful shame. I am so ashamed'.

Tal was not an exception and said;

> 'I envy all my friends because they do not need the accommodations. The accommodations make me different and less smart. It is obvious that I am not smart because I need the accommodations. And I need them because I am dyslexic'.

As mentioned above, all research participants not only felt embarrassment for being different and dyslexic, but they also blamed the accommodations for revealing the fact of being dyslexic and different. Even though they admitted that the test accommodations in the English subject in school did help them to improve their marks in English as an FL, all the research participants were more than willing to get rid of them. Yuval expressed this point in her pre-intervention interview by saying; 'I wish I did not have to use the accommodations in class. I want to get rid of them. I hope the day comes when I know English perfectly and so I will get rid of the accommodations and will stop being dyslexic'. Kefir actually referred to the shame of having the accommodations and said his pre-intervention interview: 'I am so stupid I will never be able to get rid of the accommodations. I am so embarrassed to have the accommodations. I hope to improve my reading in English so I can get rid of them altogether'. Shuval admitted in her pre-intervention interview of the contradiction of acknowledging the positive outcome of the accommodations and the desire to get rid of them so as to conceal her dyslexia;

> 'I want to get rid of them. People think you are a moron if you have accommodations. I know that

> the accommodations are for my own good but I still want to get rid of them. If I do I will feel worthy'.

In Aviv's report the aspect of anxiety is expressed in addition to shame and willingness to conceal his dyslexia;

> 'I must get rid of the accommodations. I want to be a doctor. You cannot be a doctor with accommodations. I want to be like my friends. For that to happen I must get rid of the accommodations'.

In order to understand my research participants' frustration, which led to emotions of anger, sorrow, pain, disappointment, shame, low self-esteem and anxiety, as documented in their pre-intervention interview and my journal, it is important to comprehend the role of the English language in Israel. Next section deals with the students' behaviour due to fear of future consequences and expectations as a result of the role of the English language in Israel.

## 4.11 Behaviour

Behaviourism, as discussed in the Theoretical Perspectives chapter, explains how learning occurs due to a change in behaviour, as opposed to cognitivism which claims that learning can be described in terms of a change in the mental state (Ormrod's, 1999). Behaviourists emphasise the role that external behaviour plays in learning, rather than cognitive internal mental processing (Ellis, 1990; Ormrod, 1999). Yet, both theories of learning, the cognitive and the behaviour one, state that for learning to happen, a change needs to take place. The present section discusses behaviour as presented by the research participants.

In a discussion of consequences and expectations, Bartlet, Moody and Kindersley (2010) claimed that when 'non-dyslexic' learners succeed, they

credit their own efforts for their success, and when they fail they tell themselves to try harder. However, when the 'dyslexic students' succeed, they are likely to attribute their success to external factors such as luck or test accommodations, as mentioned in the previous section. But when they fail, they simply see themselves as unintelligent. This phenomenon results in 'dyslexic students' anxiety and frustration. Bartlet, Moody and Kindersley's observation refers to 'dyslexic students' dealing with negative emotions as a result of learning difficulties in their own language, that is, their L1. However, when dealing with foreign language acquisition the 'dyslexic students' anxiety and frustration exceed. Djigunovic (2006), who studied English acquisition as an FL in Poland, claims that FL language anxiety is quite a different type of anxiety. Due to fear of negative social evaluation 'language anxiety is a distinct complex of self-perceptions, beliefs, feelings, and behaviours related to language learning arising from the uniqueness of language learning process' (Djigunovic, 2006, p 10). In agreement with Sparks and Ganschow (1991, 2000), Djigunovic (2006) claimed that 'dyslexic students' language ability causes difficulties in linguistic coding in their L1, particularly in the coding of phonological and syntactic aspects, which causes FL learning difficulties. These difficulties give rise to a surpassed anxiety, as reported by all research participants in their pre- and pot-intervention interviews and discussed in the previous section. I agree with Djigunovic (2006) who claims that 'non-dyslexic students' anxiety is the consequence of poor foreign language performance and not the cause of it. Moreover, in the case of 'dyslexic students' difficulties the anxiety even increases.

As mentioned in the introduction to the present study, at the beginning of the twenty-first century, it seems that English is the major language around the globe, with approximately 350,000,000 native speakers, about 350,000,000 second language speaker, and roughly 100,000,000 foreign language speakers (Ministry of Education in Israel, 2001). English is at

the present solidly well-established in Israel as the 'first foreign language', as defined in the Policy on Language Education in Israeli Schools (Ministry of Education in Israel, 2001, 2007). For Israelis English is the expected language for international communication and for overcoming barriers to the flow of information across national boundaries. English is the language most generally associated with international trade and tourism, with higher education and research, and with the electronic media. The English language, after Hebrew, is considered the most valuable asset of an Israeli citizen. For all these reasons, it is the foreign language for which there is the strongest local demand. Thus, in Israel, the mastering of English as a foreign language is almost as important as the mastering of Hebrew, the L1 of the country, and people who do not know the language feel excluded and incompetent. English has become the international language of communication and technology, and Israel often finds itself at the cutting edge in these fields. To be a part of this 21st century technological world and effectively use the Internet, to communicate through email and to participate in e-learning experiences, Israelis need to know English. The Ministry of Education in Israel (2001, 2007) and schools in Israel have reacted to this ever-growing demand for greater knowledge of English and English is first introduced to eight-year-olds in their third year of primary school. English is the only school subject that a student must pass in order to be granted a matriculation certificate. The matriculation examination in English which is necessary for acceptance to any university consists of 70% reading comprehension. Without English an Israeli student cannot go on to higher education. Israeli students need to master written English in order to succeed.

The role of English as an FL in Israel as discussed above is problematic for 'dyslexic students', as without the matriculation examination in the English subject a student is not accepted to the university. Moreover, to be accepted to certain faculties in any university in Israel, such as law or

medicine school, students must be granted a five points' matriculation examination in English, which consists of ninety percent of written language (Appendix 1 for the modularity of the matriculation examination in English in Israel). This unique role of English as an FL in Israel causes, in my opinion, an increased sense of frustration and anxiety among 'dyslexic students' in Israel in comparison to other countries worldwide, and was expressed by all the research participants, who are well aware of this reality.

Yuval, Kefir, Noah and Shuval used almost the same words in their pre-intervention interviews to express their concern;

> 'I know that I have to succeed in the English matriculation test so I can be accepted to the university. I know that without the English matriculation examination I will not get a matriculation certificate and without it you cannot be accepted to the university. If I do not succeed in the English matriculation examination I will not be able to study at any university. It is a fact; everybody knows that without the matriculation examination in English you are not accepted to the university'.

Aviv was concern of the fact that he might not become a doctor eventually and said that [he] needs to succeed in the five point matriculation examination in English otherwise [he] will not be accepted to the medicine faculty in the university. Tal was more critical of future consequences and said: 'Everybody knows that if you fail the matriculation examination in English you will not succeed in life'.

Not surprisingly, that the frustration and anxiety felt by all research participants, due to the unique role of the English language in Israel, generated an immense fear of future consequences in life, as reported by

all the students in their pre- and post-intervention interviews and as expressed, for example, by Yuval;

> 'It frightens me that I have to study at the university otherwise I cannot have a good job and succeed in life. I want to succeed in life. To have a good job where I have a good salary and I make money. For that I must succeed in the English matriculation test. This really scares me'.

Kefir shared the same anxiety as Yuval's and said;

> 'I am so afraid of the future because I must succeed in the English matriculation test. Otherwise I will not be able to study at the university and will not have a good job. I must succeed in the English matriculation test and study in the university I will succeed in a good job. That means that I have succeeded in life. Otherwise I am just a failure. It scares me'.

Noah was very articulate on this aspect and told me that;

> 'I am so afraid to fail the English matriculation test. That will mean that my life if worthless. I am so afraid because if I fail the English matriculation test and I am not accepted to the university, my life is worthless. I will not succeed in life and I will be just a simple cosmetician like my mother and then my life is finished'.

Shuval also explained her anxiety and said;

> 'I am afraid because I know that the five points English matriculation test can open for me the world; study in the university, travel the world, get a good job. Then I can be proud of myself and have a curriculum vita of an honourable person and I will feel equal to others. I am afraid because English is so difficult for me'.

Aviv was so afraid of not fulfilling his desire of becoming a doctor and said;

> 'I must be a doctor. If I fail the five points English matriculation test in English I will not be accepted to the medicine faculty in the university. It really scares me because if I do not become a doctor my life will have no purpose'.

Tal expressed her fear, as well, by saying;

> 'It is important for me to succeed doing the five points English matriculation test in English. I am afraid that I will not be able to do it. I need to succeed in the five points English matriculation test in English in order to reach important achievements in life'.

Without exception, all the six research participants expressed in their pre-intervention interviews anxiety of future consequences where they see a very pessimistic picture of their life in the future without being granted the matriculation certificate due to failing the English matriculation examination. This anxiety of future consequences was mentioned by all research participants in both interviews the pre-intervention and the post-intervention one. Interestingly enough there was not an optimistic change in the students' post-intervention interviews reports where the pessimistic tone remained, even though all the students reported of an improvement in their reading in English and an improvement in their English marks at school as a result of the combined reading intervention programme. As mention before the improvement in English was reported in all the students' diary and in the entire practitioner's journal of the students, and was well documented in the post-intervention students' assessments as opposed to the pre-intervention ones.

Expectedly the research participants' future expectations were straightforwardly connected to their anxiety of negative future consequences as mentioned above. I believe that Noah's words in her pre-intervention interview express all the students' future hope quite accurately;

> 'I hope when I finish the programme here to be able to succeed in the English matriculation examination so then I will be able to study in the university, have a good profession and succeed in life. I need it to study in the university then I will know that I am not a failure anymore'.

Above and beyond from desiring to succeed in the English matriculation examination, which they all believe will guarantee a successful future life, all the research participants crave to get rid of the test accommodations in the English subject as these make public their dyslexia. Yearn for getting rid of the accommodations was expressed by all research participants in their pre- and post intervention interviews and was well phased by Tal; 'I hope that after finishing your programme I will get rid of the accommodations in English and will feel like a 'non-dyslexic student'. Then I will know that I am like everybody else'.

In agreement with Ryan (2004), the six dyslexic research participants' frustration focuses on their inability to meet expectations; society expectations, school expectations and their own ones. Moreover, the students' anxiety of failing to meet society expectations is increased by the research participants' inability to achieve these expectations. Thus, all the six research participants expressed a sense of being afraid of pessimistic future consequences and negative social evaluation. Moreover, this frustration is surpassed due to the perplexity created from the fact that the accommodations do improve their marks, but reveal to

society the very fact of them being dyslexic, so the students desire to get rid of them hoping to conceal or get rid of their dyslexia altogether.

The present chapter discussed the theme analysis of **cognition**, where an improvement in the reading of English as an FL and an improvement in the marks in the English school subject were reported by all research participants, and documented by the post-intervention students' assessments. That is, the students reported on a cognitive change. However, due to strong **emotions** of frustration and anxiety, all the six students devalued the improvement, that is, the cognitive change. Discussing the **behaviour** aspect of the research participants, it was evident that no change occurred in the students' behaviour after the improvement in English as a result of the combined reading intervention programme.

The next chapter discusses the factual and conceptual conclusions based on the documented post-assessment positive effect of the research combined reading intervention programme on the six participants, the discussion of the themes analysis and my self-reflection as a practitioner.

# 5 Conclusions

## 5.1 Limitations of the Research

There are a number of limitations to my research work which identify potential weaknesses of this study. These are discussed through three aspects: methodology, methods and sample.

**Limitations of methodology:**

One of the limitations of action research is in the emphasis of this kind of study on action and outcomes and the need to bring about change, rather than generate theory, as in the case of my research. However, action

research is an approach that offers the potential for teachers to be engaged in all aspects of research design and process, which greatly increases the chance that the findings of the research will be implemented and sustained within the practice setting (Jester, 2010).

Even though collaborative action research is strongly suggested by theorists (Sagor, 2011), Cohen *et al* (2000, 2007, 2013) claim that it is possible for action research to be an individualistic matter as well, relating action to the teacher as a researcher, as in the case of my research. This point is discussed by Whitehead (1985) and McNiff and Whitehead (2006) who strongly support action research in individualistic terms where the process of writing involves clarifying and exploring ideas and interpretations by the practitioner researcher. Thus, this enables action research techniques to be sufficiently specific so that they enable a small scale investigation by a practitioner to lead to genuinely new insights, and avoid being accused of being too minimal to be valid.

**Limitations of methods:**

My research uses only inductive research methods: in-depth open interviews, students' diaries and practitioner's journals. The nature of the questions used for the students' diaries and practitioner's journals are problematic as they are leading questions and might lead the respondents, particularly children to a particular answer. However, the six research participants of my study did feel able to respond with negative comments despite the nature of the leading questions, due to the fact that Israeli students are very straightforward. Based on many years of teaching in Israel I am familiar with the openness nature of Israeli students. Nevertheless, as a reflective practitioner and due to a learning curve for me, I am now aware that such questions are problematic and should not be used. Using observations as well might have reinforced the findings.

However, I could not conduct observations of the six research participants in their own classrooms due to the fact that I was not granted permission to observe them in their inclusive EFL classrooms, as this was against the policy of the six students' schools. I used the pre- and post-intervention students' assessments scores as documentation and not subjected to statistical analyses in view of the small sample size of six research participants. However, as document analysis they were a helpful antecedent and important evidence providing a context for interpretation of the emergent data analysis from the qualitative research methods used in my research.

**Limitations of sample:**

The study's small sample size, six research participants as there is a limit to the number of students whom I can teach at any one time, although consistent with positive findings of other case studies using a similar sample size (Uber-Kellogg, 1999; Hopper and Harmon, 2000; Fahnehjelm, Fischler, Jacobson and Nemeth, 2003; and Pereina and Vallance, 2006), limits the research findings' strength which cannot be generalised to other populations. However, as discussed in chapter three of this research, Guba and Lincoln (1989) identified transferability as to the extent to which research findings can be transferred to other populations. Therefore, the richness of the data sources and the extensive and careful descriptions of time and context which have been documented in my research, allow the reader to make judgments about transferability of the data or at least about applicability of some of the conclusions.

