The Maor Ben Zion Education Program

Putting the NDFA framework of promoting learning and behavior skills in kindergarten and elementary school into practice

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The Maor Ben Zion education program in kindergarten

A high-quality, dynamic, and successful education program

This book presents the Maor Ben Zion Education Program promoting learning and behavior skills among young children based on the Neuro-Developmental-Functional Approach (NDFA) developed by Mr. Rami Katz, Senior Developmental Psychologist.

Over the years, the NDFA concept developed by Rami Katz has been enriched by members of the education profession within Petach Tikva, a city of approx. 250,000 citizens in the center of Israel, where it found practical application as an education program within many classrooms, both in kindergartens and elementary schools from which more than 10,000 children aged 3-8 years already have benefitted.

In a demographically, socially, and technologically fast-changing world, there is a dire need to adapt teaching methods to address the evolving needs of its youth.

It is the conviction of the founders and members of the Maor Ben Zion Foundation that the program described in the following pages will be an effective tool to reach that objective. It is not limited to a specific country, culture or value system and can be applied in those classrooms where successful preparation of children for the demands of further education are of the highest standards and expectations.

The book was written mainly by the program coordinators and coaches in collaboration with the developer of the NDFA concept and members of Muvanim, the professional external body entrusted with the yearly review of the results achieved.

The book is divided in different sections and begins with the theoretical basis of the program, presented by Mr. Rami Katz. This is followed by showing how the NDFA is implemented within the framework of the kindergartens and first two grades of elementary school. It presents the perspectives of the parents, the teaching staff and of the municipal officials on the program, as well as presenting selected findings from the accompanying evaluation research conducted by Muvanim.

The Maor Ben Zion Foundation

Heart's desire

Would that every child - wherever and whoever they may be - could grow up surrounded by the love and attention of their parents and relatives; could be accepted, with the understanding of how unique they are.

Would that each child could be encouraged to safely encounter a wide range of experiences, allowing them maximal development of their inherent functional abilities, and know they are truly valued for them.

Would that each child could have this background to develop the experience of being loved, safe and valued, and that from this foundation, be able to treat others with friendship, trust and appreciation.

Would that when all these children grow up - they become adults who have respect both for themselves and for others, are trustworthy, friendly, and peace-loving.

The Maor Ben Zion Education Program, which promotes learning and behavior skills, attempts to touch upon that same understanding, acceptance and encouraging appreciation of development which have the power to advance children and help them realize their inherent potential.

In our community program, we implement this hands-on approach with children in daycare, kindergartens and schools through the educational staff, and we hope that this will also help to reach out and impact the children in their homes and their parents as well.

This program attempts to promote child-friendly classes. Let us hope that such classes will create a child-friendly environment, even on a small scale, a world that favors children and one that will be friendlier to people wherever they may be.

Rami Katz

Senior Developmental Psychologist

The Maor Ben Zion Education Program in Petach Tikva, Israel

The Petach Tikva Municipality and the Director of Education invest multiple resources to create quality frameworks for young children. One such resource is the learning skills program developed by psychologist, Rami Katz.

The program introduces children to an environment that encourages free play, develops imagination, social play, and the basic skills to ensure their emotional, social, cognitive, and linguistic development. It highlights these features in preparation for children's needs in schools and significantly promotes their chances of success. The program also promotes positive interaction between adults and young children, contributing both to emotional and social well-being, and to the development of thinking and knowledge tools.

The program is run by a team of coordinators and support staff who regularly come to the kindergartens. The kindergarten staff receives quality and professional guidance to maintain these goals. It has high costs, and the municipality has operated it as a pilot in a limited number of kindergartens in refurbished and immigrant-concentrated neighborhoods.

About 12 years ago, Ruth and Steven Sandelowsky, together with the municipality, examined the possibility of contributing to the advancement of children from the Ethiopian community and children from distressed neighborhoods. The staff of the Education Department revealed the plans to them, and the match was a great success. Ruth and Steven were impressed by the potential of the program and its benefits, and, together with the Director of Education and the staff of Rami Katz, built the Maor Ben Zion Education program, named in commemoration of the late father of Ruth Sandelowsky.

The program expanded to about 130 kindergartens and at some point, was also extended to elementary schools, all with the generous funding of the Maor Ben Zion Foundation, which treated the program as an investment and accompanied it with the ongoing help of professionals. Thousands of children have reached a higher and better entry point into the school system, and life. About 120 kindergarten teachers have undergone significant training and experience that will accompany them further in their professional careers.

Thanks for the success of the program go to many: the staff of the Kindergarten Division headed by Michal Unger; the staff of the Education Services Division headed by Karin Ohayon; the Ministry of Education inspectors; the professional academic team led by Rami Katz; and first and foremost, to the founders and members of the Maor Ben Zion Foundation who enabled the program and its extensive scope, and their local representatives, Mr. Arnon Aviner and Ms. Ziva Maor.

On behalf of thousands of pupils and of the Petach Tikva Municipality, thank you all. The Municipality continues to implement the project in its kindergartens and schools.

Rami Hoffenberg

Deputy Director of Education and Director of the Education Administration, Petach Tikva Municipality.

A world of grace will be built

From the moment a vision is conceived, a long time and incessant thoughts can pass until the moment of fruition.

We were able to fulfil the humble and generous vision - the Maor Ben Zion Education Program for the promotion of learning and behavioral skills - thanks to individuals of virtue who unhesitatingly opened their hearts and extended a supportive and embracing hand.

I would like to thank Ruth and Steven Sandelowsky, founders of the Maor Ben Zion Foundation and its members for their great generosity and important and unparalleled contribution.

Thanks to you, we are privileged to be a ray of light to the thousands of children of the city of Petach Tikva, and in the future to illuminate it with a successful, ethical generation that has been part of this important and noble project.

I thank you from the bottom of my heart on behalf of the Ethiopian community in Petach Tikva, and on behalf of the city's thousands of kindergarten and school children for your part in promoting and developing learning skills based on neuro-developmental functions that has enabled them to build a set of essential and individual learning skills.

This system leads to:

- Reduction of violence in challenging children
- Improvement of class climate and experiential multi-sensory learning
- Reduction of linguistic gaps among Ethiopian immigrant children
- Guidance of parents, providing educational tools, and involving parents in education
- Training of educational staff

May your generosity be recognized, blessed, and be a credit to your loved ones.
With much gratitude and appreciation,

Shlomi Dassali

Director of the Department of Community Relations and Youth Clubs,
Petach Tikva Municipality

A learning skills program based on the Neuro-Developmental-Functional Approach (NDFA)

Rami Katz

The program to enhance learning skills and behaviors according to the NDFA offers a new format for educational work that has proven successful within the Israeli education system. We explain below why it seems that so many kindergartens and elementary schools urgently need to make a significant change to their current format.

In today's education system, all too often we encounter the following characteristics in young children:

- Boredom and lack of interest in what is being taught
- Ever-increasing problems of discipline
- Increased incidence of violent and aggressive behaviors
- Severe deficits in attention, concentration, and the ability to absorb new material
- Motor restlessness and an increased need to move
- Lack of social ease, and more

Educators wishing to help children develop in all fields within the education system feel that there are more and more children with whom it is very hard to attain the desired educational goals and that teaching is becoming harder from year to year. These problems originate in two different areas:

A considerable change in the children – The children now attending kindergartens and schools are very different due to the tremendous technological, social, economic and cultural changes in the contemporary environment, which has significantly altered their socialization patterns and affected their development. This has created a severe mismatch of expectations among educators, who are finding it hard to cope.

The lack of suitable change in the kindergartens and schools – The public school system was founded in the 19th century in a pseudo-military format. Some of the patterns of activity it created are still prevalent in education systems in the 21st century, a situation which hampers the implementation of necessary changes relevant to the children of today given the rapid rate of change in the world.

Causes of change in children, mismatched expectations and the difficulty of teaching

The increasing difficulty in educational work due to the change in the children and in the current environment is evident in the mismatch between educators' expectations and the changes the children have undergone. Below we present seven areas of functioning and abilities expected of the child entering the education system:

1. **Interest and mental alertness** – we expect children to show interest in class activities, and not to be bored and uninterested and thus labeled as suffering from Attention Deficit & Hyperactivity Disorder (ADHD).

2. **Motoric calm** – we expect children to be able to sit quietly for a reasonable amount of time so they can learn, listen or write without fidgeting restlessly, and not be labelled as suffering from ADHD.

3. **Effective auditory attention** – we expect children to be able to listen effectively to what is being said in class for a reasonable amount of time, without disengaging and daydreaming. Otherwise, such children will be deemed to be suffering from ADHD.

