**UNIVERSITATEA " BABEŞ - BOLYAI"**

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**Faculty of Psychology and Education**

**DOCTORAL THESIS - <u>Summary</u>**

# IMPROVING GENERAL FUNCTIONING AND ACADEMIC ACHIEVEMENT AMONG ADOLESCENTS WITH DYSLEXIA AND ADHD

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# Introduction

We live in a modern and a technological society that is characterized by expanding knowledge and rapid changes. These changes require each person to make extensive modifications through learning. Therefore any student should be equipped with thinking ability (Feuerstein, 2010). Knowledge itself is becoming ever more specialized and expanding exponentially. According to Binkley, "success lies in being able to communicate, share, and use information to solve complex problems, in being able to adapt and innovate in response to new demands and changing circumstances, in being able to marshal and expand the power of technology to create new knowledge and expand human capacity and productivity" (Binkley, et al., 2010, P.1).

Israel is a developed modern country. Education and self-fulfillment are basic values in its society. Education is compulsory from ages 3 to 17. This means that the State of Israel is obligated to provide free formal education to children within this age range and that parents are likewise obligated to send their children to an age appropriate institution. This serves to provide equal opportunities for education without discrimination on any basis (financial, ethnic / sectorial backgrounds, special needs). Yet, the educational system failed to assist student with learning disabilities and /or ADHD. Many of those students learn in regular crowded and heterogenic classes. Their weekly curriculum is not in accordance to their disabilities, nor to their strengths. Some of them failed to finish high school or to be to qualify for the matriculation certificate; which enables admission to higher education.

This research is focused on an evaluation of the contribution of a "Learning Strategies Course" (LSC) to high school students; adolescents with dyslexia and or ADHD disorders from their point of view.

The LSC is a unique course named LEHAVA developed by the researcher on the basis of her accumulative experience with LD & ADHD students. It was designed to accommodate and help compensate for their disabilities. LEHAVA is a Hebrew acronym signifying Learning, Organization, Confidence and Success. The essence of the program is evident from its name; a combination of proper organization together with the acquisition of study methods. The main issues studied in the LSC are time

management, input processing and output procedures. With proper guidance, practice and training, students should improve their academic achievements, become efficient, successful and independent learners and cope better with real life situations.

The conceptual framework guiding this research consists of various theories from different fields pertaining to learning styles, developmental, learning and disabilities as well as social theories relating to living in a modern, technological society along with background about the Israeli educational system. Each theory, from its perspective sheds light on the syndromes, different situations and difficulties of adolescents with dyslexia and or ADHD disorders and presents the a key for a better functioning in school and in life in general.

The paradigm of this research is qualitative interpretative and constructivist that reflects a holistic approach. The research employs a multiple case study approach dealing with six high school students, representing three different types of disability: ADHD only, Dyslexia only, co-morbidity (both ADHD and Dyslexia).

# Brief theoretical background

Dyslexia and ADHD are highly renowned syndromes and yet the least understood. The term dyslexia comes from Greek: "dys" means difficulties; "lexia" means words or language. It is a sub-type of a large category of language based learning difficulties that derive from a neuropsychological deficit rather than from social or educational conditions (Frith, 1992, 1997; Fawcett, 1999; Barkley, 2000; Hanell, 2004; Fischer, Bernstein and Yang, 2007). Attention Deficit / Hyperactive Disorder (ADHD) is a medical condition that affects a person's ability to regulate behavior and attention. It is a neurobiological behavioral disorder characterized by a chronic and developmentally inappropriate degree of inattention, impulsivity and in some cases hyperactivity (CHAAD, 2001 in Rief, 2005). According to Barkley (2000) it is a developmental disorder of self-control, consisting of problems with attention span, impulse control and activity level.

Dyslexia and ADHD occurs among all ethnic groups and at all socio-economic levels. Dyslexic and ADHD children are of at least average intelligence have proper visual and auditory senses. Despite the disagreement about definition, precise roots and syndromes of each of them, it is agreed that both syndromes have a crucial effect on the students' ability to learn.

Reading diverse definitions led the researcher to the conclusion that dyslexia is a disorder in processing information characterized by difficulties in single word decoding in spite of at least average intelligence and proper visual and auditory senses. It is usually considered as a reading problem, though the long term spelling difficulties are at least as severe. It involves a complex interaction between language, listening, seeing, remembering and taking action. It is a lifelong condition, though appropriate intervention can reduce the difficulties over the long term.