## 5.2 Closing thoughts as a reflective practitioner

As already mentioned in Chapter 3 of this study, which deals with research design and methodology, my research follows the steps of an action research. As such it follows the four generic steps of an action research;

planning, action, monitoring and self-reflection (Carr and Kemmis 1986, Jester 2010 and Sagor 2011). So far I have discussed the planning of what I really wanted to accomplish, that is, to find out what the effects of the EFL combined reading intervention programme were on the six research participants. The next step was the action of implementing the intervention and monitoring it through the gathering and analysis of the data. The present pace of this action research study is the self-reflection, so as to understand what I have learned through the process in order to draw conclusions for a change in an attempt to improve my practice.

Cohen *et al* (2000, 2007, 2013) state that action research involves the reflection of the researcher on his or her learning about the practice they are studying and the process of studying it. The reflective practitioner is central to action research because the researcher is also the practitioner, being a part of the social world that he or she is studying. It is important to understand the notion of reflection as self-conscious awareness of the effects that the practitioner as researcher is having on the research process. Thus, the practitioner as researcher asks the question as to how he or she can improve or change his or her practice. The situation of improvement and change is allowed when the researcher understands and evaluates his or her own work. In other words, participants as researchers reflect on their own work. This self-reflection is a key element within action research and allows researchers to plan what changes can be made, implement these changes, and then reflect once again. McNiff (2002) summarises this point by saying that 'action research is an enquiry by the self into the self [as with action research] researchers do research on themselves' (p. 6). In other words as Ferrance (2000) pointed out it is 'a quest for knowledge about how to improve' (p. 2). Ferrance (2000) quotation links with the following one:

'Where is the life we have lost in living?

> Where is the wisdom we have lost in knowledge?
> Where is the knowledge we have lost in information?' (T.S. Elliot; 1934)

T.S. Elliot's (1934) quotation is the basis of the DIKW (**D**ata **I**nformation **K**nowledge **W**isdom) Hierarchy Model (Harlan Cleveland, 1982), which I am borrowing as a metaphor for the discussion of my self-reflection. The DIKW hierarchy model is an information hierarchy whereby each layer adds certain attributes over and above the previous ones. The data represent the most basic level. Information adds context. Knowledge adds a layer suggesting how the information can be used, and wisdom adds the dimension of when to use it. The DIKW hierarchy, which is used primarily in the fields of information science and knowledge management, provided me with a structure for making sense out of and mapping the different stages experienced throughout my research in reaching my study's conceptual conclusions, and its subsequent contribution to knowledge, which are discussed hereafter.

The parallel between the DIKW Hierarchy and my action research self-reflection lies where Data is parallel to the data analysis of my research, Information to the discussion, Knowledge to the factual conclusions and Wisdom to the conceptual conclusions and the contribution to knowledge. In the process of conducting and writing this thesis, I, as a researcher, went through a similar process of hierarchy as in the DIKW Model, where the data analysis of my research provided me with new Data, the discussion of the data analysis introduced to me essential Information, the factual conclusions enriched me with Knowledge and the conceptual conclusions enabled the Wisdom I possess now.

This wisdom illuminates the way I have come to see and understand my practice causing an action for change and improvement. This action is due to the fact that after using an action research design in my study I

realised that I have been using techniques related to the action research design for the last 35 years of my teaching experience. That is, I built a programme for teaching English as an FL to 'dyslexic students', evaluated it through assessing the improvement of my students and changed my programme when and where needed. Self-reflection was done intuitively. In agreement with Jester (2010), after completing the research process for my study, I have learnt that if I want to reflect back efficiently to my practice, action research design offers a useful tool for planning, acting, monitoring and self-reflecting so as to improve my practice. This is facilitated due to the fact that action research is an approach which offers the potential for teachers to be engaged in all aspects of research design and process, thus increasing the chance that the findings of the research will be put into practice (Jester, 2010). Moreover, as a result of this research process, the assumptions of me as an educational practitioner have changed. I do not take for granted that the way I teach is the right one. I have become more critical of my practice. I have doubts and ask myself questions. I have become more aware of the data emerging from my students so as to improve my practice. In addition I have come to assume that being a reflective educational researcher must be a part of my everyday practice. Thus, by taking measures so as to put into practice the conclusions of my study (sections 5.3 and 5.4) whilst taking into consideration the weaknesses mentioned in the limitations of the research on pages 232-234.

The following sections discuss the factual and conceptual conclusions of my research all of which were a result of my self-reflection process and enabled the implications for change and improvement of my practice.

## 5.3 Factual Conclusions

This section deals with the factual conclusions of the research, based upon the awareness and understanding gained through the themes analysis data.

### 5.3.1 Factual Conclusions: Cognition

1. Reading and reading comprehension in English as an FL is difficult for the six research participants. The research participants' subjective observation is similar to the pre-intervention students' assessment scores and matches their assessments' reports carried by a professional assessor or an educational psychologist, who are specialists in assessing learning disabilities and are officially approved and licensed by the Ministry of Education in Israel.
2. All research participants advocated the systematic combination of the two complementary approaches to acquiring reading in each of the thirty six sessions of the intervention, claiming that the combination helped them to improve their reading in English as a foreign language, their reading comprehension in English and their marks in the English school subject. The research participants' subjective observation is similar to the post-intervention subjects' assessment scores.
3. The improvement in English reported by the research participants can be divided into four stages. The twenty weeks intervention programme was without exception equally divided by all six research participants into four stages, where each stage occurred exactly after five weeks of intervention, a total of twenty weeks;
    1. Weeks one to five – 'still not helping'
    2. Weeks six to ten – 'slight improvement'
    3. Weeks eleven to fifteen – 'improvement'

4. Weeks sixteen to twenty – 'significant improvement, but…'

### 5.3.2 Factual Conclusions: Behaviour

1. The research participants reported that they listened better to their English teacher during the English school subject lessons as a result of the improvement in reading English, as a consequence of the intervention.
2. The research participants reported that they participate more during the English school subject lessons as a result of the improvement in reading English, as a consequence of the intervention.
3. The research participants reported that they read the unseen passages and answered the questions by themselves during the English school subject lessons as a result of the improvement in reading English, as a consequence of the intervention.

### 5.3.3 Factual Conclusions: Emotions

1. All six research participants shared a mutual emotional improvement in their self-confidence, during the course of the intervention, due to the familiarity of the systematically combined reading intervention programme, caused by the pre-knowledge of tasks and repetitive exercises, not only working with me but also with the computer work.
2. All the research participants reported of an improvement in their functioning in the English subject in school as a result of the research combined reading intervention programme. However, none of them reported of a change in their attitude towards the test accommodations or the fact of being different and dyslexic. All of them devalued the improvement in reading English and devalued the positive achievement of improvement in the English subject in

school. All of them expressed a disappointment in the research intervention programme because it did not make their dyslexia disappear and they still needed the tests accommodations in the English subject.

3. All the research participants reported strong feelings of frustration which led to emotions of anger (targeted towards themselves and others), sorrow, pain, disappointment (in them and others), shame, sadness, depression, low self-esteem and anxiety.
4. All the research participants view the world negatively and foresee a life of continuing failure.
5. All research participants, not only felt embarrassment for being different and dyslexic, they also reported of a low self esteem for being socially labelled as dyslexic and different from their peer students.
6. All the research participants blamed the granted test accommodations in the English school subject, for making public the fact of them being dyslexic and different. Even though the students admitted, in their pre-intervention interview, that the test accommodations in the English subject did help them to improve their marks in English as an FL, all of them were more than willing to get rid of them.
7. All the research participants are well aware of the crucial role of English as an FL in Israel in comparison to other countries worldwide. This reality, where an Israeli student cannot be accepted to any university in Israel without succeeding in the matriculation examination in English, caused a sense of frustration, anxiety and fear of future consequences among the dyslexic research participants.
8. All the six research participants expressed anxiety of future consequences where they see a very pessimistic picture of their life

in the future without being granted the matriculation certificate due to failing the English matriculation examination, which they all believe will guarantee a successful future life.

The factual conclusions of this study are summarised in table 5.1.

**Table 5:1 Factual Conclusions**

| | | |
|---|---|---|
| **Factual Conclusions** | **Cognition** | 1. Difficulties in EFL reading and reading comprehension. |
| | | 2. Advocacy of systematic combination of top-down and bottom-up approaches in each session. |
| | | 3. EFL improvement equally divided without exception into four stages of five weeks each. |
| | **Behaviour** | 1. Improvement in listening to the EFL teacher in school. |
| | | 2. Improvement in participating in the EFL lessons in school. |
| | | 3. Improvement in reading comprehension in the EFL lessons in school. |
| | **Emotions** | 1. Improvement in self-confidence due to the familiarity of the systematical combined reading intervention. |
| | | 2. Devaluation of improvement in EFL and disappointment as the intervention did not make their dyslexia disappear. |
| | | 3. Report of strong feelings (frustration, anger, sorrow, pain, disappointment, shame, sadness, depression, low self-esteem and anxiety). |
| | | 4. Mutual negatively views of the world and future failure. |
| | | 5. Embarrassment for being socially labelled as different and dyslexic. |
| | | 6. Blame of the test accommodations in EFL for making public their dyslexic. |
| | | 7. Awareness of the crucial role of EFL in Israel. |
| | | 8. Anxiety of consequences and a pessimistic picture of their life in the future. |

The next section discusses the conceptual conclusions based on the factual **cognitive**, **behavioural** and **emotional** ones.

## 5.4 Conceptual Conclusions

The present section deals with the conceptual conclusions of the research based on the knowledge gained from the factual conclusions. The conceptual conclusions will endow with some light the research question,

which asks what effects did the research combined reading intervention programme in English as a foreign language in Israel have on the six research 'dyslexic students'.

### 5.4.1 Conceptual Conclusions: Cognition

As already mentioned in the theoretical perspectives chapter, theorists such as Snowling's (2000), Anthony and Francis (2005), and Gathercole *et al* (2006), claim that phonological awareness skills are a crucial foundation for learning to read in ones native language and in a foreign language. My research findings have provided evidence of improvement in phonological awareness and reading in English, and as a consequence improvement in the English subject in the inclusive EFL classroom in school, of the six research participants. This improvement occurred by implementing the combined reading intervention programme, which combines the top-down approach and the bottom-up approach to reading in each session for the same duration of time. This accords with the findings of Berent and Perfetti (1995), Jessen (1999) and Simos (2002), all of which stress the need to use both approaches to reading, the bottom-up approach (phoneme/grapheme correspondence) and the top-down approach (whole word), thus involving equally the different brain structures which are involved in the reading process. Moreover, the improvement accords with all research participants advocacy of the systematically combination in each session of the two complementary approaches to acquiring reading, claiming that the combination helped them to improve their reading in English as a foreign language, their reading comprehension in English and their marks in the English school subject.

The goal of the research combined reading intervention was to help the six research 'dyslexic students' acquire a deeper awareness of the sounds

of speech and an improved understanding of the connection between the sounds of speech and the letters of the alphabet (the bottom-up approach) or the sounds of whole words and frequent spelling patterns (the top-down approach), that is, to facilitate learning due to a cognitive change. It seems that this goal was achieved during the research combined reading intervention programme as the research findings show an improvement in the students' phonological awareness, an improvement in the students' reading and an improvement in the students' English school subject in the inclusive EFL classroom of the six dyslexic research participants.

Based on my research findings, which have provided evidence of a remarkable improvement in the six research participants' reading in English as a foreign language, reading comprehension in English and their marks in the English school subject, as a result of the research combined reading intervention programme, I can conclude that the first effect of the research intervention is a change in the cognitive state of all research participants which enabled this improvement. This conclusion concurs with Pierce's (2004) proposition, for inclusion to be more effective, that teacher-mediated short-term interventions should be implemented in inclusion schools, which proved to be effective and successful throughout all academic areas in which disabled students were having difficulties. My research EFL reading intervention programme for dyslexic Israeli students, studying in an inclusive EFL classroom, might be considered as a teacher-mediated intervention as recommended by Pierce (2004) within the private sector, as suggested by the *Policy Guidelines on Inclusion in Education* (UNESCO 2009).

### 5.4.2 Conceptual Conclusions: Behaviour

Zafiropoulou and Karmba-Schina (2005) claimed that over the last three decades behaviourism, which was largely eclipsed as a result of the cognitive revolution, has had a major and positive impact on researchers understanding students' behaviour and subsequently creating strategies for improving it.

Behaviourism, as mentioned in the theoretical perspectives chapter, claims that learning can be described in terms of a change in behaviour as opposed to cognitivism which explains how learning occurs due to a change in mental state. Behaviourism, according to Bandura (1969), assumes that a learner basically responds to environmental stimuli where behaviour is shaped through positive or negative reinforcement. Learning is therefore defined as a change in behaviour in the learner where the change in behaviour is caused by an external stimulus.

As mentioned above the basis of behaviourists' learning theory was the idea that behaviours are learned and become habitual, as a result of reinforcement (Bandura, 1969). All six research participants reported of a change in their behaviour in the inclusive English classroom in school. The students reported that they listened better to their English teacher; they participated more than before the intervention programme, they read the unseen passages and answered the questions by themselves. Based on my research findings I can conclude that there was a change in the six students' behaviour in the inclusive English classroom in school. The change in behaviour was caused by the improvement in reading in English as an FL, reading comprehension in English and their marks in the English school subject. As explained in the previous section the improvement was caused by the research combined reading intervention programme, that is, the improvement is a cognitive change. This improvement might be

seen as the reinforcement behaviourists referred to where the research combined reading intervention programme is the external stimulus. I believe that I can conclude that in the case of my research the cognitive change caused a behavioural change.