4. **Effective muscle tone and posture** – children should have proper muscle tone and posture for movement, sport, drawing and writing, so that those lacking in this area are not labelled as lazy, refraining from doing things clumsy, hypotonic or suffering from Developmental Coordination Disorder (DCD).

5. **Adequate functioning competence for learning** – we expect children to have competent functioning. Competence is a complete range of essential basic functions needed for reading, writing and mathematics. For example, to learn how to read, a child must be equipped with many important basic functions, and if one of them is flawed, the fluent reading will not be properly acquired. We do not want children to be categorized as having dyslexia, dysgraphia, dyscalculia, a learning disability or as having a Specific Learning Difficulty (SDL).

6. **Social ease and interpersonal confidence** – children should be socially at ease and have self-confidence within an often crowded class, so that they do not withdraw or become socially aggressive, and are not labelled as having Social Anxiety Disorder (SAD).

7. **Discipline and boundaries** – we wish the children to be disciplined and not display problematic behavior with no boundaries. We do not want them to be labelled has having Oppositional Defiant Disorder (ODD).

However, as mentioned, the children have changed and so our expectations of them are no longer being met. More and more of them come to class unmotivated, physically restless and struggling to remain attentive. Many children lack the competence to acquire basic learning functions, their muscle tone and posture are poor, we often see social difficulties, aggression or violence, as well as a lack of discipline and boundaries.

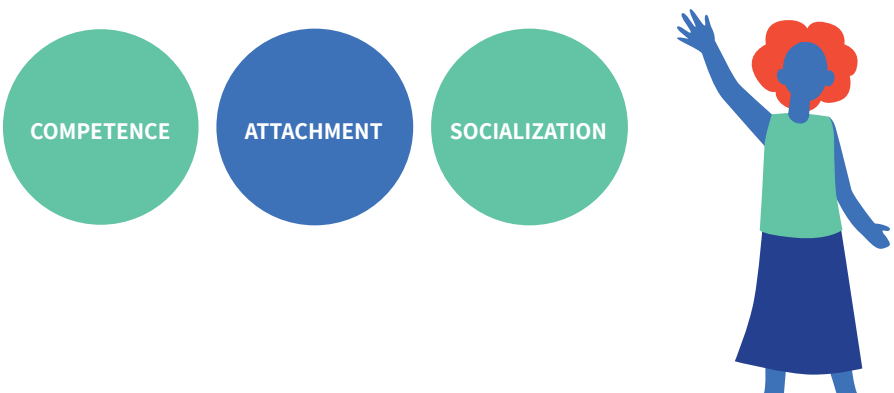
Considerable environmental changes in the modern world highly affect the changes children undergo. To understand the effects of these changes, including very early exposure to an accumulative rise in toxins, radiation and pollution, we will relate here to the changes affecting children's experiences of their environment and how they have changed. To do so, we will first discuss neuroplasticity (flexibility of the brain) - one of its fundamental qualities – and three essential developmental processes that affect children. Understanding these processes is essential for every parent and educator, and indeed, anyone dealing with children and their development.

Neuroplasticity

A critical trait underlying our natural ability to learn is the plasticity of the brain. Heredity equips us with a flexible brain that can change its structure and function as a result of changes in experiences in the environment. Within this flexibility lies tremendous inherent potential, as positive experience of the environment enables much learning and adaptability by developing new inter-cranial connections. However, this mental flexibility also contains a certain risk. In the absence of important experiences, systems of inter-cranial connections might not develop or might even deteriorate. Hence the tremendous importance and impact of the experiences the child is exposed to.

The three developmental processes

These three processes have inherited cerebral foundations that are independent of culture or time, but their realization is dependent on environmental experiences. The quality and manner of the brain's experiences are affected by both environmental and internal [organism] factors and the interactions between them.



Competence

It is children's inherent nature from birth to learn about the world around them and about themselves and their bodies through physical activities that activate the senses, muscles and brain and cause them pleasure. This trait is essential for adaptation and survival through which to attain competence, build future abilities and skills, and prepare for life as an adult.

As children grow, so does their ability to make more complex and developed movements and sensory integration. These activities include expansion of familiarity with the environment, imitation of and learning from the actions of the significant adults around them and from joint activities with peers. All this extensive activity involving plentiful activation of the body, which is both enjoyable and contributes to the building of competence, is generally known as play.

Playtime is thus a key to natural learning that takes place with powerful motivation. It involves intensive activation of the senses, muscles and integrative mental activity, and enables the acquisition of information and physical abilities needed to thrive in the society in which the child lives. The environmental condition for realizing the building of skills is having opportunities for diverse experiences and playtime. However, a child might start with some inherited and/or environmental basic functional difficulty that might make some experiences difficult, even when there are suitable conditions for development.

When environmental conditions change – as they have in the current era – it changes children's playtime experiences, which can then make it harder to achieve competence. This might also affect children's encounters in the education system and make teaching even harder. Here are some examples:

The declining use of 'neighborhood' outdoor play areas has considerably reduced opportunities for competence training for very many children. The advantages of the neighborhood play areas were the experiences with all kinds of materials, fine and gross motor coordination development, the senses of touch and spatial orientation, and more. Neighborhood playtime was also an opportunity for social training, adjusting to a multi-age group, learning non-verbal language in social communications, learning to negotiate, build character and personality and so forth. With less outdoor playtime, children enjoy fewer such experiences, and this adversely affects the development of their competence and limits the development of many functions such as posture and muscle tone, motor tranquility, effective auditory attention, functionality needed for reading, writing and arithmetic, and more.

At the same time, there has been a **massive penetration of various types of screens** into children's lives for many hours a day, and this has had a tremendous impact on children's brains and behavior. The fascination with screens is the visual stimuli of motion and contrast that strongly attracts children from a young age. Our sight is a key sense for spatial

orientation and as such, it has a strong stimulating effect on our brains and thus constitutes an attractive experience. Hence screens greatly affect mental alertness and visual attention.

The advantage of exposure to screens is the attainment of mental skills in virtual orientation and the building of new neural networks that support adjustment to modern life.

The disadvantages of exposure to screens are: a) erosion of the visual attention span, which leads to loss of interest and boredom in class, which often lacks the element of strong visual stimulation; b) lack of interest in other non-visual areas and the weakening of other brain functions. There is also a limiting effect on social and verbal developments, including reading. Screens thus contribute to a low level of mental alertness and interest and can render classroom learning ineffective. This low level of alertness also harms the efficacy of the brain's executive functions and of the ability to restrain impulses.

Attachment

Children tend to form attachments naturally – a connection of closeness and love toward the people who are constant in their environment and who influence them with warmth and affection. Attachment is the basis for interpersonal trust, confidence and sociability that develops throughout life. The environmental condition for the realization of this kind of bond is the existence of a consistent relationship over time with the child from loving people who radiate warmth and safety. However, a child might start with some inherited and/or environmental basic functional difficulty that might make some experiences such as being touched by others difficult, even when there are suitable conditions for attachment.

The changes in the realm of attachment in the modern environment

Lessening and withdrawal of parenting. This occurs where maternity leave is relatively short (e.g., in Israel, the site of the longitudinal study described in this book, it is 14 weeks) and usually followed by the immediate return to work by the caring parent. The parents are then separated from the child for long hours every day, which can adversely affect the attachment process between them. The time parents and children spend together within the demands of the modern world has been greatly reduced (according to a study conducted in Israel, it is 14 minutes a day or less on average). Among other things, this change can affect social ease and interpersonal confidence within a crowded classroom group. There is greater mistrust, suspicion, alienation and tension, as well as defensive aggression.

Socialization

Children have an inherent mental ability that matures as it develops to inhibit and restrain impulses and urges and to delay gratification. These skills are essential for the acceptance of social rules and norms which, for the most part, are learned within the family framework.

Upholding rules and norms is necessary in order to enable any kind of social-communal life. This acquisition of the rules and norms needed for acceptance as a member of the community one grows up in is called 'socialization'.

The environmental condition for this acquisition is a process of internalizing the acceptance of authority and hierarchy within the family, and the attempt to accept boundaries and learn the social rules. It should be noted that in all of these, a child might come with some inherited and/or environmental basic functional difficulty that might make it hard for them to take advantage of learning opportunities, even when there are suitable conditions for socialization.