Typical characteristics of a person with dyslexia include: short visual memory, difficultly learning from rules, inconsistency in functioning, difficulties in: reading, writing including spelling and mathematics, error detection, spatial and temporal orientation, reading analogue watches and more. On the other hand they may have

specific strengths: creativity, good problem solving skills, practical or physical dexterity and good verbal communication (Hendrickx, 2010).

Although dyslexia is basically considered as an academic parameter, like ADHD it affects the student and adults as well in daily life activities by having a negative impact on their ability to maximize their potential or even live without a daily crisis. No one is totally unaffected by learning disabilities, yet individual weaknesses and strengths, family background and support, remedial teaching and other relevant issues, play a major role in the general development of a child with dyslexia into an adequate functioning adolescent or adult.

The study by Klein & Mannuzza, (2000) shows that: 25% of students with learning disabilities fail to obtain high school diploma and only less than 10% obtain a bachelor's degree. As adults, only 4% of them attain high executive levels at work. On the other hand, a rate of alcohol and substance use is twice than of the control group.

Adolescents and adults who were defined as dyslexic when they were young still have difficulties often accompanied by poor presentation of work and worse performance under time pressure such as written examinations. Their greatest problems derive from lack of organizational skills and their poor ability to check their work. On the other hand, those not yet identified experience school life as a "living nightmare" in which they feel pressured to perform to the standards of their non-dyslexic peers. Late or mis-identification means that the dyslexic has already experienced several years of failure and its ensuing stress (Alexander-Passe, 2004).

Interviewing high school students age 15-17, Alexander-Passe found that avoidance is used as a main strategy in order to "survive" - keep up in class with peers. Thomson (1996) says there are two reactions for long-term reading failure: under-reaction causing withdrawal or over-reaction causing them to play up, be the class clown or be seen as disruptive (Alexander-Passe, 2004).

Similar to dyslexia, ADHD makes adolescence a more challenging experience due to greater academic challenges and the struggle between dependence and independence (Greenbaum & Markel, 2001).

Adolescents with ADHD find themselves in a new type of school environment that is more impersonal on one hand, and more demanding on the other (Greenbaum & Markel, 2001). That is why studying in middle school and high school, is much more difficult for them. There are more teachers, more subjects, more homework and other assignments and together with poor organizational skills and incoherent time management, the ADHD students have much more difficulty keeping up (Rief, 2005; DeRuvo, 2009). Moreover, in many cases even though the teachers really want to see their students succeed, they often feel helpless and ill equipped to guide them (DeRuvo, 2009).

In addition, these adolescents are torn between their wish for autonomy and the need for help, guidance and control due to the objective difficulties result ADHD. Some of the results of this dependence - independence battle are wrongly considered by some teachers as behavior problems (Greenbaum & Markel, 2001).

Zeigler (2000) claimed that success in school is one of the most therapeutic things that can happen to a teenager with ADHD. It even may be more helpful than a weekly hour of counseling. Success in school is most easily attained if the adolescents with ADHD: receive stable support, are involved in community activities, feel that their effort and hard work make a difference, and have good learning and problem solving abilities (Greenbaum & Markel, 2001).

Executive functions are another piece in the puzzle of proper functioning. Executive functions are the "command center" in the frontal lobe. This center controls a wide-ranging process that enables the student to deal with any task from beginning to end and to regulate behavior (Greenbaum & Markel, 2001). The executive functions play an important role in the student's success while performing different academic tasks.

Executive functions include: working memory, organizing thoughts, time and space, planning and prioritizing, focusing, persevering, regulating and retrieving information, emotional self-control and strategy monitoring and revising. Brown (2008) identified six clusters of executive functions that are often impaired in students with ADHD: activation, focus, effort, emotion, memory and action.

Medication may help some ADHD symptoms but not weakness of the executive functions (Brown 2000; Dendy & Ziegler 2002; National Resource Center on AD/HD 2003; Rief, 2005). Difficulties with executive functions make it hard to perform well in any task in any environment and can lead to problems with peers, teachers, bosses and at home. As a result it also leads to loneliness and depression. It causes mild to severe academic challenges for most students with ADHD no matter how gifted or capable they are (Greenbaum & Markel, 2001; Rief, 2005).