Based on my research findings, which have provided evidence of a change in the students' behaviour in the inclusive English classroom in school, reflected in their listening better to their English teacher; reading the unseen passages and answering the questions by themselves and participating more than before the intervention programme, I can conclude that the second effect of the research intervention was a change in the six students behaviour in the inclusive English classroom in school. This conclusion agrees with Pierce's (2004) conclusion, for inclusion to be more effective, which stated that the desired direction should be to implement more teacher-mediated interventions to improve not only academic achievement , but also behavioural success of students with emotional and behaviour disorders due to their disabilities. As mentioned in the previous section my research EFL reading intervention programme for dyslexic Israeli students, studying in an inclusive EFL classroom, might be considered as a teacher-mediated intervention as recommended by Pierce (2004) within the private sector as suggested by the *Policy Guidelines on Inclusion in Education* (UNESCO 2009).

### 5.4.3 Conceptual Conclusions: Emotions

My research findings have provided evidence of an improvement in the students' self-confidence as a result of the improvement in reading English as an FL. The change in the students' self-confidence brought about a change in their behaviour. As discussed above this change in behaviour was reflected in their listening better to their English teacher; reading the unseen passages and answering the questions by themselves and

participating more than before the intervention programme. Based on these findings I can conclude that the third effect of the research intervention is a change, an improvement, in the six students' emotion of self-confidence in the inclusive English classroom in school.

However, apart from the change of self-confidence of the six research participants there was no change in all the other emotions reported by the students, in particular their frustration and anxiety, despite their reports of an improvement in English. Moreover, the students' anxiety of failing to meet society expectations is increased by their inability to achieve these expectations. Thus, all the six research participants expressed a sense of being afraid of pessimistic future consequences failing the matriculation examination in English, which they all believed guaranteed a successful future life. Additionally, the students' frustration was increased due to the perplexity created from the fact that the accommodations in the English school subject do improve their marks, but reveal to society the fact of them being dyslexic, so the students desired to get rid of them hoping to conceal or get rid of their dyslexia altogether.

Following my research findings, which have provided evidence of a lack of change in the students' emotions of anxiety and frustration; I can conclude that the research intervention did not have an effect on these emotions among the six research participants. On the contrary, despite the positive cognitive and behavioural effects of the intervention, the six students devalued the positive achievement of the improvement in English by expressing disappointment in the research intervention programme since it did not make their dyslexia disappear.

The **contribution of knowledge** in my research points to the fact that while a four-month cognitive intervention programme with 'dyslexic students' in Israel, studying English as a foreign language may improve

students' cognitive functioning in English, it is insufficient in enabling students to allay their fears regarding the expectations of Israeli society, and their anxiety and self-confidence in their ability to succeed in life.

The conceptual conclusions of this study are summarised in table 5.2.

**Table 5:2 Conceptual Conclusions**

| | | |
|---|---|---|
| **Conceptual Conclusions** | **Cognition** | First effect of the research intervention: change in the cognitive state of the six research participants which enabled the improvement in EFL. |
| | **Behaviour** | Second effect of the research intervention: change in the six research participants' behaviour in the inclusive EFL classroom in school. |
| | **Emotions** | No effect on the emotions of the six research participants. Devaluation of improvement and achievement in EFL. Disappointment in the research intervention programme since it did not make their dyslexia disappear. |

## 5.5 Implications of the research

The present study holds implications for professionals whom dyslexia is a consideration. It provides material for the development of a number of tools useful for teachers of English as an FL to 'dyslexic students' in Israel, school counsellors and psychologists who assess dyslexia in Israel, in addition to anyone involved in the field of remedial reading intervention programmes. It is of interest as well to parents of 'dyslexic students', 'dyslexic students' and all those interested in the study of reading in English as an FL in Israel.

### 5.5.1 Implications for teachers of English as an FL to 'Dyslexic Students' in Israel

Based on the post-intervention improvement of the six research participants in phonological awareness, reading and reading comprehension in English, which was reflected in their marks in the English school subject in the inclusive EFL classroom, the combined

reading intervention programme can serve as an appropriate intervention programme to be used by teachers who teach reading English as an FL to 'dyslexic students' using remedial intervention programmes. However, these teachers should be aware of the restriction of a solely cognitive change and set expectations with their students before commencing the intervention.

### 5.5.2 Implications for school counsellors and psychologists who assess dyslexia in Israel

School counsellors and psychologists who assess dyslexia in Israel may benefit from the fact that while my four-month cognitive intervention programme with 'dyslexic students' in Israel, studying English as a foreign language improved the six students' cognitive functioning in English, it was insufficient in enabling these students to allay their fears regarding the expectations of Israeli society, and their ability to succeed in life. Therefore, school counsellors and psychologists who usually recommend parents remedial intervention programmes in English as an FL might recommend other emotional therapies as well, explaining to the parents the restriction of a solely cognitive change of the reading intervention programme.

### 5.5.3 Implications for parents of 'Dyslexic Students' and 'Dyslexic Students' in Israel

Parents of 'dyslexic students' and 'dyslexic students' in Israel may benefit from the fact that while my four-month cognitive intervention programme with 'dyslexic students' in Israel, studying English as a foreign language improved the six students' cognitive functioning in English, it was insufficient in enabling these students to allay their emotions of frustration and anxiety. Therefore, being aware of the restriction of the reading

intervention programme, the parents and the students, will be able to set expectations with themselves before commencing the intervention. Moreover, they will be aware of the fact that there might be a need for an additional emotional therapy to allay their emotions of frustration and anxiety.

## 5.6 Propositions for Further Research Work

The results of this research, being inductive in nature, suggest a number of possible directions for further research work.

This research studied the effects of a four-month short term intervention programme on six research 'dyslexic students', where there was an improvement in the students' cognitive functioning in English, however, the intervention was insufficient in enabling the students to allay their fears regarding the expectations of Israeli society, and their ability to succeed in life. Therefore, I would suggest conducting a longitudinal follow-up research to study the continued functioning in English of these students over time, and to find out if the students' emotions of frustration and anxiety were allayed after a longer period.

The study's small sample size of six research participants, although consistent with positive findings of other multiple case studies using only four research participants as mentioned above, limits my research findings' strength, therefore, I would suggest conducting the same research with a larger population, bearing in mind the limitations of methodology, methods and sample, which were mentioned in section no. 5.1 (Limitations of the Research).

My research points to the fact that while the four-month cognitive intervention programme with the six 'dyslexic students' in Israel, studying English as a foreign language improved the students' cognitive functioning

in English, it was insufficient in enabling them to allay their fears regarding the expectations of the Israeli society, and their ability to succeed in life.

As mentioned above, my cognitive intervention programme can be considered as the teacher-mediated intervention recommended by Pierce (2004) within the private sector as suggested by the *Policy Guidelines on Inclusion in Education* (UNESCO 2009). Based on this phenomenon it seems that an emotional intervention programme combined with the research cognitive one would be more effective in helping these 'dyslexic students' overcome their frustration and anxiety, as these strong emotions constituted an obstacle which prevented the students from validating their own improvement in English. That is, the lack of change in the emotions of frustration and anxiety prevented the six research participants from validating the encouraging cognitive change. This is in accordance with research conducted by Margalit, M. (2000), Mishna, F. and Muskat, B (2004), Zafiropoulou and Karmba-Schina (2005), Schnitzer, G., Andries, C. and Lebeer, J. (2007) and Shectman, Z. (2010), all of whom were mentioned in the theoretical perspectives chapter and claimed that an emotional intervention, for 'dyslexic students', encompassing a cognitive one was more efficient in producing significant and durable effects on 'dyslexic students' cognitive skills and considerably increased their sense of academic self-confidence.

The scholars mentioned above referred to an emotional intervention encompassing the cognitive one which was carried out in the native language (L1) of the 'dyslexic students'. However, concerning the six present research Israeli 'dyslexic students' whose L1 is Hebrew, it appears that combining an emotional intervention with the combined reading in English as a foreign language (FL) intervention programme, might be more efficient in producing significant and durable effects on the 'dyslexic

students' positive cognitive changes and might increase their self-confidence, and decrease their anxiety and frustration which are preventing the students from validating their own improvement in English. For this reason, I would suggest combining an emotional intervention programme with the English as an FL cognitive intervention one, where both interventions are applied simultaneously. Moreover, the emotional intervention programme might be constructed by a psychologist following the four stages of improvement as discussed in the discussion chapter. Furthermore, the emotional intervention programme might take in consideration the students' frustration caused by the granted tests accommodations in the English subject, and the students' anxiety caused by the particular role of the English language in Israel. The combined emotional intervention with the reading in English as a foreign language (FL) intervention programme can be considered as the teacher-mediated intervention recommended by Pierce (2004) within the private sector as suggested by the *Policy Guidelines on Inclusion in Education* (UNESCO 2009). Therefore, I would propose conducting a further action research study which will examine the implementation of an additional emotional intervention to the cognitive one. The development of the emotional intervention will enable evaluation of the effects of a combined cognitive and emotional programme on 'dyslexic students' in Israel studying English in the inclusive EFL classroom.

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# Appendix 1: Examples of reading comprehension passages according to the modular structure of the English as a foreign language matriculation examination in Israel

## MODULE A

### USED GYM EQUIPMENT FOR SALE ONLINE! (unseen)

Are you looking for some gym equipment? You don't have to buy new. If you are ready to buy second-hand, you can find some really great buys on your computer at www.E-gymshop.com. Here are some examples:

### TUNTURI EXERCYCLE

The Tunturi Bicycle Company in Finland invented this exercise bike in 1969. It works as well as any of today's exercise bicycles. The Tunturi Exercycle is easy to put together and includes a clear set of instructions.

### TOTAL GYM

The Total Gym was one of the most popular exercising machines during the eighties, when actor Chuck Norris and model Christie Brinkley advertised it. This exercise machine helps you strengthen your entire body. It gives your body a good workout and helps you build muscle.

### THIGH MASTER

In 1988 actress Suzanne Somers introduced this exercise aid to the market. Ten million people have bought it. The reason it is so popular is because it is simple to use and it doesn't take long before you see the results. Sportspeople use it today before competitions to strengthen leg

muscles. It's really worth getting one!

**USED GYM EQUIPMENT FOR SALE ONLINE! (questions)**

1. CIRCLE THE NUMBER OF THE CORRECT ANSWER, (Lines 1-4)
   This equipment is on sale (-).
   i) at a store
   ii) at a gym
   iii) on the Internet

2. CIRCLE THE NUMBER OF THE CORRECT ANSWER.
   'Second-hand' equipment (line 2) means that (-).
   i) you use the machine with two hands
   ii) the machine is not new
   iii) you are buying the machine from the manufacturer

3. CIRCLE THE CORRECT ANSWER: YES or NO. (Lines 5-8)|
   The Tunturi Exercycle is difficult to build. YES/NO

4. COMPLETE THE SENTENCE, (Lines 14-18)
   The Thigh Master helps a person to.....

5. PUT A ✓ BY THE CORRECT ANSWER. (Write **THREE** answers.)
   According to the online advertisement, what is true about the equipment?

| | **Tunturi Exercycle** | **Total Gym** | **Thigh Master** |
|---|---|---|---|
| It helps build your strength before competitions. a) | | | |
| It was invented over 30 years ago. b) | | | |
| Two famous people helped to sell it. c) | | | |

## MODULE B

### THE BIG GREEN BUS (unseen)

Have you seen a large green bus in your city? Perhaps you smelled the bus before you saw it.

The Big Green Bus was a special experiment by a group of students from Dartmouth College. These students were looking for a cheap way to travel across the country to sports competitions. They also wanted to make people more aware of alternative fuels for cars and trucks.

The students remodeled the inside of an old yellow school bus, which they bought for $2,500. They added tables and chairs to the front of the bus, and places to sleep in the back of the bus. They also rebuilt the engine so it could run on vegetable oil that is used by fast food restaurants and then thrown away every day.

When they traveled, the students looked for restaurants that left barrels of used oil outside. After getting permission from the managers to take the free oil, the students used a hose to pump the oil into a special tank on the bus. The oil was heated and filtered and then used just like regular gasoline fuel. 'It's a flavor-of-the-week kind of deal,' said one student. 'It could smell like fries, burgers, Mexican or Chinese food.' It all depended on where the students refilled the bus tank.

Everywhere they went; the students talked to people about global energy and invited them to visit their website. Their experiment was such a success that other students are planning trips of their own. So on your next visit to America; sniff the air for buses running on vegetable oil.

### THE BIG GREEN BUS (questions)

1. COMPLETE THE SENTENCE. (Write ONE word in each space) (Lines 1-2)

How could people recognise the students' special bus?

People could recognise the bus by its.....
and by its.....

2. Why did the students do the experiment? Give **ONE** reason. (Lines 3-6)

ANSWER:

.....

3. What **TWO** things did the students do to prepare for their trip? (Lines 7-11)

ANSWER:

1)

.....

2)

.....

4. PUT A ✓ BY THE **TWO** CORRECT ANSWERS (Lines 10-14)

Which of the following were **NOT** done when the bus was refueled during the trip? (Lines 12-18)

..... i) The students poured the oil into the bus using barrels.
..... ii) A filter cleaned the oil
..... iii) The oil was put into a special tank
..... iv) The students bought the oil from restaurants.
..... v) The oil was heated by the engine.

5. CIRCLE THE NUMBER OF THE CORRECT ANSWER. (Lines 12-18)
Before the students took oil that was left outside of restaurants they

i) checked the oil to make sure it was clean
ii) Asked if they could take the oil
iii) Smelled it

6. a) CIRCLE THE CORRECT ANSWER: YES or NO. (Lines 19-22)

The students' experiment will be repeated. YES / NO

b) Copy the words that justify your answer.

.....

7. How can you learn more about the students' experiment? (Lines 19-22)

ANSWER: .....

**MODULE C**

**THE NEED TO READ (unseen)**

Is reading a thing of the past? Everyone used to agree that reading was a good thing. Now it is just not cool. Are people's attitudes toward reading changing?

British chef Jamie Oliver doesn't read books. Of course, he is very busy with his TV show and other projects, but he says that this is not the reason. He says that books are boring. Oliver is not the only famous person who says that. According to Britain's most popular TV presenter, Carol Vorderman, Shakespeare, one of the world's greatest writers, is 'dull'.

Dr. Hugh Jolly, an expert in the field of raising children, says children must first learn and experience the real world. The world is 'exciting, fun, educational - and frightening – enough'. Also he feels that if children stick their heads into a book too early, they will lose opportunities to develop social skills.