Economics and urbanization have weakened the nuclear family and altered the roles, functioning and status of parents. The lack of time together has, among other things, led to feelings of guilt among parents, often accompanied by a sense that the child must be compensated for this – a notion that has been a catalyst for the damage to parental authority and the hierarchy within the family. The parent becomes the child's 'friend' rather than a guide or life coach. When parents are less authoritative, children do not internalize the image of authority and cannot project it onto the teacher encountered in the education system. For example, when parents give in to their child's temper tantrum, parental authority is disrupted, and proper boundaries are not set. As a result:

a. the child does not learn self-control and the ability to delay satisfaction.
b. the child's aggressive behavior receives positive reinforcement.

All this leads to a lack of discipline and lack of boundaries, which weaken impulse control and increase the chances of violence among many children, both in kindergarten and in school.

All the above shows that experiences have a great influence on the development of the plasticity of the child's brain and are essential for the actualization of its inherent possibilities. To a great extent, the nature and frequency of the experiences will determine how effective a child's functioning is. Hence, kindergarten and school are such important places, since this is where children are exposed to the experiences they offer for several hours a day for several months of each year. In other words, they play an essential role in influencing the developing brains of the children, for better or for worse. For this reason, it is important to know how to design classroom experiences in such a manner that they will have a positive impact on the child's development and that this will be expressed in all three processes of competence, attachment and socialization.

Methods and guidelines for building an alternative format

To build an alternative format, we must first become more familiar with the child – who is our starting point. We must understand how children function and how their brains develop and what experiences might be beneficial for their development. This kind of

knowledge as presented in this book is based on the Neuro-Developmental-Functional Approach (NDFA), which is a diagnostic-therapeutic and educational mindset based on insights regarding development and neuroplasticity.

The NDFA does not classify children by symptoms and 'labelling'. Rather, it deciphers problems and phenomena by relating to how they develop. Accordingly, any failure in the development of a basic function may lead to difficulties with more complex functions based upon it that are supposed to develop later on. Hence, it is necessary to trace the path back to the source of each functional difficulty to see the sequence of its development and the environmental influences on it. The importance of these influences is informed by the insights regarding neuroplasticity, and the fact that they are modifiable through other experiences of the environment.

These two insights contribute to educational and therapeutic applications (including the diagnosis and treatment of learning and behavior disorders, ADHD and Autism Spectrum Disorder - ASD). According to the development insight, along its continuum we can locate the basic function upon which the later ones are founded, and according to the neuroplasticity insight we can identify beneficial environmental experiences that make it possible to strengthen the basic function and rectify any weakness it might display.

The NDFA constitutes the basis for the program for the promotion of learning and behavior skills proposed here as a platform for the creation of an alternative format upon which to:

- Focus on the processes of competence, attachment, and socialization.
- Remember the seven areas of essential functions expected of a child in kindergarten and the start of elementary school and examine what functional foundations underpin them.
- Learn what experiences can enhance or restore these functional foundations.
- Design the educational environmental in the kindergarten or school so as to help build up these basic functions.

For example, rather than have the children sit still in class, we will allow them some planned physical activity during the lessons. This aligns with the children's natural need of competence, gives them a sense they are engaged in some enjoyable playtime, while the brain rewards them with a sense of pleasure and happiness, all while simultaneously improving skills, thereby optimizing effective attention, motor tranquility and the ability to learn.

We call this process 'promotion', and it is the cornerstone of this program, during which the teaching staff can learn:

- What basic functions underlie the three areas of development and what flaws within them make educational work harder.
- What experiences are effective for building and promoting the basic functions.

- How to plan activities and workstations suited to the children's ages and to curricular content that will contribute to the enhancement of the basic functions.

As mentioned, children's playtime activities constitute experiences that build physical, scholastic, and social competence. Accordingly, the activities and stations around the classroom were constructed in the spirit of child's play, thereby ensuring their positive motivation and enjoyment. Thus, they engage in extensive learning activities while perceiving it as fun playtime that motivates them to learn in a different manner either in kindergarten or in school: it activates the basic functions needed to attain competence and helps stimulate the mind, which is essential to enhance attention, absorption, memory and learning on the one hand, and impulse regulation on the other.

In the chapters that follow, there are several examples of such activities and activity corners. The experiences that might prevent the development of disorders and problems and that support good development of competences and abilities should become part of the set of activities in every kindergarten and school class, which will thus become inclusive classes.

An inclusive class may also contain children defined as having special needs, even though we, in the spirit of the approach, believe that every child has special, unique needs. In our view, the program enables the inclusion and integration of children with heterogeneous special needs in a class. All children need an opportunity to experience these activities in order to develop the basic functions, and children 'with special needs' need them even more in order to help them strengthen or repair any weakness or flaws in their basic functions.

This may give rise to a key question: how can a kindergarten or schoolteacher give individual help to so many different children in their class? They can do so thanks to the function-enhancing activity corners in the classroom: the teacher learns which children particularly need which activities and can then see that they spend more time on them. Thus, following the appropriate training of the educational staff, they can arrange an inclusive classroom, without having to 'reinvent the wheel' for each child with a particular difficulty!

Since all these activities can take place within the regular classroom, rather than having children leave it for treatment elsewhere, no stigmas can develop! Children can find a solution to their problems and strengthen their functions through fun and with a positive feeling as they remain in class, engaging in the same activities as their peers, even though they may do so with different levels of intensity and frequency.

In the following chapters, we will see how and with what effect the program was put into practice in kindergartens and schools in a city in central Israel.

The Maor Ben Zion Education Program promoting learning and behavior skills in kindergarten and elementary school

The primary goal of this program is to help children develop self-efficacy to function effectively and comfortably within the education system, to create a learning environment that encourages normal development and reduces developmental gaps. The program is based on the need to support each child according to age and developmental needs, while assuming they each develop at a different pace, with every stage built upon the previous ones.

The program is flexible and adapts to changing world trends, such as technological or environmental changes that affect the children and impact their daily lives in kindergarten and elementary school. In this section, we describe some of the physical systems and their functions and present the implementation of the neuro-developmental-functional approach (NDFA) in this program and how it is applied in kindergartens and elementary schools in the city of Petach Tikva in central Israel.

Sensory systems and their functions
Theoretical and practical perspectives

We believe that activating sensory and motor skills in kindergarten and early elementary school classes must be an essential part of the educational routine. Enrichment with motor and sensory-stimulating accessories meets children's natural need for movement and the opportunity to experiment with sensorimotor development. Following is a description of the sensorimotor systems in our bodies that influence the essential functions for learning and behavior.

The sensorimotor system

The sensorimotor system activates numerous senses that help us recognize the world around us, as well as our own bodies. The mind receives information through the various senses, processes it and combines the different sensory information so that we may adapt to our environment, develop, and survive.

The familiar sensory systems are: sight, hearing, taste, smell, pain, sensing heat and cold. However, there are additional sensory systems:

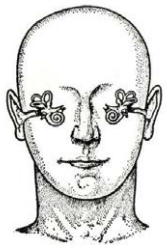
- The vestibular system – sensitive to movement and affecting muscle tension, balance, and level of alertness.
- The tactile system – the sense of touch on the skin
- The proprioceptive system (deep sensation) – giving us information about body position in space.

Integration of the senses is also essential for the development of the motor systems, which must be trained to improve strength and build nerve-motor coordination. When sensory processing functions properly, the child moves, touches, feels, and receives feedback from the environment. When there is impairment in sensory organization, the child experiences difficulties performing daily tasks relating to eating, dressing, and playing. The child needs to invest greater effort in performing tasks and experiences less success and less satisfaction with their actions. These difficulties can disrupt learning processes, writing and self-organization. Sometimes these difficulties also cause behavioral problems – hyperactivity or hypoactivity, as well as attention and concentration deficits.

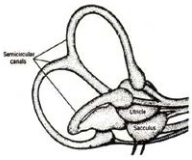
The sensory bath. Different textures are placed in a large bowl (preferably two textures per bowl) and the child dips hands and feet and has fun. We can ask the child to move objects hidden within the bowl using either their palms or their soles.

The vestibular system

The vestibular system provides the brain with information about changes in the body's movement for its spatial orientation as well as information about the direction of the force of gravity which is critical for organizing the functioning of balance.



The vestibular organ is located near the inner ear and is surrounded and protected by the skull bones. It has five parts, in which a liquid (endolymph) plays an essential role. The five parts are two follicles – upper (utricle) and lower (saccule) and three semicircular canals called "vertical semicircular canals" placed a 90° to each other, (see diagram). The role of the utricle is to detect the direction of gravity and sense any change in the movement of the head and body.



The three canals measure the turning of the head moving in 3-dimensional space, where each ring measures movement along one of the planes – length, width, and height. Each ring is affected most strongly by the movement along its own plane and less so by movement along the other planes.