Bronfenbrenner (1977, 1979, 1980, 2005) explains the importance of literacy in our modern society. There are five different layers surrounding the individual. The most relevant layers to our discussion are the macrosystem and the microsystem. The macrosystem includes cultural values, norms, customs, laws, attitudes and ideologies of the culture in which the child lives in (Berk, 2000). In the western world, we live in a high tech society, a knowledge-based society. The macrosystem reflects values such as the importance of education, achievements and self-fulfillment.

The microsystem refers to the most immediate environment the child lives in, including the family, school, neighborhood, peers and the interactions developed within this environment. Each of them should enhance a specific aspect of the child's development. The interaction of the social agents with the child affects how the child grows. The more encouraging and nurturing these relationships and places are, the better the child will be able to grow (Bronfenbrenner, 1997). This leads to the very important role of the teachers and of the educational system.

Binkley et al. (2010) working with the research group Assessment and Teaching of 21st Century Skills (ATC21S) introduces 21st century learning through a model that includes 10 skills grouped into 4 categories, as follows:

1. Ways of thinking that includes creativity and innovation, critical thinking, problem solving, decision making, learning to learn and metacognition (knowledge about metacognitive processes).
2. Ways of working that includes communication and collaboration (teamwork).
3. Tools for working including information literacy, information and communication and technology literacy.

4.  Living in the world includes citizenship (local and global), life and career, personal and social responsibility, including cultural awareness and competence.

Since literacy skills are the key to educational success in western societies, children who are slow to acquire reading and spelling skills may be at high risk of underachievement during school years and beyond (Snowling et al., 2001). Poor readers have been found less likely to report involvement in out-of-school literacy-related activities in their teens, and less likely to achieve formal qualifications by the time of the adult follow-up.

If one asks dyslexic adolescents or adults about their difficulties, they usually mention the lack of opportunities that prevented them from revealing their strengths; they are readily aware of their difficulties and failures. As a result, in later life or employment, they may perform below their true skills and ability Klein & Mannuzza, 2000; Hendrickx, 2010).

Although literacy is essential for living in our modern society, there is a significant percentage of children who do not attain reading in spite of sufficient intelligence. The estimated number of students with dyslexia varies from one country to another, due to different national policies and budgetary allocations. Generally it is considered to be between 1% and 11% (Hanell, 2004). ADHD affects approximately 3%-6% of the school-age population.

Not all students that have learning problems have dyslexia. Yet inconsistent performance, underachievement and low response to intervention are significant indicators for it. Students with dyslexia will experience a variety of difficulties in the basic skills of reading, writing and mathematics. However, each of them will experience it differently due to personal strengths and differences in areas of difficulty. They will all have learning problems in school and will all be underachievers. Yet while one might have a problem in fluent reading, others might have difficulties in spelling, getting ideas down on paper, calculating or problem solving in mathematics (Hanell, 2004; Morgan & Klein, 2000 cited in Hendrickx, 2010). The impact of the disability also varies from one student to another due to

character, family background and social and psychological factors. Therefore it is very important that teachers and the educational system enable those children a proper learning environment so they will be able to conduct life in modern society in spite of their disabilities.

Vygotski and Feuerstein were curious about differences in functioning between different people and underachievement. Vygotsky (1962) developed the term "zone of proximal development" (ZPD); the distance between the actual development level and the level of potential development. The key to advancing in the ZPD requires adult guidance in collaboration with peers and emphasizes the creation of meaning rather than the teaching of specific skills (Vygotsky, 1986).

Feuerstein (1980) refers to deficient cognitive functions to explain the child's low performance and to the Mediated Learning Experience (MLE) as the way to work with him in order to correct the malfunctioning. The MLE is also considered as the ingredient that determines differences in cognitive development between people, even if they live under the same conditions of stimulations because it influences one's proper cognitive functioning.

The deficient functions can be arranged in four categories: impairments in cognition at the input phase – this includes all impairment concerning quantity and quality of data gathered by the student while working on a given problem; impairments in the elaboration phase - anything that causes an inefficient use of data available to the student. Impairments in the output phase - the factors that lead to an inadequate communication, and impairments in affective-motivational factors - anything that affects performance in cognitive tasks, academic studies, tests and real life situations.