Many people are disturbed by anyone who is critical of books. Writer Susan Hill says she 'screams in rage' when rich and famous people proudly say they never read books. For Hill, books are a source of enrichment. 'I have loved books, been ... formed by them, taught and guided and inspired by them all my life.' People are influenced, she says, by what famous people say and do. If their role models think books are boring, they'll follow their lead and decide that reading is unimportant.

Millions of children today enjoy reading the Harry Potter series. However, when children admit that they love reading in general, their friends often make fun of them. 'It was better in the past,' says librarian Juliana Rodgers, 'when reading wasn't anything to be ashamed of.' Is it too late to get children back into the habit of reading?

**THE NEED TO READ (questions)**

1. CIRCLE THE NUMBER OF THE CORRECT ANSWER.
   What is the purpose of the article?
   i) to criticise Oliver and Vorderman
   ii) to discuss the change in attitudes toward reading
   iii) to show what the disadvantages of reading books are
   iv) to praise writers and librarians

2. Name **ONE** thing that Oliver and Vorderman have in common, **apart from** not liking books, (lines 3-7).

   ANSWER: .....

3. Why is Vorderman's comment about Shakespeare surprising? (lines 3-7)

ANSWER: .....

4. What is the meaning of the word 'field' as it is used in line 8? Circle the number of the correct dictionary definition.

i) **field** (n.) an area of land on a farm

ii) **field** (n.) an area of land used for sports

iii) **field** (n.) an area of study or knowledge

iv) **field** (n.) an area affected by something

5. 1) COMPLETE THE SENTENCE ACCORDING TO LINES 8-11.

Dr. Jolly believes that children should read only after.....

.....

2) Give **ONE** reason why Dr. Jolly thinks so.

.....

6. a) CIRCLE THE CORRECT ANSWER: YES or NO. (lines 12-17)

Susan Hill agrees with Oliver and Vorderman's comments about books.

YES / NO

b) Copy the words that justify your answer.

7. Name **TWO** ways books have influenced Susan Hill, (lines 12-17)

ANSWERS:

1) .....

2) .....

8. Why does the writer mention the Harry Potter series? (lines 18-22)

ANSWER: .....

9. COMPLETE THE SENTENCES, (lines 18-22)

According to the librarian Juliana Rodgers, how was reading books among children in the past different than today?

1) In the past, .....

2) Today, when children read .....

**MODULE D**

**A MATTER OF LIFE AND DEATH (unseen)**

Dear Editor,

I was shocked when I read your article about convicted criminals who are awaiting the death penalty in America. Since the United States Supreme Court made the death penalty legal in 1976, more than 700 prisoners have been executed, and 3,700 are still waiting on Death Row. The U.S.A. is the only major western democracy to put prisoners to death. This, in my opinion, is immoral.

There are arguments for and against the death penalty. Advocates for the death penalty claim that it is an appropriate punishment for the crime of murder. They claim that the death penalty deters crime. In addition, it saves the state the cost of keeping criminals in high security prisons and prevents convicted criminals from returning to the streets.

I, like many other people, oppose the death penalty. We believe that it is a crime to take a life for a life. Moreover, the death penalty in the U.S.A. is often accompanied by many social injustices. Statistics show that African-Americans and Hispanics are far more likely to be sentenced to death than whites and that the poor are condemned more often than the rich. Furthermore, research has found that the death penalty does not deter crime.

In contrast to the U.S.A., most western democracies have already abolished the death penalty or, at least, no longer use it. For example,

in Britain, the last 20 execution was in 1964, and the death penalty was finally abolished by law in 1965. If we Americans do not want to stoop to the same low moral level as the criminals who take life, we must do everything in our power to change the present situation. We, like the Europeans, can also rewrite our laws.

Jeremy Macmillan

**A MATTER OF LIFE AND DEATH (questions)**

1. What is the writer's opinion of the death penalty? (lines 2-6)

   ANSWER: .....

2. According to the writer, why is it surprising that America has the death penalty? (lines 2-6)

   ANSWER: .....

3. What is the meaning of the word 'advocates' as it is used in line 7? Copy the correct definition from your dictionary or explain it in your own words.

   ANSWER: .....

4. Give **TWO** arguments in favor of the death penalty, (lines 7-11)
   ANSWER:

   1) .....

   2) .....

5. The writer states that the death penalty is often 'accompanied by many social injustices'. Name **ONE**. (lines 12-17)

   ANSWER: .....

6. COMPLETE THE SENTENCE, (lines 18-23)

Britain is mentioned as an example of .....

7. According to the writer, if America continues to have the death penalty, (-).
   i) the rate of crime in America will decrease
   ii) America will behave in a similar manner to criminals
   iii) America will behave in a similar manner to England
   iv) the rate of crime in America will increase
8. The writer of this letter wants to abolish the death penalty. How does he recommend this can be done?

   ANSWER: .....

**MODULE E**

**A MODERN NOAH'S ARK (unseen)**

The future of humanity could lie within a large concrete room, cut out of a mountain on a freezing-cold island 1,000 kilometers from the North Pole. The room is a 'Doomsday vault' designed to hold around two million seeds, representing all known varieties of the world's crops.

The vault is being built to safeguard the world's food supply against natural and man-made disasters such as climate change, earthquakes, terrorism and nuclear war. 'If the worst came to the worst, this would allow the world to reconstruct agriculture on this planet,' says Cary Fowler, director of the Global Crop Diversity Trust, an independent international organisation that is promoting the project.

The $3 million vault will be built deep inside a mountain on the remote Norwegian island of Spits Bergen. It will have meter-thick walls of reinforced concrete and will be protected by high-security, blast-proof doors. There will be no permanent security guards - but 'the mountains are patrolled by polar bears', Fowler says. The site has another

advantage. To survive, the seeds need freezing temperatures. Spits Bergen's year-round frost will ensure that the seeds remain alive. Even global warming would take many decades to penetrate the mountain vault.

The project will start by taking seeds from a network of seed banks around the world. 'We will then add samples from elsewhere until we have a complete set of the world's crop varieties,' says Fowler. The seed collection will represent the results of thousands of years of plant breeding by the world's farmers. Though most types of seeds are no longer widely planted, it is vital to preserve them as they contain important genetic material that is still used in plant breeding.

The project comes at a time when there is growing concern about the safety of existing seed banks. Many have been criticised for their poor security. In the late 1980s, for example, terrorists forced their way into an international potato seed bank in Peru, causing damage. 'This will be the world's most secure gene bank,' says Fowler. A committee that studied the project agrees. They concluded that the vault 'would essentially be built to last forever'.

(Based on 'Doomsday Vault to Avert World Famine' by Fred Pearce, *New Scientist*, January 12, 2006)

**A MODERN NOAH'S ARK (questions)**

1. What is the main purpose of the project? (lines 1-9)
   i) To recreate Noah's Ark.
   ii) To prevent an atomic war.
   iii) To collect all known varieties of plants,
   iv) To help people who survive a disaster.

2. What do the words 'The site' in line 14 refer to?

ANSWER: .....

3. Several factors were considered in choosing the location of the vault.

   Name ONE factor, (lines 10-16)

   ANSWER: .....

4. Fowler's remark in line 13 is meant to be (-).

   i) informative

   ii) critical

   iii) humorous

   iv) threatening

5. What are we told about the seeds in lines 17-22?

   PUT A ✓ BY THE TWO CORRECT ANSWERS.

   ..... i) Where they will come from.

   ..... ii) How many varieties there will be.

   ..... iii) How long it will take to collect them.

   ..... iv) Which types are widely used today.

   ..... v) Which types are the most important.

   ..... vi) Why it is important to include them all.

6. How will the vault be different from other seed banks?

   Name ONE way. (lines 23-28)

   ANSWER: .....

7. According to the writer, two main kinds of disasters endanger the world's food supply. Find ONE example of each in lines 5-9 and a specific example of each from another paragraph.

FILL IN THE THREE EMPTY BOXES IN THE TABLE BELOW.

| **Kind of disaster** | **Example from lines 5-9** | **Specific example from another paragraph** |
|---|---|---|
| Natural | climate change | (1) |
| Man-made | (2) | (3) |

**MODULE F**

**PLUTO (unseen)**

**INTRODUCTION**

At the time of its discovery in 1930, Pluto was counted as the ninth and outermost planet in the solar system. With a diameter of about 2,360 kilometers, Pluto is approximately two thirds the size of Earth's moon. It revolves around the sun once every 248 Earth years at an average distance of 5,880 million kilometers.

The most recently detected planetary body in the solar system, Pluto is the only one that has not yet been visited by a spacecraft. However, scientists anticipate that the New Horizons spacecraft, which was launched from Cape Canaveral, Florida in January 2006, will reach Pluto by 2015.

**OBSERVATION FROM EARTH**

All of the information astronomers have about Pluto comes from observation through powerful telescopes. Pluto was discovered as the result of a telescopic search initiated by the American astronomer Percival Lowell in 1905. Astronomers had previously noticed that the orbits of Uranus and Neptune were slightly irregular, and Lowell believed that this

might be caused by the existence of a distant planet beyond Neptune. Although Lowell's theory was later disproved (Pluto is too small to affect the orbits of the other planets), he turned out to be right about one thing: an unknown planet actually did exist beyond Neptune. It would take another 25 years, however, before Pluto was discovered - not by Lowell, but by another American astronomer, Clyde W. Tombaugh. That discovery is now seen as a lucky accident.

Little was known about Pluto for many years. Then, in 1978, astronomers discovered a large moon orbiting Pluto and named it Charon. With a diameter of 1,200 kilometers, Charon is slightly more than half Pluto's size, leading some scientists to call Pluto and Charon a double planet. In 2005, astronomers using the Hubble Space Telescope detected two more small moons orbiting Pluto.

**CLASSIFICATION OF PLUTO**

In recent decades, some scientists began to challenge Pluto's classification as a planet. Its much smaller size, its icy composition, and its location in the solar system set it apart from the other recognised planets. The term 'ice dwarf' was suggested to distinguish Pluto from the true planets.

In August 2006, the International Astronomers Union (IAU) voted to downgrade Pluto from 'planet' to 'dwarf planet'. However, it is by no means certain that this new status will be accepted universally. Arguments in support of continuing to call Pluto a planet, despite its small size, include its spherical shape, its internal structure, and the presence of an atmosphere and a set of moons. The strongest argument, however, may be historical: People have called Pluto a planet for about 80 years.

(Based on Encarta Online Encyclopedia, 2006)

**PLUTO (questions)**

1. What are we **NOT** told about Pluto in lines 1-9? PUT A ✓ BY THE **TWO** CORRECT ANSWERS.

   ..... i) Where it is located.

   ..... ii) How big it is.

   ..... iii) How it was discovered.

   ..... iv) How far it is from the sun.

   ..... v) When it was discovered.

   ..... vi) Where our information about Pluto comes from.

2. The discovery of Pluto is seen as a lucky accident because astronomers (-).
   (lines 10-21)

   i) had no reason to suspect it existed

   ii) were looking in the right place for the wrong reason

   iii) were looking in the wrong place for the right reason

   iv) couldn't have found it without the help of telescopes

3. According to lines 22-26, why are Pluto and Charon often called a double planet?

   ANSWER: .....

4. COMPLETE THE SENTENCE.

   In lines 27-31, the writer explains why.....

5. Why is the term 'ice dwarf' (line 30) suitable for Pluto?
   COMPLETE THE ANSWERS.

   (1) Because Pluto is .....

   (2) Because Pluto is .....

6. We can understand from lines 32-38 that all planets have certain

characteristics. Name **TWO**.

1) .....

2) .....

7. Why does the writer mention the fact that Pluto has been called a planet for about 80 years? (lines 37-38)
COMPLETE THE ANSWER ACCORDING TO LINES 32-38.

Because .....

**MODULE G**

**GOOGLE CENSORS ITSELF FOR CHINA (unseen)**

Google, the world's most popular Internet search engine, has decided to launch a new, censored version of its Chinese language site, Google.cn. Censorship on the site is not new. The Chinese government keeps a tight rein on the Internet and the information that can be accessed by its citizens, routinely blocking content that it considers a threat. Certain sites, such as the BBC news site, cannot be accessed at all, while other sites are heavily censored. So, for example, if a Chinese citizen tries to search for information about Falun Gong, a spiritual movement that is banned in China, he or she will be directed to a long list of articles condemning the movement. Other 'undesirable' topics include independence for Taiwan and the 1989 Tiananmen Square massacre.

Now, however, Google has decided to comply with the Chinese government's guidelines and censor itself. With a population of 1.2 billion, China is an incredibly attractive market for businesses. There are approximately 100 million Internet users in China, and their number is expected to nearly double in the near future. But a recent survey revealed that Google's share of the Chinese Internet market is declining. Google is counting on its new, self-censored site to help reverse this

trend. It hopes to gain a competitive edge by complying with the Chinese censorship rules, thus speeding up the site, which has been slowed down until now by Chinese government filtering.

China's strict censorship policy presents a moral dilemma to companies doing business there. 'The requirements of doing business in China include self-censorship,' explains Elliot Schrage of Google, 'something that runs counter to Google's most basic values as a company.' While the decision to censor itself may seem inconsistent with Google's mission to make information universally accessible, the company believes it has little choice.

Critics of Google's new policy disagree, accusing the company of putting profits before freedom of speech. The Paris-based media watchdog, Reporters Without Borders, says Google is being hypocritical, and described the launch of the new site as 'a black day for freedom of expression in China'. 'The company says it has no choice and must obey Chinese laws, but this is a tired argument,' says Julien Pain, head of Reporters Without Borders' Internet freedom desk. 'Freedom of expression isn't a minor principle that can be pushed aside when dealing with a dictatorship,' Pain says. He has called on Google to stand up for the same freedom of speech in China that it is so anxious to protect in the West.

Google counters that despite the compromises involved, it can play a more useful role in China by participating rather than by boycotting it. Google's official statement declares: 'While removing search results is inconsistent with Google's mission, providing no information ... is more inconsistent with our mission.'