Activation of the vestibular system is of tremendous importance. With all its components, it enables us to be aware of our movements in space (even without relying on the sense of sight), and, together with other sensory systems, helps organize and maintain normal balance.

According to clinical knowledge accumulated in recent decades, the vestibular system has essential connections with several key functions, some of which we list here.

Connection with general alertness. While monotonous movement reduces alertness, relaxes us and helps us fall asleep (like rocking a baby to sleep), movements that require intense activation of the vestibular system stimulate alertness. Use of movement in kindergarten and elementary school increases children's mental alertness, thereby promoting their ability to learn.

Connection with hearing and auditory attention. Vestibular activation improves auditory attention and is important and recommended when working with children who tend to 'daydream' or have Attention Deficit Disorder (ADD).

Connection with sight and eye movement. The vestibular system and sight are interlinked and work naturally together, as the brain needs both to interpret what is going on in the world in which both we and other objects are in motion. There is a reflexive connection between the vestibular system and eye movement which helps stabilize the eyes when the body and head are moving, and a vestibular nystagmus is created when turning around. People with vestibular sensitivity may suffer from nystagmus while reading and see letters

and words 'jumping' out of place, and this affects their reading ability and might develop into a form of dyslexia (Levinson, 1988). Vestibular activation might resolve this difficulty.

Connection with muscle tone regulation, posture, and coordination. The brain must regulate muscle tone and see to posture and coordination. Two of the types of information the brain needs to do this are the degree of strain on the joints (proprioceptive information) and the direction of gravity (vestibular information). When there is ineffective regulation, the ability to write properly might be impaired. The vestibular activities are very important for improving this condition.

Ways to activate the vestibular system

Vestibular activation can be generated by a range of movements such as swiveling around our axis, rolling from side to side, rolling forward and jumping on a trampoline, and through various balance exercises. Such activities can be planned in a way that requires only limited room so they can be conducted within the kindergarten or school classroom, and not necessarily outdoors.

One can plan the integration of these activities for groups of children during the lessons, so that they can be linked to the various areas of learning content. Children whose class time includes movements that stimulate the vestibular system perceive their learning as pleasurable playtime, their need to move around is met and they are more motorically calm and quiet. At the same time, the vestibular activity generates wide functional impact through its significant connections with other key sensory systems

For example, asking the children to roll from side to side on a small mattress, where on each side they have to pick up a card showing a number of items and then roll over holding the card and place it next to the card with the relevant number.

Making movements that stimulate the vestibular system

A balance beam. Advancing at different heights

Revolving or rocking on the vestibular plate stimulates the balance sensors

Summary

According to our experience and to accumulating knowledge, vestibular activation in the classroom may contribute to increased mental alertness while learning, thereby improving the efficacy of the executive functions essential for learning and of impulse restraint, which is also essential for learning. These activities also enhance the efficacy of auditory attention and reduce disengagement and 'daydreaming'. They may contribute to the normal functioning of eye tracking movements needed for reading, writing, and copying from the board; improve muscle tone regulation as well as writing and other necessary motor activities. All this occurs alongside the need to restrict movement among all the learners, who otherwise might disrupt the learning process taking place and leads to considerable calming of hyperactive behaviors in children whom some teachers find hard to manage.

Note that overuse of the vestibular system might cause serious discomfort (nausea, vomiting, dizziness, headaches and more), and so it is very important to adjust the exercise to the individual level of sensitivity of each child. In cases of vestibular hypersensitivity, for example, these activities must be carried out with great caution, gradually, starting slowly for very short periods of time.

The tactile system

The tactile system, the sense of gentle touch over the skin functions through receptors located near the skin's surface, which constitutes the boundary between our body and the outside world. The receptors transmit information about touch as well as about pressure, temperature, and pain.

The tactile system has three very important functions:

1. Warning for protection. When something comes close enough to touch the skin – this sense is activated and gives out a warning so that the person can check whether it poses any threat.

2. Social development, making contact, love and closeness. Warm, loving, and caring touch by a baby's primary caretakers sends a signal to the baby's brain. This is essential for securing primary communication with caretakers. This communication (a baby's first love) constitutes the infrastructure for future social and emotional development and affects all social interactions the baby will experience later in life. This is why the tactile system has such a strong influence on social development. Children born with hypersensitivity to touch might, in some instances, react by shying away from the loving touch of their caretakers and thus have difficulty developing a normal, safe attachment to them. Alternatively, even if they have developed a good attachment, they will have difficulty developing safe and pleasant social ties with their peers, whose touch might be perceived as bothersome or threatening.

3. Palpation. Some areas of the skin are more sensitive to gentle touch than others - our mouth, palms and soles being the most sensitive. These areas that are particularly sensitive to touch enable a child to learn about the world and identify objects within it through palpation. For example, babies put everything in their mouths, not to taste them, but to learn the shapes and textures of what is around them. At a later age, the main responsibility for palpation shifts to the fingers – the fingertips in particular. Palms and fingers can feel and perform a wide variety of delicate movements and they take part in the execution of fine motor skills and writing.

Because of the tremendous importance of the tactile system for social development, promoting this sense involves offering plenty of tactile experiences within the daily routine in the kindergarten and at school. This is true for all children, and especially for children who are hypersensitive to touch.

The children take part in the process of preparing a variety of craft materials of different textures.

A sensory table with materials from nature

Activities for development and enrichment in the sphere of touch – "What feels nice and what doesn't?"

Ways to enhance the tactile system

Exposure to textures. Exposing the limbs to different textures can help a child accept random touch from other children in the kindergarten and at school in a non-threatening manner. We can expose the child to various sensation boxes containing different types of cloth, brushes, squeeze balls, spiky balls, furry dolls, and foam. We can offer them gradual experiences of touching different textures with their hands and feet and find out which ones are pleasant for the child and which ones are not. Working in groups and with the mediation of the staff, we can find out whether a particular texture that is nice for one child is not pleasant for another. We can teach the children that they have the right to allow for or request sensations that are pleasant to them, but equally can ask not to experience touch that they don't like, and that all their peers must respect this. In this manner, the children learn the essential basis for developing empathy - different people feel different things and we must respect each and every one, even if their sense of touch is different from ours.

Palms and soles. Our palms and soles, as well as our fingers and toes, have many receptors and so they are highly important for gathering information about the outside world. But children whose palms are hypersensitive might avoid touching different materials. Not experiencing these things might lead to a developmental delay in fine motor skills, as well as other difficulties. At the same time, it is worthwhile working on tactile exposure for the soles of the feet, since sensitivity to touch in this area can have problematic implications (such as walking a lot on the balls of one's feet, difficulty walking barefoot, or having trouble with socks, shoes, sandals, etc.).

Playing and drawing in foam on a board to develop sensitivity in the palms of one's hands

Examples of activities designed to develop the tactile system in palms and soles:

Working with foamy soap or shaving cream is particularly effective in reducing hypersensitivity in one's palms.

Drawing in sand. This is a wonderful experience! Large letters or large numbers can be drawn in the sand, and the child walks barefoot along the lines drawn.

The proprioceptive system

A person's proprioception is how a person sees themself: the sense of the muscles, joints and tendons that are deep under the skin and contain receptors of different kinds.

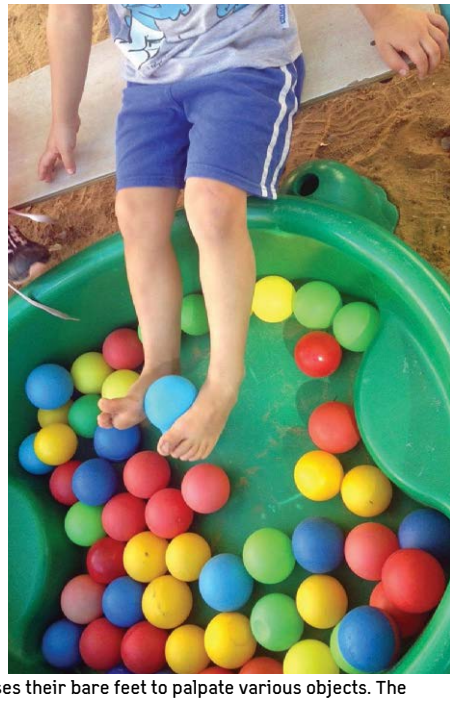
The importance of proprioception

As mentioned, proprioception provides feedback to the brain from our muscles, tendons and joints. Feedback regarding the movement of the joints, the pressure on them and the contraction of muscles and stretching of tendons is transferred to the brain by way of deep sensory receptors and provides information about location and movement and their intensity exerted on the body. This information is essential for the planning and organization of movement and for the supervision of its execution. From a subjective perspective, proprioception is the means through which we feel the different parts of our body and where exactly they are located.