Neither Vygotski nor Feuerstein were interested in the current abilities of the students but in their ability to proceed, in the "how" instead of the "what". Both emphasized the major role of the teacher in class as a guide-teacher and not an authoritative teacher. The teacher may enable the cognitive modifiability - a structural change in the state of the organism as a result of an intervention. The term "change" refers to changes in the structure of thinking and not just acquisition of knowledge. It affects the individual's future development (Feuerstein, 1980).

Feuerstein (2010) claims that belief in the student's capability of making the needed changes for cognitive modifiability has a critical place in the teacher's work. Yet, the common assumption among many of the teachers in Israel is that the student's difficulties are fixed and unchangeable. Therefore it is impossible to change their cognitive structure and learning ability. Those teachers do not consider their everyday work with the students as a critical factor in the child's cognitive and behavioral development. As a result, they perceive themselves merely as "knowledge agents". Their teaching is mainly based on facilitating the learning materials instead of promote the struggling student to equal his peers (Feuerstein, 2001).

In contrast to this attitude, Feuerstein (2008) claims that any student should be equipped with thinking skills. This can be achieved through the MLE - a special kind of interaction strategy in learning situations. It deals with the source of the cognitive impairment and strongly emphasizes the role of the mediator in learning; to select and organize the stimuli for the child. There are twelve key criteria for MLE, each of which provides a different approach to interacting with the learner (Feuerstein, 1980, 1991; Mentis, et al., 2008; Vigoya, 2005). The twelve criteria are: intentionality and reciprocity, transcendence, mediation of meaning, competence, self-regulation and control of behavior, sharing, individuation, goal planning, challenge, self-change, search for the optimistic alternative and sense of belonging.

"Learning styles" are another important component in learning and success. "Learning styles" are based upon personal preferences in the ways one takes in and processes information. Some people tend to focus on facts, data, and algorithms, while others are more comfortable with theories and mathematical models. Some respond strongly to visual forms of information, while others obtain more from verbal forms of explanations, written or spoken. Some prefer to learn actively and interactively while others - introspectively and individually. Since it derives from the learner itself the preference is relatively stable over time. It has no connection to intelligence, socio-economic background or level of academic achievement.

"Learning styles" are often confused with the terms of "cognitive style" and "learning strategies". "Learning style" refers to individual differences in ways of organizing and processing information or experience. "Cognitive style" refers to characteristic modes

of perceiving, remembering, thinking, problem-solving, and decision making. A learning style is more concerned with the use of cognitive style in a practical learning situation while cognitive style is reserved more for academic purposes (Riding & Cheema, 1991). Sadler-Smith (2001), on the other hand, considered these concepts as two independent constructs. "Learning strategies" are considered as a set of one or more procedures that an individual acquires to facilitate the performance of a learning task. They will vary depending on the nature of the task while "learning styles" are more inherent to the learner himself or herself and are relatively stable over time (Loo, 1997).

The most familiars models regarding learning style, are the one of Kolb (1984), McCarthy (1980, 2000, 2006), Sprenger (2002) and Tileston (2004, 2010). Learning in accordance to one's learning style, may change his opinion on himself and help teachers to teach all students. The students learn faster and enjoy learning more, as their unique learning style is affirmed by their teachers. This kind of learning helps to explore and better understand the facts. The students will be more willing to put what they have learned into practice (Tileston, 2010).

Following Feuerstein and the learning styles models, the LEHAVA program has been developed for around 10 years until it reached its final form. As mentioned before, LEHAVA is the Hebrew acronym signifying Learning, Organization, Confidence and Success. The researcher found out that the combination of proper organization along with the acquisition of study methods contribute to the learner's learning procedure, self-confidence and sense of self-efficacy, and as a result leads to success.

The LSC was first designed in order to give an appropriate solution to high school students with LD and ADHD that in spite of good behavior in class, high IQ and motivation they were underachievers. The atmosphere and attitude in school towards those students motivated the researcher to develop a different approach among educators.

The essence of the LSC is the integration of knowledge and skills under the supervision of the teacher as a mediator who creates the proper learning environment for the students. The goal of this course is to change passive and dependent thinking

into autonomous and independent thinking, to transform those students from underachievers into self and efficient learners by providing tools to handle any academic tasks successfully by themselves. The researcher believes that working on the "how" rather than on the "what" is what makes a change in these students' general functioning in life as well.