(Based on 'Google censors itself for China' news.bbc.co.uk, January 25, 2006)

**GOOGLE CENSORS ITSELF FOR CHINA (questions)**

1. How is Google's new site different from its old site? (lines 1-19) The new site is (-).
   i) censored
   ii) not censored
   iii) censored by the Chinese government
   iv) censored by Google itself

2. COMPLETE THE SENTENCE.
   In lines 11-19, the writer explains why

   .....

3. Complete the following sequence of cause and effect according to lines 15-19?

| |
|---|
| (1Google will comply with Chinese censorship rules. |

↓

| |
|---|
| (2) The Chinese government won't have to..... ..... |

↓

| |
|---|
| (3) As a result, the site will be speeded up. |

↓

| |
|---|
| (4) Google's share of the Chinese market..... ..... |

4. What is Google's moral dilemma in China? (lines 20-25)

COMPLETE THE SENTENCES.

(1) On the one hand, .....

.....

(2) On the other hand, .....

.....

# Appendix 2: Sample of a Typical Top-down Approach Followed by Bottom-up Approach Session

**Activity 1 (5 minutes):**

The student is asked to repeat words out loud as oral training.

For example: **cat, hat, fat, sat, rat, mat, sad, mad, had, man, ran, ham, bag, tag.**

**Activity 2 (3 minutes):**

The student is introduced to the written words of activity 1 where I show the student a word (whole word) and read it aloud.

**Activity 3 (3 minutes):**

Using the 'hear-look-and-say' method for each word, the student is asked to read the words of activity 1.

**Activity 4 (2 minutes):**

The student is taught the Hebrew meaning of the words of activity 1, and practises reading the words and saying their translation in Hebrew.

**Activity 5 (7 minutes):**

The student is introduced to sentences which are constructed from the words in activity 1. For example: 'The fat man had a cat.'; 'The cat had a hat.' The student reads the sentences using the 'hear-look-and-say' method for each word. Then the student reads the sentences independently.

**Activity 6 (10 minutes):**

Using computer programme THRASS.IT (Davies and Ritchie, 1998) the student practises the exercise called 'Choose a phoneme'.

**Activity 7 (10 minutes):**

Using computer programme THRASS.IT (Davies and Ritchie, 1998) the student practises the exercise called 'Find a phoneme'.

# Appendix 3: Sample of a Typical Bottom-up Approach Followed by Top-down Approach Session

**Activity 1 (5 minutes):**

The student is asked to repeat these words out loud as oral training.

For example: **dog, cot, hot, top, hop, stop, box, fox, on, soft, cold, cop, comb, mop.**

**Activity 2 (3 minutes):**

The student is introduced to the written words of activity 1, where I show the student the graphemes of each word and link them to the phoneme of each grapheme (grapheme/phoneme correspondence).

**Activity 3 (3 minutes):**

Using the 'hear-look-and-say' method for each grapheme/phoneme correspondence the student is asked to read each grapheme/phoneme correspondence of the words in activity 1.

**Activity 4 (2 minutes):**

The student is taught the Hebrew meaning of the words of activity 1 and practises reading the words using the 'hear-look-and-say' method for each grapheme/phoneme correspondence and saying their translation in Hebrew.

**Activity 5 (7 minutes):**

The student is introduced to phrases or sentences which are constructed from the words in activity 1. For example: 'the dog on the box', 'the hot fox and cold cop'. The student reads the sentences using the 'hear-look-and-say' method for each word. Then the student reads the sentences independently.

**Activity 6 (10 minutes):**

Using computer programme THRASS.IT (Davies and Ritchie, 1998) the student practises the exercise called 'Choose a word'.

**Activity 7 (10 minutes):**

Using computer programme THRASS.IT (Davies and Ritchie, 1998) the student practises the exercise called 'Find a word'.

# Appendix 4: Pre- and Post-Intervention Assessment

### 1. Word repetition task

The student is asked to repeat each word out loud:

1. dog
2. cat
3. teacher
4. box
5. pen
6. day
7. snake
8. man
9. bed
10. school
11. birthday
12. sun
13. sky
14. book
15. table
16. chair
17. horse
18. car
19. bus
20. computer

**2. Non word repetition task**

The student is asked to repeat each pseudo word out loud:

1. ket
2. lum
3. mup
4. ret
5. spige frut
6. trum
7. ronch
8. tarp
9. horp
10. brid
11. nate
12. fode
13. wike
14. drup
15. hin
16. nabe
17. keld
18. proog
19. cren
20. dob

**3. Alliteration (same initial phoneme)**

The student is asked to repeat the one word out of the three out loud that has a different initial phoneme:

1. gap got **nod**

2. net **dig** nip

3. **rope** take time

4. big **pit** ball

5. form fat **van**

6. **train** plane prone

7. spade start **break**

8. crumb **twist** climb

9. pram **trap** plan

10. great glue **crane**

**4. Rime (same final phoneme)**

The student is asked to repeat out the one word out of the three out loud that has a different final phoneme:

1. fog log **bag**

2. neck peck **beg**

3. nap **hip** sap

4. pen hen **pet**

5. **red** big dig

6. hid did **dub**

7. pack **buck** rack

8. **buckle** puddle muddle

9. tone **home** phone

10. ship rip **stop**

**5. Sound discrimination**

The student is asked to distinguish whether the pair of words sounds the same or different:

1. rip tip

2. sick sack

3. side side

4. pet bet

5. big bog

6. sit sit

7. bed pad

8. dam mad

9. slow snow

10. lab lap

11. fish fish

12. shelled shieled

13. halt hall

14. ship chip

15. nib nip

**6. Deletion of syllables**

The student is asked to delete the syllable in bold, then repeat the remaining syllable out loud (example: bookcase without **book** says case):

1. **lap**top (top)

2. birth**day** (birth)

3. **black**bird (bird)

4. **light**house (house)

5. foot**ball** (foot)

6. hand**book** (hand)

7. **friend**ship (ship)

8. **bat**man (man)

9. hot**pot** (hot)

10. **sea**weed (weed)

**7. Deletion of initial phoneme**

The student is asked to delete the initial phoneme, then repeat the remainder of each word out loud (example: pat without **p** says at):

1. **r**at (at)

2. **b**it (it)

3. **f**all (all)

4. **n**eat (eat)

5. **p**rice (rice)

6. **m**ate (ate)

7. **d**itch (itch)

8. **s**lam (lam)

9. **c**ouch (ouch)

10. **p**inch (inch)

**8. Deletion of last phoneme**

The student is asked to delete the final phoneme, then repeat the remainder of each word out loud (example: pat without **t** says pa):

1. ca**t** (ca)

2. do**g** (do)

3. re**d** (re)

4. chi**p** (chi)

5. moo**n** (moo)

6. anima**l** (anima)

7. star**t** (star)

8. gol**d** (gol)

9. pape**r** (pape)

10. sin**g** (sin)

**9. Phoneme segmentation (Blending of phonemes into words).**

The student is asked to blend each group of phonemes into a word and say it out loud.

1. t-o-p

2. p-i-n

3. f-a-t

4. c-u-t

5. s-e-ll

6. s-t-o-ck

7. s-p-e-n-d

8. r-a-bb-i-t

9. h-o-s-p-i-t-a-l

10. e-s-c-a-l-a-t-o-r

**10. Phoneme segmentation (Breaking words into phonemes).**

The student is asked to break each word into a group of phonemes and say them out loud.

1. set

2. get

3. bus

4. mat

5. cat

6. dishes

7. morning

8. mystery

9. department

10. expensive

**11. Single word reading test (grapheme / phoneme correspondence).**

The student is asked to read these words out loud:

1. tree
2. little
3. milk
4. egg
5. book
6. school
7. frog
8. bun
9. flower
10. road
11. picture
12. crowd
13. biscuit
14. knife
15. disease
16. audience
17. recent
18. island
19. attractive
20. saucer

**12. Single pseudo word reading test (grapheme / phoneme correspondence).**

The student is asked to read these pseudo words out loud:

1. gat
2. rop
3. pim
4. fot
5. lub
6. hin
7. chog
8. shug
9. hild
10. trum
11. pran
12. nabe
13. narge
14. higure
15. ligtade
16. kibnick
17. pachine
18. clabnag
19. tringdom
20. cromgat

**13. Passage reading test (pace, accuracy and comprehension):**

The student is asked to read a reading comprehension passage (unseen) out loud and answer its questions orally. The reading comprehension passages are chosen according to the level of module each students is design to in their inclusive EFL classroom in school. For an example of reading comprehension passages see Appendix 1.

# Appendix 5: The emergent themes listed under the three categories: cognition, emotions and behaviour, accompanied by quotations from the different research tools

## Examples of the themes listed under the first category – Cognition:

### Theme no. 1: Learning difficulties

**Sub themes:**

1. **Reading is most difficult:**

- 'I am not able to read English'.
- 'Reading is the most difficult thing. That is why I fail all the unseen texts'.
- 'I have a huge difficulty with reading English'.
- 'It is easier for me to understand a text when someone reads it to me, but I can't read it by myself'.
- 'Reading is the most difficult thing. That's why I fail all the unseen texts'.

2. **Reading comprehension is most difficult:**

- 'My biggest problem is reading and reading comprehension'.
- 'It is very difficult for me to read. And if I manage to read I don't understand what I read'.
- 'Even if I try to read I don't understand anything. That is why I prefer someone to read the text for me'.

- 'I always fail all the unseen texts because I don't understand what I read'.
- 'Even if I read some words I don't understand anything. I am sure that I don't read them correctly'.

**Theme no. 2: Method of Intervention**

**Sub themes:**

1. **Bottom up/Top down:**

- 'It helps me a lot working first on sound and then on words'.
- 'It really helps me working with words and then with sound. Not only with you but also with the computer'.
- 'Breaking up the words into sounds helps me with the computer tasks'.
- 'Working on words and then on sounds helped me understand that there are sounds in words'.
- 'The fact that we work on sounds and then on words, and vice versa, is very helpful. I succeeded to write correct words on the computer'.
- 'Working on words and sounds in the same lesson helps me to understand that there are sounds in words. And that there are many sounds to one letter. I enjoyed finding out'.

2. **Pre knowledge of tasks enhances confidence:**

- 'It was good that I knew in advance that first we would deal with sounds and then with words. It helped me with the lesson tasks, I think'.
- 'Knowing in advance how the lesson is built gives me a good feeling'.
- 'The fact that the lessons are alike is very encouraging'.

- 'I felt great when I told you what was going to be next task in the computer, and I was right'.
- 'It makes me feel confident that I know in advance what we are going to do in the lesson'.
- 'It makes me feel more confident that the exercises are alike each other'.

**3. Repetitive exercises enhance confidence:**

- 'It helps that the lessons are similar to each other. It gives me confidence. I know what to expect'.
- 'It gives me a good feeling to repeat again and again the words and the sounds. Later I feel more confident'.
- 'I do not mind having the same exercises again and again. It makes me feel better when I know the correct answers'.
- 'It makes me feel more confident that the exercises are alike each other'.

**4. Working with the computer:**

- 'Working first with you really helps me with the computer tasks'.
- 'It is fun working with the computer. Even you cannot see my failures'.
- 'It helps that I repeat the sounds and words on the computer and not just with you'.
- 'I fail less on the computer tasks. It is fun'.
- 'Combining also exercises on the computer helped me a lot today'.
- 'It is good that I work with you and with the computer. It is no boring'.
- 'I enjoy working also with the computer. It is less boring like this'.
- 'It was good that I repeated the sounds and words also with the computer and not just with you. It was less boring'.

- 'Today I really enjoyed working on the computer. I always enjoy it. It is not boring'.

**Theme no. 3: Improvement**

**Sub themes:**

1. **'Still not helping' - weeks 1-5:**

**1. Low self esteem:**

- 'I am probably dumb because I still do not feel any improvement at all'.
- 'It is not surprising that I still do not feel any improvement because I am a failure'.
- 'I still do not feel any improvement at all. I will probably not be able to get rid of the accommodations'.
- 'I am still very disappointed that I have not felt any improvement yet. I want to be like my non dyslexic classmates'.
- 'I am probably stupid because I still do not feel any improvement at all'.

**2. But there is a slight improvement:**

- 'I still do not feel any improvement, but during the last English lesson at school I listened better to my English teacher'.
- 'I still do not feel any improvement but I find it easier to listen to my English teacher'.
- 'There isn't any improvement yet. However I decided that I was going to listen to the teacher and I understood some words that she said. These were words that we worked on her with you'.
- 'There isn't any improvement, maybe a very small one'.

2. **'Slight improvement'- weeks 6-10:**

**1. Less afraid:**

- 'I am less afraid to listen to the teacher'.
- 'I don't know if it is an improvement but I am less afraid of the English lessons'.
- 'There is a slight improvement; I find it easier to listen to the teacher'.
- 'I am less afraid to read by myself and I even dare to read in the English lesson'.

3. **'Improvement' - weeks 11-15:**

**1. Reading:**

- 'I have started to feel an improvement in my reading'.
- 'I feel an improvement in reading words and even sentences'.
- 'I feel an improvement in reading words especially when I break them into sounds as we do here with you'.
- 'There is an improvement in reading; I can feel it here and in school'.
- 'I have started to feel an improvement in reading English'.

**2. Reading comprehension:**

- 'I can feel an improvement not only in reading words and sentences, but also in reading a passage and understanding it'.
- 'Last week I read aloud in class and I also understood what I read'.
- 'I have started to understand the passage and also the questions of the passage. Some of them were correct'.

- 'I read better. I understand better. Today during the English lesson in school I even answer some questions by myself. Not all of them were correct but more than before'.

**4. 'Significant improvement, but…' - weeks 16-20:**

**1. Enhancement of self esteem:**

- 'There is a real improvement in reading English. I also participate in the lessons'.
- 'Last week I read the unseen alone and answered the questions. I felt more confident about English when I saw that most of them were correct'.
- 'Now after four months I can really say that I have improved in English. I read and I understand what I read'.
- 'I have more confidence to participate in the class because I read better and I know more words so I understand better the unseen'.
- 'I have more confidence to raise my hand and participate in the English lesson'.
- 'I really enjoy the English lessons now that I can read much better'.