In fact, thanks to proprioception, we can feel both the orientation and location of our bodies, as well as the movements of our torso and limbs. This, for example, enables us to eat freely without having to look in a mirror to guide the hand to bring the spoon to our mouth, knowing how much force to exert in the hand movement to do so, and when exactly our mouth should open to take in the spoonful of food.

* Oliver Sacks (1985) described proprioception as 'the eyes through which the body "sees" itself.'

A safe climbing wall to activate muscles and regulate strength, with support adapted to the children's age.



Palpating with one's feet. With eyes closed, the child uses their bare feet to palpate various objects. The child guesses what the objects are while noting their most obvious feature: cold, hard, soft, spiky, rough, smooth, etc; Tactile games with palms and soles.

There are other important areas of functioning the program addresses in both kindergartens and schools:

Gross motor skills

The development of gross motor skills is based, among other things, on the integration of the various sensory systems such as proprioception, sight, and the vestibular system, as well as on the regulation of muscle tone.

Efficient functioning of all these may contribute to the development of gross motor coordination, efficient movement, and the ability to perform a variety of children's daily activities. Hence, we recommend a range of activities that should become part of the kindergarten and school routine, as suited to the motor abilities of the various children in order to promote them in this area.

Fine motor skills

Fine motor skills are highly meaningful for effective control of the body's small muscles and for the coordination between them. Among the most important of them, when it comes to kindergarten and school routine, apart from the eye muscles, are the hand muscles. Effective fine motor skills will allow differentiated activation of the fingers, proper holding of a pencil, drawing, writing, and more. Many basic functions affect the development of fine motor skills - a tactile system which is not hypersensitive (the ability to touch different materials without reluctance); proprioception, and effective differentiation, normal muscle tone for small muscles and for strong shoulder muscles with the ability to stabilize the body and the hand, regulating proper force when using the hands, and more.

Stringing beads in a container filled with soapy water; **Sliding paper** squares into transparent jars while crossing the midline

Sliding straws into a transparent jar

Attaching clothes pegs to a hoop according to a color model

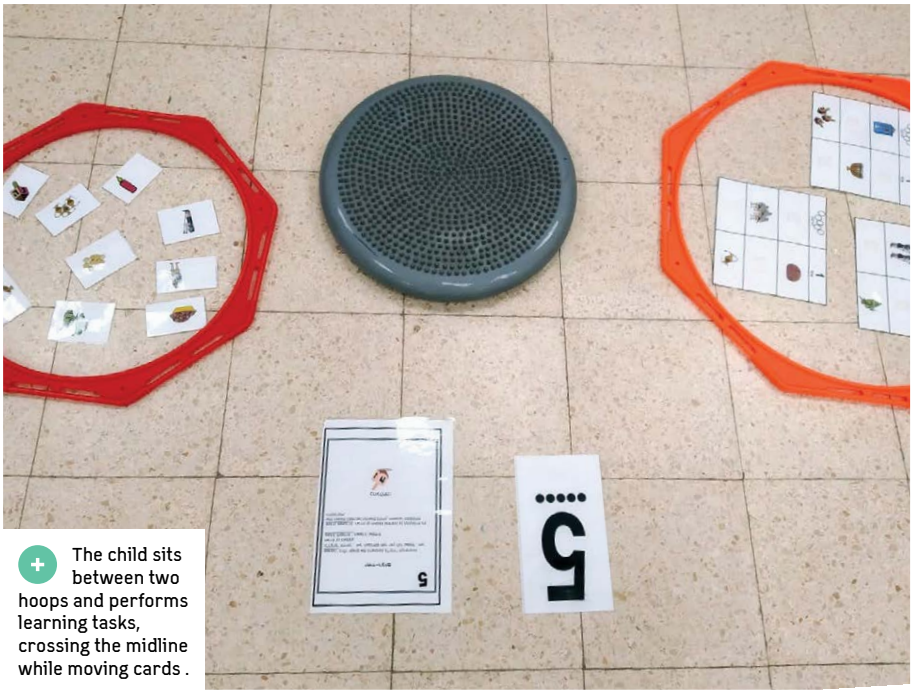
Omega game to activate arm muscles and strengthen muscle tone

Differentiation – separation of movement

In this context, differentiation relates to the brain's ability to perform motor actions using a muscle or specific group of muscles without activating other muscles not needed for this particular action. For example, a child's ability to perform an action with the fingers of one hand, without the fingers of the other hand moving unnecessarily. This ability to differentiate is based, to a great extent, on effective proprioception. Differentiation is very important for the efficacy of gross and fine motor coordination, and is expressed, for example, in a child's ability to jump, lie down on a ball, pick up an object, write and track with the eyes, and many other activities without which there will often be obvious clumsiness of movement.

Internal brain coordination between the two sides of the body, midline crossover and other forms of coordination. Based on internal brain organization, this is the ability, to coordinate between the two sides of the body and perform symmetric movements, for example, jumping with both feet from one hoop to another, doing "kangaroo" and "frog" jumps, or clapping hands.

Asymmetric movements. These are crossover activities - simultaneous activation of an opposing arm and leg (very important for practicing normal and effective internal brain coordination, e. g., walking on all fours, crawling Indian style, and crossover jumping.



The child sits between two hoops and performs learning tasks, crossing the midline while moving cards .

Midline crossover activities. The ability to cross the midline reflects coordination between the two hemispheres of the brain. This coordination is necessary to perform significant actions with one arm or one leg (e.g., the right) on the other (left) side of the body which it is extremely important for the development of high functions such as reading, writing, and more. For example, sorting objects with the left hand on the right side of the body, walking while crossing over the feet, bringing the right elbow to the left side or writing and drawing with one hand (e.g., the right) on a wide board, constantly moving from the right side of the board (in the right field of vision) to the left in the left field of vision without moving the whole body.

Eye-hand and eye-leg coordination. This is the ability to coordinate between the focus of the eyes and how they track the actions of a leg or an arm. For example, games of pointing, tracking a beam of light from a flashlight the child is holding, bowling, shooting a ball into a basket or an arrow at a target, jumping from one point to another according to markings on the ground, and more.

Development of dominance. The development of the dominance of an arm, an eye, an ear, and a leg. Dominance is also based on internal brain coordination and is affected by practicing in the ways mentioned above.

+ Transferring cards from right to left or vice versa to match pairs.

The importance of including sensorimotor activities in kindergarten and school routines

Including sensorimotor activities in the daily kindergarten and school routines constitutes a significant basis for a child's normal development. This development depends, among other things, on the normal development of the central nervous system, of which the three most important functions are:

a. Receiving stimuli from the outside and from the body through the sensory systems.
b. Regulation, deciphering and processing of stimuli in the brain.
c. Generating a suitable adaptive response.

The various sensory systems begin to develop while in the womb, and as they mature over time through experiences of the environment, the sensory integration that is essential for effective functioning and learning develops. Normal sensory development enables control of the body, trying new things and coping with new situations, the ability to learn and concentrate, the skill of social communication, and self-confidence.

Movement. A range of activity options.

Sensation. Exposure to a variety of textures.

Difficulties with basic functions

In the learning skills program, we train the sensory motor system according to the NDFA through activities intended for all the children. At the same time, we identify children with specific difficulties who will benefit from additional individual or small group treatment.

Regardless of whether these activities are given to a whole class, a small group or an individual child, it is essential to be able to identify the signs indicating these difficulties. Below are several such signs. Many of them are linked to a flaw in basic sensory regulation or to some other important basic function.