The LSC is a metacognitive process about learning: "learning how to learn". It deals with a variety of issues beginning with understanding what learning is, what efficient learning is, organizational skills, reading comprehension and improving written and oral expression skills. Like Feuerstein, the researcher believes in the students' ability to make cognitive changes even if they are teenagers with LD that already have gaps in knowledge and are extremely frustrated due to objective difficulties and low performances. The teacher is fully focused on the recipient's needs or concerns. The students, for their part, are open to the mediator's input and demonstrate cooperation by being involved in the learning process.

The LSC is designed as a 3-4 month intervention program within a small group of middle school, high school and university students, but it can take longer and be conducted in private sessions as well. All the work is done on the regular class learning materials. The three primary elements of the workshop are: student activity, group discourse and self-monitoring procedures. It gives the individual the necessary tools to learn how to learn.

# The research objectives

A great deal has been written about the dyslexia and ADHD syndromes. Most of the researches in this field are concerned with the medical model or behavioral issues, changing the identifications and looking for neurological impairment. But not enough researches have been done on their learning style and the probability for cognitive modification.

Much has been written about those students' failures in life in the modern society, but there have not been enough research studies dedicated to ways of helping them

besides medication. Very specific intervention programs are developed from time to time. None of them look at the struggling students from holistic point of view but as alternative to medication.

This research is conducted in accordance with this gap in the knowledge. It deals with a holistic intervention program developed to assist the LD and/or ADHD student to raise the level of their academic and general functioning.

This research aims to understand the learning processes among high school students with learning disabilities or ADHD and their impact. The research is focused on an evaluation of the contribution of the LSC to high school students; adolescents with dyslexia and or ADHD disorders, from their point of view. The aim of the research is to reach a deeper understanding of their complex world of experience and behavior from their perspective; through the participants view of the situation being studied (Denzin, 2000, 2011; Creswell 2011).

## Hypotheses

The paradigm of this research is qualitative interpretative and constructivist that reflects a holistic approach. The goal of a qualitative investigation is to understand the complex world of human experience and behavior from the perspective of those involved in the situation (Denzin, 2000, 2011). It emphasizes the quality of the process and the meaning that are not examined or measured in terms of quantities or frequencies by experiment. According to Creswell (2011) the constructivist researcher tends to rely on the participants view of the situation being studied.

Since the aim of this research is to understand how participation in the LSC, made a difference to each of the participants from the perspective of the participants, the research employs a multiple case study approach in which the "case" is the participants in the LSC and not the LSC itself. "What if", "how" and "why" are the research questions. Therefore there is no hypothesis but a research question that leads to other questions.

Case study research may be exploratory, descriptive and explanatory (Yin, 2009). The answers to the "why" and "how" questions, is derived from the question "what in the LSC made the difference to you?" this question may explore, describe or even explain the process the students underwent, and what in the process, made a difference to them. Following Shlasky& Alpert (2007), further questions that arose in this research concerning the impact of the LSC on the participants were:

1. What is the meaning of the LSC for them?

2. What kind of knowledge did they acquire through the LSC workshop? What do they do differently after "graduating" the LSC?

3. How and why has the LSC affected their functioning?

4. What in the LSC made the difference?

# Contribution to knowledge

In order to understand the contribution of participating in the LSC on the participants from their point of view, interviews with the participants were taken. Interviews with their parents and teachers were taken as well in order to get the whole picture. The interviews were conducted as a free conversation focused on the interviewees' feeling, thoughts and knowledge and were analyzed thematically.

The main findings concerning the participants show improvement in the academic level and in general functioning as well: better learning, higher scores (all the participants significantly improved their scores in all the subjects learned by at least 15 points), higher self-esteem and self-confidence, higher levels of self-awareness and breaking the cycle of failure.

Some sample remarks: "I became familiar with several methods of dealing with the study material. Not all of them were good for me, but I found the one and today I study differently". "I found out that for me, explaining the materials to other helps me to be sure that I understand everything and say it correctly". "I manage to understand the material and not just remember it". "I read more quickly and understand better ". "It's important to know all the facts and to understand the inter-relations between them. Thus everything becomes so clear, logical and it is easy to remember." "After I

analyzed the question… I knew what to write and how to write it. I was able to write a much longer, justified answer, not like the answers I gave until now". "My answers became so good that my history teacher asked me: 'So why do you need to be tested orally?'" "I'm well aware of my difficulties, but I'll deal with all of them not only concerning learning." "from here I can go on. I can succeed. I can make it on my own".