**2. Improvement of self efficacy:**

- 'My marks in English have improved. I haven't failed a test lately. Even my basketball playing improved'.
- 'I feel that I can get a good mark in the matriculation test in English'.
- 'I feel that I can read better. That I have the ability to read better and understand what I read'.
- 'I feel that I have the ability to take the matriculation test in English. My marks have improved'.

**Examples of the themes listed under the second category – Emotions:**

**Theme no. 1: Feelings**

**Sub themes:**

1. **Sadness:**

- 'I was always sad when I got a bad mark in English'.
- 'I was very sad and I cried a lot when I understood that I need the accommodations in English'.
- 'I felt such sadness when I thought that I might not become a doctor eventually'.
- 'I was really down because I want to study at the university'.

2. **Disappointment:**

- 'I was very disappointed in myself for being a failure in English'.
- 'I was very disappointed in myself. Why is it that I can't study English like all the other 'non-dyslexic students'.
- 'Failing again in English was a huge disappointment and I was afraid that I might not become a doctor eventually'.
- 'I was really disappointed in myself for not succeeding in English and I felt a huge failure'.

3. **Anger:**

1. **towards oneself:**

- 'I was angry at myself for being such a failure'.
- 'I was angry at myself for not knowing English'.

- 'I get so annoyed with myself every time I get a bad mark in English'.
- 'Every time I failed an English test I became angry and I cried a lot'.

**2. towards others:**

- 'I was angry at the English teacher who didn't teach me properly'.
- 'I was angry at my brother because he knew English good'.
- 'I was angry at my English teachers because they never helped me with my English'.
- 'I was angry at my parents because they pushed me to succeed in English but I couldn't do any better'.

**4. Failure:**

- 'I felt that I was a total failure'.
- 'I was very disappointed for being such a failure'.
- 'I felt that I was a total failure'.

**5. Anxiety:**

- 'I am really afraid that I won't be able to succeed in the English matriculation examination'.
- 'I am afraid to end up my life like my mother, a simple cosmetician'.
- 'I am afraid to be just nobody if I fail doing the English matriculation examination'.
- 'I am afraid of not becoming a doctor in the future'.
- 'I am so afraid that I will not succeed in life'.
- 'I am afraid of being my eldest brother's shadow without being able to manage by myself because I don't know English'.

6. **Shame:**

- 'I am so ashamed of being dyslexic and different from the other students'.
- 'Maybe I will not have to use the accommodations in English any more because it is a huge shame to be different from all the other 'non-dyslexic students'.
- 'I am so ashamed of being dyslexic because people think that you are a retarded person'.
- 'I am so ashamed of being different of all the other students who do not have to use accommodations in English'.
- 'I like it here because I study alone and no one from my classmates sees that I fail in English'.
- 'I am happy that all my classmates do not see that I need special tutoring'.
- 'I hate failing but at least nobody can see it here. And today I failed a lot'.
- 'I hate it when my classmates see my failures that are why I am happy here just with you'.

**Theme no. 2: Tests accommodations**

**Sub themes:**

1. **Positive effect:**

- 'After I was granted the accommodations for the English subject my marks improved'.
- 'When my English teacher reads the passage for me and then also the questions, it is easier for me to answer these questions'.
- 'I prefer the English teacher to read the passage for me several times then I can answer the question OK'.

- 'Using the electronic dictionary helps me a lot in the English tests'.
- 'It helps me to know that I have more time than others for my English tests. I am less stressed'.

**2. Being labelled:**

- 'In grade seven I was granted accommodations in the English subject. But, I am very ashamed to take the English tests in my class using the accommodations because then everybody can see that I am different'.
- 'Maybe there is a chance to get rid of the accommodations and then I will stop being dyslexic and different from others'.
- 'I do not want the accommodations because I study English in an inclusive class and it is such a shame that I am with accommodations and the rest of the students in my class are not'.
- 'I am waiting for the day when I know English perfectly. Then I will not have to use the accommodations any more and I will not be dyslexic any more'.
- 'I envy all my friends because they do not need the accommodations. The accommodations make me different and less smart'.
- 'It is obvious that I am not smart because I need the accommodations. And I need them because I am a 'dyslexic student'.

**3. Getting rid of tests accommodations:**

- 'I hope the day comes when I know English perfectly and so I will get rid of the accommodations and will stop being a 'dyslexic student'.
- 'I am so embarrassed to have the accommodations. I hope to improve my reading in English so I can get rid of them altogether'.

- 'I want to be like all the other students. I want to be able to succeed in my English tests without the accommodations'.
- 'I know that the accommodations are for my own good but I still want to get rid of them. If I do I will feel worthy'.
- 'I want to get rid of them. People think you are a moron if you have accommodations'.
- 'I want to be like my friends. For that to happen I must get rid of the accommodations'.

**4. Improvement but…**

**1. Pre reading intervention programme:**

- 'My marks in the English tests improved after I got the accommodations, but it does not count because it was with accommodations'.
- 'My marks in English improved after I got the accommodations, but the improvement is not worth it because it was with accommodations'.
- 'If I take a test in English with the accommodations I succeed better. But it does not count because it is with accommodations and I am still different from my classmates'.
- 'When I got the accommodations in English in the 9th grade, my marks improved but it did not count because I was different from my friends who succeeded without accommodations. I wanted to be like them'.
- 'The fact that I get higher marks in English does not worth anything because it is with accommodations. I want to succeed without the accommodations. To be like all my classmates'.

**2. Post reading intervention programme:**

- 'There is an improvement in my English marks, but I want to reach the situation where I do not use the accommodations at all. Then I will know that I have succeeded'.
- 'There is an improvement in English. I read better and I understand better what I read. My marks have improved. But I want to succeed without the accommodations otherwise it does not count'.
- 'I read English and understand better now after the lessons here. My marks in English have improved but it does not count because I still have the accommodations. I hoped to get rid of them after I finish the reading programme with you'.
- 'Even though I got better in reading English, unseen tests and I have less spelling mistakes; these do not count because it is still with accommodations and it means that I am still different, I am still a 'dyslexic person'.
- 'My English has improved. My reading has improved. The marks of my English tests have improved. But all this does not count because I still have the accommodations. With accommodations I will not be able to become a doctor and everything is useless if I do not become a doctor'.
- 'My reading in English improved. My marks improved as well. Thanks to the improvement I am going to take the five point's matriculation examination. But I am disappointed from your programme because it did not cause me to get rid of the accommodations. I really wanted to get rid of the accommodations, to be like everybody else. Not to be different'.

**Examples of the themes listed under the third category – Behaviour:**

**Theme no. 1: Referring to the future**

**Sub themes:**

1. **Role of English in Israel:**

- 'I know that I have to succeed in the English matriculation test so I can be accepted to the university. I know that without the English matriculation examination I will not get a matriculation certificate and without it you cannot be accepted to the university'.
- 'If I do not succeed in the English matriculation examination I will not be able to study at any university'.
- 'Everybody knows that without the matriculation examination in English you are not accepted to the university'.
- 'I need to succeed in the five point matriculation examination in English otherwise I will not be accepted to the medicine faculty in the university'.
- 'Everybody knows that if you fail the matriculation examination in English you will not succeed in life'.

2. **Fear of future consequences:**

- 'I want to succeed in life. To have a good job where I have a good salary and I make money. For that I must succeed in the English matriculation test. This really scares me'.
- 'I must succeed in the English matriculation test and study in the university I will succeed in a good job. That means that I have succeeded in life. Otherwise I am just a failure. It scares me'.

- 'I am so afraid because if I fail the English matriculation test and I am not accepted to the university, my life is worthless. I will not succeed in life and I will be just a simple cosmetician like my mother and then my life is finished'.
- 'I am afraid because I know that the five points English matriculation test can open for me the world; study in the university, travel the world, get a good job. Then I can be proud of myself and have a curriculum vita of an honorable person and I will feel equal to others. I am afraid because English is so difficult for me'.
- 'I must be a doctor. If I fail the five points English matriculation test in English I will not be accepted to the medicine faculty in the university. It really scares me because if I do not become a doctor my life will have no purpose'.
- 'It is important for me to succeed doing the five points English matriculation test in English. I am afraid that I will not be able to do it. I need to succeed in the five points English matriculation test in English in order to reach important achievements in life'.

**3. Expectations:**

- 'I expect to get rid of the accommodations in English'.
- 'I really hope to learn to read English by myself so I can get rid of the accommodations in English'.
- 'I really want to succeed in the matriculation examination in English so I can succeed in life'.
- 'I hope that I will study to read by myself without the accommodations in English, then I can get rid of them and know that I am like everybody else'.
- 'I hope to succeed in the matriculation examination in English because I want so badly, to become a doctor'.

- 'I want to learn to read alone and to understand English by myself without the accommodations in English. Then I will be able to get rid of them'.
- 'I hope I succeed in the matriculation examination in English so I can succeed in life'.

## Appendix 6: Example of a pre- and post-intervention interview script in Hebrew highlighted according to the three different categories: cognition, behaviour and emotions

**Yuval's pre intervention interview script (03/2010):**

התחלתי ללמוד אנגלית בכיתה ב' והייתי בין המתקדמים עד כיתה ג'. בכיתה ג' אבא שלי נפטר ואז באה מורה חדשה והיא לא לימדה טוב

והתחלתי להתדרדר.

לא הבנתי את החומר והציונים ירדו ממאה לשישים.

הייתי מבואסת לגמרי. מאוד התאכזבתי מעצמי ומהמורה שלימדה אותי. כעסתי על המורה שלא לימדה טוב והזנחתי את האנגלית.

הזנחתי את המקצועה.

התאכזבתי מאוד מעצמי. הרגשתי שאני כשלון גמור.

בקיצור הפסקתי ללמוד אנגלית. לא הקשבתי בכיתה ולא עשיתי שעורים. לא התכוננתי למבחנים.

המורה לא השתלטה עלינו וחצי כיתה לא ידעה את החומר.

היה הרבה רעש ולא יכולתי להתרכז. עד כיתה ו' לא למדתי אנגלית ולא ידעתי מילים ולא היה לי אוצר מילים. בכיתה ו' היגיע מורה חדשה שהיה קשוח ועשה לנו כל הזמן מבחנים. אבל אני המשכתי לא ללמוד אנגלית ולא להתכונן למבחנים.

בשביל מה אני ממילא נכשלת.

התאכזבתי מעצמי כי רציתי להצליח ואם לא הצלחתי אז סימן שאני כישלון. ומה יצא ממני בעתיד. בלי אנגלית אין לי עתיד.

אני ידעתי שאני צריכה להצליח באנגלית כדי שאוכל ללמוד באוניברסיטה. אני ידעתי שבלי אנגלית לא מקבלים תעודת בגרות ובלי תעודת בגרות לא מתקבלים לאוניברסיטה. אני צריכה ללמוד באוניברסיטה כדי שתהיה לי עבודה טובה, שאני אצליח בחיים. שתהיה לי תעודה טובה. שאני אוכל להצליח בעבודה שאני ארצה כאשר אהיה גדולה. גם שאוכל לדבר אנגלית כאשר אני אסע לחוץ לארץ ושאני אסתדר שם לבד. אני רוצה להצליח בחיים. שתהייה לי עבודה טובה ושאני ארוויח טוב, שתהייה לי משכורת טובה. אני יודעת שצריך אנגלית בשביל זה.

אני מאוד מפחדת שאני לא אצליח לעשות מבחן בגרות באנגלית. בלי בגרות באנגלית אני אכשל בחיים. זה מאוד מפחיד אותי שאני לא אצליח בעתיד שלא יהיה לי עתיד.

כאשר הייתי נכשלת באנגלית הייתי מאוד עצבנית בבית עם אמא וגם עם אחי. אחרי מבחן שבו אני נכשלתי הייתי חוזרת הביתה וצועקת על אחי ורבה איתו על כל דבר. הייתי מתרגזת על אמא שלי וצועקת עליה ורבה איתה גם. הסתגרתי בחדר ולא רציתי לראות אף אחד ומאוד כעסתי והתרגזתי על אמא שלי.

כאשר הייתי נכשלת באנגלית הייתי מותרת לעצמי ופשוט מרימה ידיים. זאת אומרת שהייתי מפסיקה לנסות ללמוד אנגלית. לא הייתי מנסה להכין שעורים או ללמוד למבחנים.

הכי קשה לי קריאה והבנת הנקרא. אני לא מסוגלת לקרוא אנגלית. מה שאני כבר מצליחה לקרוא אני לא מבינה כלום. גם אוצר המילים שלי מאוד נמוך. אני יכולה ללמוד מילה חדשה אבל אני מיד שוכחת אותה. כאשר קוראים לי את הטקסט אני קצת יותר מבינה. הבעיה שלי זה קריאה ואוצר מילים.

בכיתה ז' קיבלתי התאמות באנגלית אבל אני מאוד מתביישת לעשות מבחן בכיתה עם ההתאמות כי אז כולם רואים שאני שונה. אני רוצה להיות כמו כולם בלי התאמות. זאת בושה גדולה להיות שונה מאחרים. אחרי שקיבלתי התאמות הציונים שלי באנגלית קצת השתפרו אבל זה לא חוכמה כי זה היה עם התאמות. אני רוצה שיפור באנגלית בלי שאצטרך להיות שונה ולהשתמש בהתאמות.

**ציפיות:**

עכשיו שאני מתחילה את התוכנית שלך אני רוצה לנסות להצליח. אני מצפה להצליח. אני מבטיחה לעצמי שאני אחשוב חיובי ואני אצליח. אולי פה אצלך אני אצליח כי זה נראה שונה מהכיתה. ואולי אני לא אצטרך להשתמש בהתאמות כי זה בושה גדולה להיות שונה מאחרים. אולי אחרי התוכנית אני אצליח באנגלית וגם בבגרות באנגלית ואז אני אוכל ללמוד באוניברסיטה ויהיה לי מקצוע טוב ואני אצליח בחיים.