- Auditory hypersensitivity. This is a very important factor in problems of language, learning and attention that create stress and outbursts.
  - **When auditory hypersensitivity is overtly manifest,** a kindergarten child will cover their ears, complain about the noise in the kindergarten, refrain from participating in a rhythmics lesson, become startled by the sound of nearby drilling or hammering, handclapping, by parties or general hustle and bustle. Such a child is also bothered by more distant noises that do not disturb other people and will be easily distracted by trivial sounds and lose concentration. In a space that is usually noisy, such as a kindergarten or school classroom, a child might feel increasing stress and then have a temper outburst in response to a marginal stimulus.
  - **When auditory hypersensitivity is hidden,** there is a defensive shut down of attention: Such children may murmur or hum all the time, often making sounds (including loud sounds and even screams); they can be inattentive, frequently not responding when addressed and may keep on asking 'what?' They have difficulty paying attention to instructions and thus often fail to carry them out; there will be difficulty maintaining a normal attention span because of this detachment and so learning materials are often missed.
- Vestibular hypersensitivity – a key factor in avoidance of travel and motor activity. Such children refrain from motor activities such as running, swinging, jumping, sliding, climbing, etc. They will be cautious and slow in movement, feel uncomfortable when moving, have difficulty traveling, mainly when swerving around corners, and will thus prefer to avoid or limit journeys. While moving around in space or afterwards, they might experience dizziness, nausea and headaches, and may even vomit. Tracking intense motion with the eyes might affect children as if they themselves are in motion. Sometimes there are problems with balance.
- Vestibular hyposensitivity – a key factor in developing hyperactivity. Children engage in intensive movement in space which stimulates the vestibular system because they desire rapid and dizzying motion (rapid swiveling on the vestibular plate, jumping on a trampoline for a long time or on sofas, riding around on a carousel, sliding and more.) Sometimes they

may look for adventure or thrills. They jump, roll around and climb, and have difficulty sitting quietly in class. Such children do not tire easily and do not easily get dizzy.

- **Tactile hypersensitivity - a key factor in social problems and in creating stress and outbursts.** Such children will avoid random touch or tickling and keep a distance between them and other people. If they initiate contact, they must feel in control of the situation to feel safe. They are not usually at ease in company and tend to withdraw and keep a distance. They might be physically or verbally violent towards others and choose to move away when someone passes by them, as they might feel that the person is "bothering" them. They might become controlling, dictating to classmates who will play and how. Running away, keeping a distance, aggression and controlling behavior are defensive strategies these children use in social situations because of this hypersensitivity. In a crowded place such as a kindergarten or school classroom, these children might feel accumulating stress which then ends in a temper outburst in response to a seemingly minor stimulation. They will refrain from wearing certain items of clothing that bother them because of seams in a shirt or socks, collars, labels, fabrics unpleasant to touch, and so forth. They will avoid art and craft work and playing with materials such as dough, plasticine, hand paints, glue, etc. They might also refrain from putting a certain type of food in their mouths because of its texture and there may be problems with writing.

- **Tactile hyposensitivity might lead to social problems or fine motor skill issues.** Such children might frequently seek exaggerated tactile contact. Socially, they might come too close to their classmates and therefore end up being involved in fights. They touch everything, put everything into their mouths until a late age, they like to paddle in a pool and enjoy the sensation of a sandbox. They are not usually concerned if they get dirty with mud or hand paints for example. Saliva or nose phlegm might gather without them noticing and they have difficulty identify identifying objects by touch; there might be problems with writing.

- **Proprioceptive hyposensitivity - a key factor in the development of hyperactivity.** Such children seek intense activity of the muscles and joints to stimulate their proprioception: they move around a lot without tiring easily and enjoy intense physical activity including different sports. They tend to be labeled as 'hyperactive'. They have trouble sitting quietly in lessons. Since they have difficulty regulating the amount of strength to apply, they might break toys unintentionally. Socially, they like to wrestle with others or hug them strongly, so they might hurt a classmate without meaning to. They might make faces in order to sense their face muscles, enjoy biting items and clothing strongly and might stuff a lot of food into their mouth. They might crack their knuckles when writing, and they might hold the pencil too strongly and scratch the paper. This may lead to difficulties with writing, and as well as with gross motor skills.

- **Proprioceptive hyposensitivity accompanied by hypertonia (poor muscle tone)** – a key factor in the development of clumsiness, lack of motion and writing difficulties. Children who are clumsy and get tired easily might accidentally bump into things and so they tend to refrain from movements that are hard for them. They are often called 'lazy' because they refrain from both fine and gross motor activities such as gymnastics, sports, moving games with other children, use of climbing equipment in the schoolyard or playground, and they may also refrain from writing, copying from the board, drawing or other forms of artwork. They tend to support their body and head with their arms leaning on the table; they may lie across the table or support themselves with other objects around them, as it were – taking on the shape of the armchair or sofa they are on. Low muscle tone in the upper part of the body is often termed 'weakness of the shoulder muscles' and can be seen in slouching shoulders, poor posture, head and back position and arm activation. The difficulty and slowness of movement might affect their social standing and integration among their peers, and thus might damage their self-esteem.

- **Hyposensitivity to pain – a key factor in lack of caution and a tendency to engage in dangerous and even violent activities**. These are children with a higher than usual pain threshold who either do not cry when hit or bruised or can brush it off very easily. A significant outcome of this is that they do not learn proper caution and so may fearlessly do things that put them or other nearby children at risk. If they are aggressive – expressions of this aggression might be lack of inhibition or impulse control, and they might be perceived as violent.

- **Difficulty regulating the sense of smell** – a key factor in social problems and difficulties with food and bowel movements.

A track children build from various accessories

Shooting balls at a board with different geometrical shapes

- **Olfactory hypersensitivity.** Such children are disgusted by smells even if they are not considered strong by most other people. They find it hard to sit at the table for meals with the other children and avoid going to the toilet while in kindergarten or in school. They avoid working with arts and crafts materials that have any kind of smell. They may react to smells with nausea, vomiting and headaches.

- **Olfactory hyposensitivity.** These children might seek to get close to strong smells, sniff garbage bins, spoiled food, and the hair and clothes of other children.

- **Difficulty regulating the sense of taste – a key factor in difficulties surrounding food.** With hypersensitivity to taste, children might be very conservative about the types of food they eat and refrain from eating too many different foods including ones that are sour or bitter, and also tomatoes. They are afraid of new tastes and try to avoid them.

- **Hyposensitivity to taste.** These are children who can eat anything, even things that look weird. They can eat things with extreme tastes - very sour, bitter, or spoiled in order to satisfy their hyposensitivity to taste

- **Difficulty regulating the sense of vision.** This factor can lead to severe difficulties with reading and visual fatigue.

- **Visual hypersensitivity.** Children who refrain from going out into the yard and complain of being blinded by strong sunlight find ways to shade their eyes or stay in the shade or in darker places. Looking at a white page hurts their eyes in a way that may well hamper their acquisition and performance of reading; they may see black letters on a white page in a book as "spreading out" and unreadable.

- **Visual hyposensitivity.** These children feel there isn't enough light to read and write and this causes them visual fatigue, so they look for strong light.

- **A great need for visual stimulation of movement and contrast (strong contrasts in brightness or color).** Such children frequently seek strong visual stimulation of movement and contrast (e.g., rapidly moving videos in bright colors, the movement of spinning wheels, the rapid movement of foliage against the sky, etc.), and display a lack of the alertness and interest needed to observe and concentrate on a static image or printed text in a book.

- **Difficulties with visual functions.** This is a possible factor in severe problems with reading and rapid visual fatigue.

- **Difficulty with eye-tracking.** Such children find it hard to track objects with their eyes smoothly and without getting tired from something that is moving horizontally, vertically, diagonally, or in an infinity shape (∞).

Active yard shooting balls from different body positions.

- Difficulty focusing and expanding vision. Such children find it hard to smoothly track objects coming closer and moving away from them without getting tired and might have double vision of an object that is at close range.

- Difficulty focusing vision (accommodation) at close range. Such children see things close to them as blurred, which might make it very hard to read and write. Various issues might cause this condition and they should be examined by an optometrist.

- Normal and efficient tracking, focusing, and expanding vision. These are essential for the efficacy of reading, writing, and copying from the board so that they can be done easily and without undue eye fatigue or pain that might lead to avoidance.

The following problems are influenced by the difficulties in some of the abovementioned basic functions.

- Problems with crossover movement. Such children find it hard to crawl on their stomach or on all fours, walk, jump or crossover skip, where the opposing arm and leg move simultaneously; they cannot throw a ball well (bowling, for example) with one hand while the other foot is forward.

- **Problems with midline crossover leads to avoidance.** Such children find it hard to perform any significant action with one of their limbs on the other side of their body; for example, they will move a piece of paper around or move their body position according to the direction of the painting of drawing, move a writing utensil from one hand to another while drawing a horizontal line that crosses the midline, and so forth.

- **Problems differentiating fingers and bringing each one to the thumb (contrast)**. There will be problems with the fine motor skills needed to effectively differentiate between the fingers and bring them to the thumb. We will see this with a pincer-hold (index finger and thumb), threading small beads, opening, and closing clothes pegs with the fingers or holding a pencil or crayon, and so forth.