**The innovations of this research** are in the conceptual framework, the focus on the research population and the LEHAVA program.

**The conceptual framework**: Following her holistic attitude it was very important to the researcher to deeply understand the complexities of students with learning disabilities and ADHD in school. Why do they struggle? Why not giving up? Therefore she did not stopped as many of other researcher, in understanding the disabilities and their implications but look at the "whole picture" of living in a modern society where knowledge and certificates are the key to success. More than that, living in a modern society is very demanding and force each of us to adjust to quick changes. This can happened only while having flexible thinking and relevant knowledge. Since knowledge is growing excessively tools to reach and deal with relevant knowledge are more important than the knowledge learned in school.

**The research population:** Much has been written about mediating teaching including quotations and precise word by word communication between teacher and students. However this reflects only the teacher's outlook at the process that is how the teacher views the student's response to the explanation. What is new and unique about the current research is that the total focus is on the student: how he perceives the interaction with his teacher, the teaching material presented to him and how the insight and enrichment of his new knowledge can be utilized to promote intellectual thinking and processes.

**The research tool:** The most common evaluation of different interventions, are mainly quantitative and structured ways of data collecting. In contrast, in this research the participants in the program and their insights are the focus. The idea behind was to

get the real end-users' comments in the most un conducted way. That is why an open interview became the main research tool.

**The LSC - LEHAVA program** is offered as an easy, effective and inexpensive tool to promote student functioning. The LSC biggest advantage is that it not a special material learned (means that it is not a course in history, geography or else) but a way of teaching, based on mediation, student activity, group discourses and self-monitoring procedures. Therefore any teacher can adopt the guidelines of the teacher's work, be qualified in the organizational skills such as: data arrangements and time planning, and work with his students on deciphering the question, improving oral and written ways of expression and other basic issues as his regular teaching.

The LSC is not an expensive program. There is no need for new curriculum or syllabuses, or for enlarging school budgets (for extra therapists or extra hours). It is just about teacher training.

Since statistically students with ADHD and LD are all over, and this program is not limited to a certain field of knowledge, it can be implemented worldwide at any place with very young students and university students as well.

Prior to the final model of this program, there was a gathering of existing knowledge about LD and ADHD syndromes as reflected in the latest researches in psychology and education, familiarity with the diversity of learning programs and with the Israeli education system, understanding the tools needed to function successfully in our modern society and the most important thing according to the researcher – listening to the students.

As in coaching, the researcher's attitude is that an individual is a complete being, creative, whole, and that all the answers already reside within him or her. Therefore: the teacher-student relationships are based on equality, truth, openness and trust. The whole process is focused on what the student thinks and experiences. Each of the participants can achieve more than he or she is currently achieving and can generate perfect solutions. Each student is responsible for the outcomes generated.

Looking at the findings, it becomes clear that the students do know how to define their exact difficulties and needs very well, in accordance to the models of Hanell (2004), Snowling (2001) Rief (2005) and others. They explain what they can do, what they cannot do, what happened to them when… and sometimes they even have some idea of why. The most important thing is that they know what may help them.

Due to the dyslexia and ADHD that had a major impact on their functioning, as discussed by Morgan & Klein (2000), Hanell (2204) and Snowling, Muter & Carrol (2007), the participants explained their difficulties using their own words: "The problem is organizing and arranging the material". "Finding a way to say things". "To organize the material so I can learn it". "To give a proper answer". "Time planning". "My problem was reading comprehension and organization". "My grades do not reflect my knowledge". Those remarks and others describe what Feuerstein (1980) considered as deficient cognitive functions; impairments in cognition at the input phase, at the elaboration phase, at the output phase and affective-motivational factors.

The LSC helps improve each of those impairments through promoting the acquisition of principles, concepts or strategies beyond the immediate activity through generalization and increasing the learners' self-image, self-esteem and self-confidence. It works on the "how" rather than on the "what", promoting students' belief in their ability and providing them with the necessary tools to take control of their own learning and behavior, encourage becoming an effective and more independent learner.