**Yuval's post intervention interview script (08/2010):**

בהתחלה לא הרגשתי שום שינוי באנגלית. הייתי מאוד מאוכזבת מעצמי. הרגשתי שמשהו ממש לא בסדר אצלי כי אפילו התוכנית הזו לא עוזרת לי. הייתי מאוד מבואסת. עבר חודש ועוד חודש ואני עדיין לא מרגישה שיפור. הייתי ממש מאוכזבת מעצמי. ממש החלטתי להרים ידיים ולהפסיק לגמרי ללמוד אנגלית כי אם התוכנית הזאת לא עוזרת אז שום דבר לא יעזור ואני אשאר דיסלקטית כל החיים שלי.

אבל פתאום התחלתי לשים לב שאני מבינה יותר מילים. קודם מילים ואחרי כן משפטים. החלטתי להקשיב למורה

ושמתי לב שאני מבינה את המורה יותר טוב.

התחלתי להעיז להשתתף בשעורים.

ראיתי שיש לי יותר ביטחון להשתתף בשעורים.

הרגשתי שאני מתקדמת לאט. הרגשתי שיש לי יכולת ללמוד. שיש לי יכולת טובה ללמוד וזה עשה לי טוב אפילו שהציונים עדיין לא היו גבוהים כי אולי יש סיכוי שאני אפטר מההתאמות ואפסיק להיות דיסלקטית ושונה מאחרים. ראיתי שאני מבינה יותר מילים ואני גם מצליחה לקרוא יותר טוב.

שמתי לב שאני קוראת יותר טוב ומבינה את הקטע יותר טוב. ראיתי שאני מצליחה לענות על יותר שאלות .

כאשר השתתפתי ועניתי נכון

הרגשתי שעשיתי את זה, שהצלחתי. יש לי הרגשה שאני פחות מפחדת משעורי אנגלית.

אני נכנסת היום לשיעור אנגלית עם יותר רצון להצליח.

פחות פוחדת משעור אנגלית.

אחרי הארבעה חודשים ממש התחלתי להשתפר. אני יותר משתתפת בכיתה.

יש לי יותר ביטחון להשתתף כי אני יכולה לקרוא יותר טוב ואני יודעת יותר מילים אז אני מבינה יותר טוב את הקטע.

אני היום חושבת שיש סיכוי שאני כן יכולה לעשות בגרות באנגלית.

אני מרגישה שאני יכולה לקבל ציון טוב בבגרות באנגלית. חשוב לי לקבל ציון טוב בבגרות באנגלית כדי להצליח בחיים. כי בלי בגרות באנגלית אין לי חיים. אני לא אתקבל לאוניברסיטה ואני אהיה כישלון כל החיים שלי. אני לא רוצה התאמות כי אני לומדת אנגלית בכיתה רגילה וזה מבייש אותי שאני עם התאמות וכל יתר התלמידים בלי. אני מרגישה שונה. אני רוצה להיות כמו כולם.

היום יותר קל לי לקרוא ולהבין את מה שאני קוראת. יש לי אוצר מילים גדול יותר.

אבל אני רוצה להגיע למצב שאני לא משתמשת עם התאמות יותר. אז אני אדע שהצלחתי.

**ציפיות שהתגשמו:**

אני יותר מאמינה בעצמי שאני אצליח במבחנים באנגלית ובכל שער המקצועות. אני ביחסים יותר טובים עם אחי ועם אמא שלי כי אני פחות עצבנית. כי אני פחות נכשלת. אבל אני רוצה שיגיע היום שאני אדע אנגלית מצוין ואני לא אצטרך להשתמש בהתאמות, שאני לא אהיה דיסלקטית.

# Appendix 7: Example of a pre- and post-intervention interview script in Hebrew classified according to the different themes

**Yuval's pre intervention interview script (03/201):**

| | **Themes** |
|---|---|
| התחלתי ללמוד אנגלית בכיתה ב' והייתי בין המתקדמים עד כיתה ג'. בכיתה ג' אבא שלי נפטר ואז באה מורה חדשה והיא לא לימדה טוב והתחלתי להתדרדר. | Who is to be Blamed/ others |
| לא הבנתי את החומר והציונים ירדו ממאה לשישים. | Learning difficulties/ general difficulties in English |
| הייתי מבואסת לגמרי. | Feelings/sadness |
| מאוד התאכזבתי מעצמי ומהמורה שלימדה אותי. | Feelings/disappointment |
| כעסתי על המורה שלא לימדה טוב והזנחתי את האנגלית. | Feelings/anger towards oneself and others |
| הזנחתי את המקצועה. | dysfunction |
| התאכזבתי מאוד מעצמי. | Feelings/disappointment |
| הרגשתי שאני כשלון גמור. | Feelings/failure |
| בקיצור הפסקתי ללמוד אנגלית. לא הקשבתי בכיתה ולא עשיתי שעורים. לא התכוננתי למבחנים. | Dysfunction |
| המורה לא השתלטה עלינו וחצי כיתה לא ידעה את החומר. | Who is to be Blamed/ others |
| היה הרבה רעש ולא יכולתי להתרכז. | Who is to be Blamed/ others |

| | |
|---|---|
| עד כיתה ו' לא למדתי אנגלית ולא ידעתי מילים ולא היה לי אוצר מילים. בכיתה ו' היגיע מורה חדשה שהיה קשוח ועשה לנו כל הזמן מבחנים. | Dysfunction<br><br>Who is to be Blamed/ others |
| אבל אני המשכתי לא ללמוד אנגלית ולא להתכונן למבחנים. בשביל מה אני ממילא נכשלת. | Dysfunction/giving up |
| התאכזבתי מעצמי כי רציתי להצליח ואם לא הצלחתי אז סימן שאני כישלון. ומה יצא ממני בעתיד. בלי אנגלית אין לי עתיד. | Feelings/Disappointment/failure<br><br>Feelings /fear of future consequences |
| אני ידעתי שאני צריכה להצליח באנגלית כדי שאוכל ללמוד באוניברסיטה. אני ידעתי שבלי אנגלית לא מקבלים תעודת בגרות ובלי תעודת בגרות לא מתקבלים לאוניברסיטה. אני צריכה ללמוד באוניברסיטה כדי שתהיה לי עבודה טובה, שאני אצליח בחיים. שתהיה לי תעודה טובה. שאני אוכל להצליח בעבודה שאני ארצה כאשר אהיה גדולה. גם שאוכל לדבר אנגלית כאשר אני אסע לחוץ לארץ ושאני אסתדר שם לבד. אני רוצה להצליח בחיים. שתהייה לי עבודה טובה ושאני ארוויח טוב, שתהייה לי משכורת טובה. אני יודעת שצריך אנגלית בשביל זה. | Feelings /fear of future consequences |
| אני מאוד מפחדת שאני לא אצליח לעשות מבחן בגרות באנגלית. | Feelings/anxiety |
| בלי בגרות באנגלית אני אכשל בחיים. | Feelings /fear of future |

| | |
|---|---|
| consequences | |
| Feelings /fear of future consequences | זה מאוד מפחיד אותי שאני לא אצליח בעתיד שלא יהיה לי עתיד. |
| Feelings/anger toward others | כאשר הייתי נכשלת באנגלית הייתי מאוד עצבנית בבית עם אמא וגם עם אחי. |
| Feelings/anger toward others | אחרי מבחן שבו אני נכשלתי הייתי חוזרת הביתה וצועקת על אחי ורבה איתו על כל דבר. |
| Feelings/anger toward others | הייתי מתרגזת על אמא שלי וצועקת עליה ורבה איתה גם. הסתגרתי בחדר ולא רציתי לראות אף אחד ומאוד כעסתי והתרגזתי על אמא שלי. |
| Dysfunction/giving up | כאשר הייתי נכשלת באנגלית הייתי מותרת לעצמי ופשוט מרימה ידיים. זאת אומרת שהייתי מפסיקה לנסות ללמוד אנגלית. לא הייתי מנסה להכין שעורים או ללמוד למבחנים. |
| Learning difficulties/reading/reading comprehension | הכי קשה לי קריאה והבנת הנקרא. |
| Learning difficulties/reading | אני לא מסוגלת לקרוא אנגלית. |
| Learning difficulties/reading comprehension | מה שאני כבר מצליחה לקרוא אני לא מבינה כלום. |
| Learning difficulties/vocabulary | גם אוצר המילים שלי מאוד נמוך. |
| Learning difficulties/vocabulary | אני יכולה ללמוד מילה חדשה אבל אני מיד שוכחת אותה. |
| Accommodations/positive effect | כאשר קוראים לי את הטקסט אני קצת יותר מבינה. |
| Learning difficulties/reading | הבעיה שלי זה קריאה ואוצר מילים. |

| | |
|---|---|
| בכיתה ז' קיבלתי התאמות באנגלית אבל אני מאוד מתביישת לעשות מבחן בכיתה עם ההתאמות כי אז כולם רואים שאני שונה. | Accommodations/being labelled |
| אני רוצה להיות כמו כולם בלי התאמות. | Accommodations/being labelled |
| זאת בושה גדולה להיות שונה מאחרים. | Feelings/Shame |
| אחרי שקיבלתי התאמות הציונים שלי באנגלית קצת השתפרו אבל זה לא חוכמה כי זה היה עם התאמות. | Accommodations/improvement but |
| אני רוצה שיפור באנגלית בלי שאצטרך להיות שונה ולהשתמש בהתאמות. | Accommodations/being labelled |
| **ציפיות:** | |
| עכשיו שאני מתחילה את התוכנית שלך אני רוצה לנסות להצליח. | Feelings/hope |
| אני מצפה להצליח. | Feelings/hope |
| אני מבטיחה לעצמי שאני אחשוב חיובי ואני אצליח. | Feelings/Self commitment |
| אולי פה אצלך אני אצליח כי זה נראה שונה מהכיתה. | Feelings/hope |
| ואולי אני לא אצטרך להשתמש בהתאמות כי זה בושה גדולה להיות שונה מאחרים. | Feelings/Shame |
| אולי אחרי התוכנית אני אצליח באנגלית וגם בבגרות באנגלית ואז אני אוכל ללמוד באוניברסיטה ויהיה לי מקצוע טוב ואני אצליח בחיים. | Feelings/hope |

**Yuval's post intervention interview script (08/2010):**

| | Themes |
|---|---|
| בהתחלה לא הרגשתי שום שינוי באנגלית. | Still not helping |
| הייתי מאוד מאוכזבת מעצמי. | Feelings/disappointment |
| הרגשתי שמשהו ממש לא בסדר אצלי כי אפילו התוכנית הזו לא עוזרת לי. הייתי מאוד מבואסת. | Feelings/sadness<br><br>Who is to be blamed/myself |
| עבר חודש ועוד חודש ואני עדיין לא מרגישה שיפור.<br><br>הייתי ממש מאוכזבת מעצמי. | Still not helping<br><br>Feelings/disappointment |
| ממש החלטתי להרים ידיים ולהפסיק לגמרי ללמוד אנגלית כי אם התוכנית הזאת לא עוזרת אז שום דבר לא יעזור ואני אשאר דיסלקטית כל החיים שלי. | Feelings/ despair dysfunction/giving up |
| אבל פתאום התחלתי לשים לב שאני מבינה יותר מילים. קודם מילים ואחרי כן משפטים. | Slight improvement |
| החלטתי להקשיב למורה ושמתי לב שאני מבינה את המורה יותר טוב. | Slight improvement/less afraid |
| התחלתי להעיז להשתתף בשעורים. | Improvement/ enhancement of self esteem/improvement of self efficacy |
| ראיתי שיש לי יותר ביטחון להשתתף בשעורים. | Feelings/ enhancement of self esteem/improvement of self efficacy |
| הרגשתי שאני מתקדמת לאט. | Slight improvement |
| הרגשתי שיש לי יכולת ללמוד. | Feelings/ enhancement of self |

| | |
|---|---|
| | esteem/improvement of self efficacy |
| שיש לי יכולת טובה ללמוד וזה עשה לי טוב אפילו שהציונים עדיין לא היו גבוהים. | Slight improvement<br><br>Feelings/ enhancement of self esteem/improvement of self efficacy |
| כי אולי יש סיכוי שאני אפטר מההתאמות ואפסיק להיות דיסלקטית ושונה מאחרים. ראיתי שאני מבינה יותר מילים ואני גם מצליחה לקרוא יותר טוב. | Accommodations/being labelled<br><br>Improvement/reading |
| שמתי לב שאני קוראת יותר טוב ומבינה את הקטע יותר טוב. | Improvement/reading |
| ראיתי שאני מצליחה לענות על יותר שאלות. | Improvement/reading |
| כאשר השתתפתי ועניתי נכון הרגשתי שעשיתי את זה, שהצלחתי. | Improvement<br><br>Enjoying success |
| יש לי הרגשה שאני פחות מפחדת משעורי אנגלית. | Improvement/less afraid |
| אני נכנסת היום לשיעור אנגלית עם יותר רצון להצליח. | Feelings/self commitment |
| פחות פוחדת משעור אנגלית. | Improvement/less afraid |
| אחרי הארבעה חודשים ממש התחלתי להשתפר. | Significant improvement |
| אני יותר משתתפת בכיתה. | Significant improvement/enhancement of self esteem |
| יש לי יותר ביטחון להשתתף כי אני יכולה לקרוא יותר טוב ואני יודעת יותר מילים אז | Significant improvement/enhancement of |

| | |
|---|---|
| אני מבינה יותר טוב את הקטע. | self esteem |
| אני היום חושבת שיש סיכוי שאני כן יכולה לעשות בגרות באנגלית. | Significant improvement/enhancement of self esteem/ enhancement of self efficacy |
| אני מרגישה שאני יכולה לקבל ציון טוב בבגרות באנגלית. | Significant improvement/enhancement of self esteem/ enhancement of self efficacy |
| חשוב לי לקבל ציון טוב בבגרות באנגלית כדי להצליח בחיים. | Referring to the future/fear of consequences |
| כי בלי בגרות באנגלית אין לי חיים. | Referring to the future/fear of consequences |
| אם אני לא אתקבל לאוניברסיטה ואני אהיה כישלון כל החיים שלי. | Referring to the future/fear of consequences |
| אני לא רוצה התאמות כי אני לומדת אנגלית בכיתה רגילה וזה מבייש אותי שאני עם התאמות וכל יתר התלמידים בלי. | Accommodations/being labelled |
| אני מרגישה שונה. | Accommodations/being labelled |
| אני רוצה להיות כמו כולם. | Accommodations/being labelled |
| היום יותר קל לי לקרוא ולהבין את מה שאני קוראת.<br><br>יש לי אוצר מילים גדול יותר. | Significant improvement/reading/reading comprehension |
| אבל אני רוצה להגיע למצב שאני לא משתמשת עם התאמות יותר. אז אני אדע שהצלחתי. | Accommodations/getting rid /improvement…but |
| **ציפיות שהתגשמו:** | |
| אני יותר מאמינה בעצמי שאני אצליח | Feelings/self esteem |

| | |
|---|---|
| | במבחנים באנגלית ובכל שער המקצועות. |
| Feelings/less anger | אני ביחסים יותר טובים עם אחי ועם אמא שלי כי אני פחות עצבנית. כי אני פחות נכשלת. |
| Accommodations/getting rid /improvement…but/being labelled | אבל אני רוצה שיגיע היום שאני אדע אנגלית מצוין ואני לא אצטרך להשתמש בהתאמות, שאני לא אהיה דיסלקטית. |