- **Problems rotating the wrist and arm**. Such children will find it hard to rotate their wrist or arm, movements that are important for drawing and writing, for example, screwing and unscrewing, sharpening a pencil, pouring water into a glass and so on.

- **Non-determination of a dominant hand**. This occurs when a child reaches the age of 5 and still switches hands frequently during activities or does not use one hand consistently as the supporting hand but rather switches roles between them. Actions are usually not precise or efficient. This may occur from an internal difficulty in the brain, or from a weakness of some sort, including a neurological difficulty of the dominant side. Alternatively, the child may be ambidextrous and have equal control in both hands.

Summary

Normal development of the sensory and motion systems and the coordination between them constitute the foundation of a child's ability to function in daily life; to run, play, make things, learn, get to know their surroundings, control them to meet their needs and tasks, understand spatial relationships and orientation, be sociable around other children, feel safe, independent and develop a sense of self-efficacy.

In the Maor Ben Zion Education Program, the learning environment and activities in the kindergarten and in the early years of elementary school are designed to provide children with diverse experiences in order to stimulate and develop the sensory and motor systems. Most children see these activities as challenging and as a source of learning and enjoyment.

Children with gaps in their sensorimotor development might interpret certain activities as threatening and thus might be reluctant about or even avoid them. This can have consequences for their motor, social and emotional development.

This program helps such children understand and accept their different feelings and offers them gradual exposure to various experiences according to their individual needs.

The types and frequency of these experiences will affect the advancement of the children in kindergarten and elementary school.

The Maor Ben Zion Education Program in kindergartens in Petach Tikva, Israel

Training

The Maor Ben Zion Program functions in collaboration with representatives of the Israeli Ministry of Education and the Municipality of Petach Tikva. Together they provide the organizational infrastructure and the selection of participating kindergartens and schools.

The team responsible for instruction and implementation consists of experienced professional municipal coordinators and coaches who attended a comprehensive two-year course in the Neuro-Developmental-Functional Approach (NDFA) delivered by its developer, Rami Katz, and his team. The latter also led the program initially and mentored the training team during the first years of implementation, after which it continued to operate under the professional guidance of the municipal coordinators. The program concentrates on three target groups: the educational staff, the children, and the parents.

The educational staff: kindergarten teachers, teaching assistants, and supplementary staff

Participation in the program involved:

a. A theoretical in-service course for the entire kindergarten staff delivered by Rami Katz and his team, designed to provide understanding of the important basic developmental functions and their impact on functioning, behavior, sociability and learning among young children. Challenging behaviors that staff members often encounter were explained so that the children could be understood from an empathic point of view, and practical tools were provided to promote and improve the children's functioning while catering to their needs. This supported the trend of including children with functional difficulties in a mainstream public kindergarten.

b. Counseling within the kindergarten, provided by the program coordinators to ensure practical implementation of the insights with help of the tools acquired in the course in the daily routine of the kindergarten. The coordinators helped the kindergarten staff make use of the specific equipment needed to implement the NDFA.

Topics addressed in the on-site counseling:

Counseling the kindergarten staff took place in group meetings and workshops as well as through ongoing individual counseling at the kindergarten, which addressed the following:

- Creating a learning environment within which function-building activities are integrated in the official Ministry of Education core curriculum by setting up activity corners inside the classroom and outside in the yard*. That allow practice of the various functions.
- Observing children's challenging behaviors and tracing the functional origins that may have led to these behaviors. Understanding what kinds of activities will help the children overcome the functional difficulties identified.
- Building and organizing the learning environment according to the principles of the program and the use of the relevant accessories.
- Using a range of materials and work techniques.
- Setting up 'morning paths' and 'transition paths' around the kindergarten.
- Enriching the yard as part of the enhancement of functions, in particular, environmental and sensory content.

Topics also addressed the implementation of NDFA principles for the conduct of the kindergarten staff:

- Implementing practical ideas on a variety of topics linked to daily conduct.
- Organizing the kindergarten and the learning environment.

*This element of the program can be modified in locations where the climate does not allow for extensive use of an outside space

Working at a table while choosing a texture comfortable to sit on

Painting while standing up to strengthen posture and grapho-motor control

- Enhancing the ability to respond differentially to the different styles, abilities and needs of the children.
- Encouraging reciprocity between the kindergarten, the parents, and the community.
- Providing tools and ways to create an optimal climate and reduce aggression.
- Modeling by the coordinators for the staff in sessions with the children.

The kindergarten children

Through the various activities, the program team and kindergarten staff create a routine involving the children in its social life through which they learn to display caring and social responsibility, express empathy, help each other, respect differences and accept others as they are, while understanding and expressing a range of preferences for games inside the classroom and outside in the yard. The children learn to think creatively and develop different ways of coping with different social situations through respectful conversation, even when there is conflict.

The contribution of the program to the kindergarten children:

- Multi-sensory experiential learning with a sense of success and enjoyment
- Promoting the children in all areas of development
- Showing consideration for children having difficulty with sensory processing and providing a personal response within the kindergarten setting
- Activities at various levels of complexity; adapting them to individual diversity and learning styles

- Developing respect and support for individuals, their language and culture
- Catering to emotional needs
- Reinforcing the sense of confidence and belonging
- Developing thinking skills, self-expression, and practice in problem solving
- Encouraging children's initiatives
- Social interactions and peer learning

Children with certain difficulties in terms of developmental, functional or behavioral gaps were given additional attention by the coaching staff while remaining in the classroom. This will be further elaborated on.

The parents

The parents are the most significant figures in a child's life. The cooperation and communication between them and kindergarten staff pave the way for a process that promotes the child and creates the proper conditions for the actualization of the child's abilities and skills. Involving the parents helps advance the educational process in the kindergarten.

How does this happen?

- A presentation of the program and its objectives to all parents at the start of the school year. An information sheet is distributed
- Workshops for parents only or together with their children are offered to familiarize them with its principles applied in the classroom as well as at home.
- Individual conversations with parents to monitor their child's progress.

Implementing the program in the kindergarten routine

Children draw a sense of confidence from a world that is organized and well-arranged. When the environment is perceived as safe, they can enjoy what is familiar and known, access new experiences and be better able to cope with difficulties. In addition to the environmental design of the kindergarten spaces, it is also important that there are rules in place as well as a routine of activities based on a daily timetable. The space should be functional and convenient for a wide range of activities. Proper planning of the learning environment, its organization and its enrichment with sensory and motion accessories are essential for the development of the children's motor, social, emotional, and cognitive skills as they greatly influence the kindergarten climate.

It is all about creating an environment that enables children to take part in diverse activities that advance enjoyable learning and promotes their sense of efficacy and belonging.

Guiding principles in the organization of the learning environment

- The choice of equipment, including light movable furniture that can be flexibly organized and placed as needed.
- Building an environment:
  - for multi-sensory learning through diverse sensorimotor experiences to promote the functions that underpin learning.
  - for diverse learning that allows a differential response to each child according to their style, abilities, and needs.
  - for learning that helps children who struggle with sensory regulation through the exercises and equipment used in the program.
  - that is organized and aesthetic and contains the right number of visual components without overload.

A rich environment for sensory motor stimulation

Activity on the floor dealing with lines

Activities at different heights around the kindergarten space

The program uses different height levels during daily activities in the kindergarten with erasable boards, magnetic boards, wire boards and floor tracks. Thus, activities can be conducted standing up with hands held in the air at shoulder height and above, sitting down at a table, sitting on the floor, or lying on a mattress, and so forth.

The benefits of activities at different heights including:

- diversifying the activation of proprioception and the vestibular sense which contributes to enjoyment, motivation and mental alertness, and reduces the great need for movement that might make things hard for children in kindergarten and school classrooms.
- improvement and regulation of muscle tone, strengthening the muscles that affect posture and the shoulders, which is important in preparing children for lengthy periods of sitting and thus their efficacy once they enter school, as well as enhancing their drawing and writing abilities.
- regulating strength, flexibility, and balance.
- creating a challenging and inspiring environment for the children.
- initiative and finding ways of coping with the challenge of height.

Active boards

Painting standing up to strengthen posture and the shoulder muscles, and practice grapho-motor skills

Going through a maze using a flashlight to practice eye tracking in front of a board.

Building spaces for daily movement helps create an optimal climate.

Integrating movement into the kindergarten routine

It is important to have plenty of physical movement throughout the day and it should begin in the morning. This will activate the vestibular and the proprioceptive systems and thus contributes to the children's motor development. It stimulates optimal mental alertness and thereby promotes their attention, their focus, and their ability to enjoy their learning process.