As Feuerstein explained (1979, 2000), developing higher mental processes can be achieved by direct interaction between the organism and its environment. The cognitive structures are built even if it is done as late as adolescence. Listening to the participants and their parents reflects the changes that they feel that are happening to them, as Zeigler (2000) mentioned. The LSC contributes to the students' acquisition of the needed 21st century skills according to Binkley (2010): being able to communicate, share, and use information, to solve complex problems, to response to new demands and changing circumstances, marshal and expand the power of technology, to create new knowledge and expand human capacity and productivity. It also enables the students better functioning in accordance to the consensus in their

society, (Bronfenbrenner, 1977, 1979, 1980, 2005), consensus that reflects the values and norms of education and self-fulfillment.

Being a parent is a full-time job. Being a parent to a child with special needs is even more so. The parents accompany the children sometimes through a non-stop struggle. It takes time to understand that the child is different, especially if he or she is the first born, charming and intelligent, especially when nothing seems wrong from the outside. Going to different specialist trying everything that may work is exhausting. The parents find themselves on a very thin line between frustration and despair. (At the beginning of the interviews their fears and frustration were very obvious).

Sending their children to the LSC brought the parents to a safe place. Although it was not planned in advance, a natural process between the LSC teacher and the parents developed. The parents, at least some of whom did not know what to expect, found themselves in a new reality in which their child was talking about the importance of the LSC and about not missing even one meeting under any circumstances (bad weather, not feeling good etc.) and the most important thing succeeding and smiling.

What became very clear from the interviews with the parents and the students is the role of the teacher as conceived by Vygotsky (1986), Feuerstein (1980, 1991, 2001, 2008. 2010) and Bronfenbrenner (1977, 1979, 1980, 2005). In this research it was found that most of the teachers were interested only in the students' academic achievements and behavior but did not show any understanding of their underachievement. Moreover, they did not push their students to attain higher levels but were satisfied with adequate only scores. This makes the difference.

As long as the teachers do not have the knowledge about how to work with students with LD and ADHD, despite the constant rise in the number of such students, the students have no chance of being taught appropriately or of succeeding according to their strengths and abilities. As Feuerstein (2001) analyzed the teachers' attitudes in Israel, as a result of lack of information, they mostly assume that the student's difficulties are fixed and unchangeable; therefore it is impossible to change their cognitive structure and learning ability. Those teachers do not consider their everyday work with the students as a critical factor in their cognitive and behavioral

development. As a result, they perceive themselves as "knowledge agents". However, looking at the scores of the Israeli students in the matriculation tests and in the OECD tests reveals that this alone does not work.

To summarize, the key findings include:

1. Participants and their parents were positively affected by the LSC although nothing formal was done with the parents.
2. According to the participants, all parts of the LSC contributed to their better functioning, each in regard to the participant's starting point.
3. The better functioning was expressed in: higher scores, improved self-esteem and self-confidence, better time planning, renewed feelings of enthusiasm and the adoption of an optimistic view that it is possible to handle with any difficult.
4. Working according to the MLE criteria enables cognitive modifiability even while using regular curriculum materials and not only the Feuerstein Instrumental Enrichment (FIE) materials and even while working with adolescents who already have a long history of failures.
5. Teachers' attitudes play a major role in their students' success. As theoretically obvious as this notion is, most of the teachers are not aware of this fact in their daily classroom practices.

The conclusions are:

1. Success in school has a crucial effect on the wellbeing of students with LD and ADHD and encourages thin other areas of life as well.
2. The LSC successfully resolves the special needs of students with LD and ADHD in the regular class. There is no need for new curriculum or syllabuses, nor for enlarging school budgets (for extra therapists or extra hours), but all teachers would benefit from training to enable them to teach according to the LSC principles.

3. The teacher is a key figure in his student success.

4. The LSC can be implemented worldwide because it is the approach and technique that make the difference. The materials learned are just the tools for practicing the LSC different elements.

Key words: "Learning Strategies Course" (LSC), "LEHAVA" - Hebrew acronym signifying Learning, Organization, Confidence and Success. Zone of Proximal Development (ZDP), Mediated Learning Experience (MLE), learning style.

LEHAVA este un acronim ebraic ce semnifică Învățare [Learning], Organizare [Organization], Încredere [Confidence] şi Succes [Success].

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