## Appendix 8: Example of a practitioner's journal script in Hebrew highlighted according to the three different categories: cognition, behaviour and emotions

| Session | Date | Kefir's comment |
|---|---|---|
| 1 | 5/4/10 | היה טוב שהייתי לבד ואף אחד לא ראה שאני כישלון. |
| 2 | 7/4/10 | לא היה טוב. אני רואה כמה אני לא יודע לקרוא. |
| 3 | 12/4/10 | זה מפחיד. איך אני אזכור את כול הצלילים והאותיות. |
| 4 | 14/4/10 | נהניתי במחשב. שם גם את לא רואה שאני נכשל. |
| 5 | 19/4/10 | טוב שלא כול הכיתה רואה שאני צריך לימודים מיוחדים. |
| 6 | 21/4/10 | זה טוב שהשעורים דומים אחד לשני. אני יודע למה לצפות. |
| 7 | 26/4/10 | זה שעובדים במחשב היה כיף. |
| 8 | 28/4/10 | זה טוב שעובדים קודם על צלילים ואחרי כן על מילים. זה עזר לי בעבודה במחשב. |
| 9 | 3/5/10 | אני מתחיל להבין שיש הרבה צלילים באנגלית. |
| 10 | 5/5/10 | היה נחמד שהצלחתי במחשב. המחשב לא יודע שאני כישלון. |
| 11 | 10/5/10 | זה שקודם עבדנו על מילים ואחרי כן על צלילים מאוד עזר לי במחשב. |
| 12 | 12/5/10 | היום נהניתי שהצלחתי לקרוא את המילים גם אתך וגם במחשב. |
| 13 | 17/5/10 | זה טוב מאוד שאני עובד אתך לבד. אני פחות בלחץ פה במכון. |
| 14 | 19/5/10 | זה טוב מאוד שאני חוזר על אותם צלילים אתך ובמחשב. זה עוזר לי במחשב מה שאנחנו עושים קודם ביחד. |

| | | |
|---|---|---|
| 15 | 24/5/10 | זה טוב שאני מתחיל להבין שיש כל מיני צלילים באנגלית. שיש הרבה צלילים באנגלית. |
| 16 | 26/5/10 | זה שפירקנו את המילים לצלילים עזר לי בעבודה עם המחשב. היה כיף שהצלחתי במחשב. |
| 17 | 31/5/10 | היום היה לי קצת קשה אבל זה שאני לבד ואחרים לא רואים שאני נכשל זה טוב. |
| 18 | 2/6/10 | זה טוב מאוד שאני עובד אתך לבד. אני פחות בלחץ שאני לא אצליח. |
| 19 | 7/6/10 | היה טוב שידעתי מראש שקודם אנחנו נעבוד על צלילים ואחרי כן על מילים. |
| 20 | 9/6/10 | כיף לי שאחרים לא רואים את הכישלונות שלי באנגלית. |
| 21 | 14/6/10 | עוזר לי שהשעורים דומים אחד לשני. זה נותן לי ביטחון. אני יודע למה לצפות. |
| 22 | 16/6/10 | היום ממש נהניתי שהצלחתי לקרוא את המילים גם אתך וגם במחשב. |
| 23 | 21/6/10 | זה עוזר לי במחשב מה שאנחנו עושים קודם ביחד. זה טוב מאוד שאני חוזר על אותם צלילים אתך ובמחשב. |
| 24 | 23/6/10 | אני פחות נכשל במחשב. זה כיף. |
| 25 | 28/6/10 | הפתעה נעימה הצלחתי לקרוא את כל המילים . |
| 26 | 30/6/10 | היה טוב שעובדים גם איתך וגם עם המחשב אז לא משעמם. |
| 27 | 5/7/10 | היה לי כיף שאני מכיר כבר הרבה אותיות וצלילים. |
| 28 | 7/7/10 | אני מאושר שאני לומדת פה לבד. |
| 29 | 12/7/10 | זה טוב שפה אין התאמות. אני רוצה להיפתר מהן. |
| 30 | 14/7/10 | זה שפירקנו את המילים לצלילים עזר לי בעבודה עם המחשב. היה כיף שהצלחתי במחשב. |
| 31 | 19/7/10 | הפתעה נעימה הצלחתי לקרוא את כל המילים . |
| 32 | 21/7/10 | לא משעמם כי עובדים גם איתך וגם עם המחשב. |
| 33 | 26/7/10 | נתן לי בטחון שאני יודע מה אנחנו נעשה בשיעור. |

| | | |
|---|---|---|
| 34 | 28/7/10 | זה טוב מאוד שאני חוזר על אותם צלילים קודם אתך ואחרי כן במחשב. זה עוזר לי במחשב מה שאנחנו עושים קודם ביחד. |
| 35 | 5/8/10 | זה טוב שאיתך אין צורך התאמות. אני רוצה להיפתר מהן. |
| 36 | 7/8/10 | אני מקווה שאני אוכל להיפתר מההתאמות. |
| 37 | 12/8/10 | אני מרגיש טוב שאני יודע מה אנחנו נעשה בשיעור. |
| 38 | 14/8/10 | מאוד עוזר לי שאני מקבל שעור פרטי לבד. |
| 39 | 19/8/10 | זה עוזר לי במחשב מה שאנחנו עושים קודם ביחד. |
| 40 | 21/8/10 | היום קראתי כמעט לבד את כל המילים. זה היה כיף נורא. |

## Appendix 9: Example of a participant's diary script in Hebrew highlighted according to the three different categories: cognition, behaviour and emotions

| Week | Noah's comment |
|---|---|
| 1 | השבוע לא היה שום שיפור. |
| 2 | אני עדיין לא מרגישה שום שיפור. |
| 3 | אני עדיין לא מרגישה שיפור אבל בשיעור האחרון באנגלית בבית הספר הקשבתי למורה יותר טוב. |
| 4 | אני פחות פחדתי להקשיב למורה ושמתי לב שאני מבינה כמה מילים שהיא אמרה. |
| 5 | אני שמתי לב למילים שהמורה אמרה. קצת יותר קל לי להקשיב למורה. |
| 6 | יש לי הרגשה שאני פחות מפחדת משעורי אנגלית. |
| 7 | השבוע הרגשתי קצת שיפור אבל לא מספיק כי אני רוצה להיפטר מההתאמות כמה שיותר מהר. |
| 8 | אני בחיים לא אוכל להיפתר מההתאמות באנגלית. |
| 9 | השבוע הבנתי את המורה קצת יותר טוב. |
| 10 | אני מתחילה להרגיש שיפור בקריאה של מילים במיוחד כאשר אני מפרקת אותם לצלילים. |
| 11 | השבוע הצלחתי לקרוא יותר טוב ואפילו הבנתי יותר טוב. |
| 12 | יותר קל לי להקשיב למורה כאשר היא קוראת לנו את הקטע קריאה. ואחרי כן יותר קל לי לקרוא את אותו הקטע. |
| 13 | אני מרגישה שיפור בקריאה של מילים ומשפטים. לא רק בקריאת הקטע גם בשאלות. |
| 14 | אני פחות מפחדת לקרוא לבד. אני יותר מעיזה לקרוא לבד. |
| 15 | אני מרגישה שיפור בלהבין את מה שאני קוראת. |
| 16 | השבוע השתתפתי כמה פעמים בשיעורי אנגלית. |

| | |
|---|---|
| 17 | אני מרגישה ממש שיפור בקריאה. אני משתתפת בשיעור גם בקריאה. |
| 18 | השבועה קראתי לבד את הקטע ועניתי על השאלות. לא כולם היו נכונות. אבל יותר ממה שהיה פעם. |
| 19 | יש לי יותר ביטחון בשיעור אנגלית. אני מצליחה לעשות שעורי בית יותר טוב. |
| 20 | אני מבינה אנגלית הרבה יותר ממה שהיה לפני התוכנית יותר קל לי שעורי הבית. אבל אני עדיין רוצה להפטר מההתאמות ולהיות כמו כולם. |

# Appendix 10: Documentation of the pre- and post-intervention assessment scores

Task no. 1: Oral Repetition of words (20 out of 20 points)

| Subject | Yuval | Kefir | Noah | Shuval | Aviv | Tal |
|---|---|---|---|---|---|---|
| Pre intervention | 16 | 18 | 20 | 19 | 17 | 19 |
| Post intervention | 19 | 20 | 20 | 20 | 19 | 20 |

Task no. 2: Oral Repetition of pseudo words (20 out of 20 points)

| Subject | Yuval | Kefir | Noah | Shuval | Aviv | Tal |
|---|---|---|---|---|---|---|
| Pre intervention | 9 | 11 | 11 | 13 | 8 | 12 |
| Post intervention | 18 | 19 | 20 | 20 | 17 | 20 |

Task no. 3: Oral Detection of Alliteration (10 out of 10 points)

| Subject | Yuval | Kefir | Noah | Shuval | Aviv | Tal |
|---|---|---|---|---|---|---|
| Pre intervention | 5 | 3 | 5 | 6 | 4 | 6 |
| Post intervention | 10 | 10 | 10 | 10 | 10 | 10 |

Task no. 4: Oral Detection of Rime (10 out of 10 points)

| Subject | Yuval | Kefir | Noah | Shuval | Aviv | Tal |
|---|---|---|---|---|---|---|
| Pre intervention | 4 | 4 | 6 | 6 | 3 | 5 |
| Post intervention | 9 | 10 | 10 | 10 | 9 | 10 |

Task no. 5: Oral Sound discrimination (15 out of 15 points)

| Subject | Yuval | Kefir | Noah | Shuval | Aviv | Tal |
|---|---|---|---|---|---|---|
| Pre intervention | 6 | 9 | 12 | 13 | 11 | 7 |
| Post intervention | 15 | 15 | 15 | 15 | 15 | 15 |

Task no. 6: Oral Omission of syllables (10 out of 10 points)

| Subject | Yuval | Kefir | Noah | Shuval | Aviv | Tal |
|---|---|---|---|---|---|---|
| Pre intervention | 8 | 10 | 9 | 10 | 8 | 10 |
| Post intervention | 10 | 10 | 10 | 10 | 10 | 10 |

Task no. 7: Oral Omission of first phoneme (10 out of 10 points)

| Subject | Yuval | Kefir | Noah | Shuval | Aviv | Tal |
|---|---|---|---|---|---|---|
| Pre intervention | 3 | 3 | 2 | 1 | 3 | 2 |
| Post intervention | 9 | 10 | 9 | 8 | 10 | 10 |

Task no. 8: Oral Omission of last phoneme (10 out of 10 points)

| Subject | Yuval | Kefir | Noha | Shuval | Aviv | Tal |
|---|---|---|---|---|---|---|
| Pre intervention | 2 | 3 | 5 | 3 | 2 | 4 |
| Post intervention | 9 | 10 | 10 | 10 | 9 | 10 |

Task no. 9: Oral Blending of Phonemes (10 out of 10 points)

| Subject | Yuval | Kefir | Noah | Shuval | Aviv | Tal |
|---|---|---|---|---|---|---|
| Pre intervention | 1 | 3 | 2 | 4 | 3 | 1 |
| Post intervention | 8 | 9 | 9 | 9 | 9 | 8 |

Task no. 10: Oral Phoneme segmentation (10 out of 10 points)

| Subject | Yuval | Kefir | Noah | Shuval | Aviv | Tal |
|---|---|---|---|---|---|---|
| Pre intervention | 0 | 0 | 0 | 0 | 0 | 0 |
| Post intervention | 9 | 8 | 9 | 9 | 10 | 10 |

Task no. 11: Single word reading test (20 out of 20 points)

| Subject | Yuval | Kefir | Noah | Shuval | Aviv | Tal |
|---|---|---|---|---|---|---|
| Pre intervention | 6 | 10 | 9 | 13 | 7 | 5 |
| Post intervention | 18 | 18 | 20 | 18 | 20 | 19 |

Task no. 12: Single pseudo word reading tests (20 out of 20 points)

| Subject | Yuval | Kefir | Noah | Shuval | Aviv | Tal |
|---|---|---|---|---|---|---|
| Pre intervention | 0 | 1 | 4 | 2 | 3 | 6 |
| Post intervention | 15 | 16 | 19 | 20 | 18 | 19 |

Task no. 13: Reading comprehension passage (pace, accuracy and comprehension).

(1-low, 2-low-average, 3-average, 4-average-high, 5-high)

| | Subject | Yuval | Kefir | Noah | Shuval | Aviv | Tal |
|---|---|---|---|---|---|---|---|
| Pre intervention | Pace | 1 | 1 | 2 | 1 | 2 | 2 |
| Pre intervention | Accuracy | 1 | 1 | 3 | 2 | 3 | 2 |
| Pre intervention | Comprehension | 1 | 1 | 1 | 1 | 1 | 1 |
| Post intervention | Pace | 4 | 5 | 4 | 4 | 5 | 5 |
| Post intervention | Accuracy | 4 | 3 | 4 | 4 | 5 | 5 |
| Post intervention | Comprehension | 4 | 4 | 5 | 5 | 4 | 5 |