An example of opening the morning with movement:

The "rhythm game" daily practice to improve motor skills accompanied by music

Starting the morning with movement and music is very enjoyable. The children move around the room while preserving their personal space and showing consideration for each other. Movements should include stretching the arms, rotating the limbs, crossovers, symmetric and asymmetric movements. This allows the children to practice their balance and coordination, as well as their breathing - inhaling and exhaling. Once the children are familiar with the "rhythm game", they can switch roles in leading the session.

Games involving moving around the indoor and outdoor spaces

Games involving moving around allow children to explore the space and use their body (crawling, jumping, climbing, running, and stepping in all directions) to meet new challenges. This all supports physical, cognitive, social, and emotional development. Through various games the child can learn to delay gratification, wait for a turn, yield, help, be considerate, accept others, cooperate and be patient and tolerant towards other children. During the game there are opportunities for learning the rules of behavior and social skills for talking and solving problems.

It is important to build an environment that is interesting and challenging and is equipped with stimulating motion and sensory accessories. Children should be allowed to choose which movement game they would like to start with out of a collection offered or from picture cards. They will need to adhere to the rules, divide the roles, and use the equipment that are part of the game. Inspired by the experience, the children can initiate and invent new games and rules and are allowed to take turns in guiding and leading a game.

The children walk along lines, learning the concept of straight, broken, and wavy lines.

+ The children acquire communication and behavior habits while playing and can act originally and creatively in each selected space. At the end of the activity, they are responsible for tidying up.

In the game called "Sea and Land", one child is instructing the group and roles are being switched.

Activities involving movement promote enjoyment, a healthy lifestyle, and improved functions.

Equipment used in the program

The children should have a space in which to move around and activate their senses according to their individual needs, using accessible equipment:

- **Large accessories.** The sensory pool with different kinds of fillings, the sensory carpet, physio balls, bouncing balls with "ears", "mushroom" plates, a scooter, a vestibular plate, sponges, cylinders, cones, a balance beam, mattresses, and more.
- **Small accessories.** Squeeze balls, weights, elastic bands for stretching, a shared band, sensory bags, hoops of different sizes, stilts, ropes, play sticks, stenciled cutouts of palms and soles, rubber rings, balls of different sizes and textures, cards illustrating different types of movement, and more.

Each item is introduced by the kindergarten teacher during the plenary session. The children learn how to use them and what the safety rules are. All equipment and tools are organized in containers so that the children can take and work with them independently and keep the space tidy afterwards. To maintain the children's interest the equipment is changed from time to time.

Mushroom plate. To strengthen the muscles involved in posture and proprioception to improve and maintain balance while sitting on low chairs, standing using balance, and sitting on the floor. It is also important for children who have difficulty sitting for long periods.

A padded scooter. Lying on the stomach and moving forward along a marked line accompanied by some learning task (the scooter is very important for children with poor muscle tone and weak shoulder muscles).

Spike ball. Playing with one's toes, transferring the ball from child to child without using the hands and without letting it fall, massaging a child sitting in front, and so forth.

Overball. Exercising standing on one leg and balance, strengthening the shoulder muscles and the back, for proprioception as well as for fun and play.

Building active spaces daily while integrating core curriculum content

The educational environment in the kindergarten is composed of different spaces designed for daily activities, both within the classroom as well as in the yard (if available.) They facilitate play as well as hands-on learning, exploration, implementation of ideas, expressing wishes and promoting self-efficacy. The children are involved in setting up the spaces, planning the educational environment, and planning the content and events in the kindergarten. They are treated as active partners in the learning process and as initiators and producers in a manner that fosters creativity, innovation, and a culture of collaboration.

The different spaces help develop the tools needed for thinking that is creative, entrepreneurial, technological, and ethical, in accordance with the needs of the 21st-century.

Through the various activities, the children learn to think creatively and develop ways of coping with different social situations through respectful discourse, show caring and social responsibility as well as help each other with empathy and respect for diversity and acceptance of the other.

The morning paths

In the morning, members of the staff arrange a sensorimotor path that welcomes the children and their parents as they arrive at the kindergarten. The track consists of a varying sequence of accessories and activities that enable the children to practice and improve motor skills.

- The track is built up gradually and is age-appropriate, taking into consideration the abilities of each child.
- The track develops from sensorimotor activities to those that include didactic and motor enrichment.

The benefits of the track for the children, the staff and the parents:
For the children. Entering the kindergarten every day along a path with specific motor activities exposes the children to a range of experiences that promote functions while creating a challenging and enjoyable routine that makes it easier to transition from the home into the kindergarten.

For the teaching staff. The path offers an opportunity to observe each child in different activities and learn about that child's development and the quality of functions so that the staff can steer the children towards those activities that are relevant for them.

For the parents. When parents accompany their children as they move along the path, they can get ideas of what can be done in the home, see what their child finds difficult and how to address those difficulties.

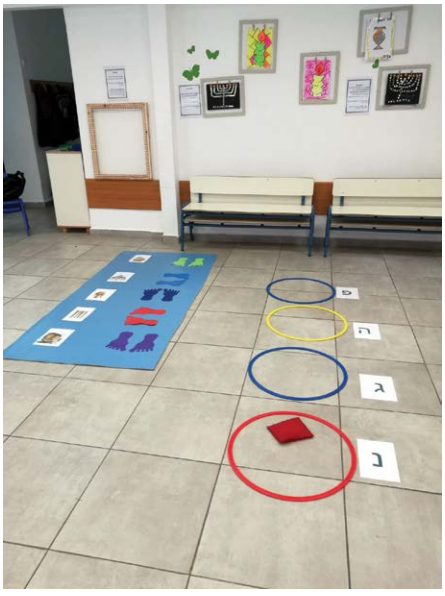
- Several cards illustrating the different paths can be prepared.
- The children pick a card with the sequence of activities they want. They can also cooperate in planning a path.
- Each time a child can be selected to lead the group of children moving along the path in different ways so that the children are given an important responsibility that helps develop self-confidence and social skills.

The transition paths

During the day, the children move from one activity to another via transition paths. These paths regulate the children's movements and make moving from activity to activity more organized, while at the same time offering the children additional experiences. The kindergarten teacher guides the children how to move from the plenary session to the different activities in the kindergarten, and as each child finishes a guided activity, they move to the next one using different types of walking along the different paths, also incorporating learning tasks. In this manner the transitions are conducted pleasantly and calmly, with no crowding, pushing, or running around the room.

Moving from one letter to the next by jumping on a letter rug

Moving along a corrugated plastic track with different forms of progress according to the illustrated cards



Transition paths combining a learning task with motor activity.

As the children move along these transition paths, the staff can monitor how they do so, and this gives them an excellent opportunity to strengthen the functions of these children.

The paths are open during the day for children who need to regulate concentration and attention while learning. The transition paths can initially be organized with the help of the kindergarten staff and at a later stage be transferred to a group of children.

Practicing balance in motion to move the bead to the center

Swiveling on the vestibular plate from side to side while matching a quantity to a number.

The space for sensorimotor activities

The space serves as a source of enjoyment and calm that answers children's natural need to move about. The space is open during the day for those who need to regulate their concentration and focus on learning. It enables the children to practice and get to know their body at the motor and sensory levels, to strengthen their posture and balance as well as muscle tone. Movement in space develops children's spatial awareness as they use the various accessories and take other people into consideration.

A space for arts and crafts and self-expression

"Young children feel a sense of enjoyment when they are involved in working with materials. This enjoyment stems from their control of the materials, their choice of materials and the autonomy they have to decide what to do while they are involved in this craft work" (Friedrich Froebel)

Every kindergarten has an arts and crafts workshop in which the children are introduced to a broad range of materials, including recycled ones.

Purposes of the arts and crafts corner

- Knowledge. Getting to know the materials and their properties - learning by doing.
- Intrapersonal skills. Exposure to and tolerance for the feeling of different textures, a sense of calm and tranquility, expression of emotions, enjoyment developing creativity and motivation to work; self-expression; the importance of the process rather than the product.
- Interpersonal skills. Learning through social interaction, teamwork, brainstorming, collaboration, recognizing sensory differences (not every material that is pleasant to my touch is also pleasant for my friends), emotional regulation.
- Management skills. Planning and organization.
- Motor skills. Fine motor skills, activating muscles and joints, hand-eye coordination, and force regulation.
- Values. Cultivating a love of nature, esthetics, friendship, cooperation, tolerance, and respect for peers.

Guiding principles for setting up the materials corner

- A suitable space that is not overloaded with other stimuli.
- A space that is accessible and has enough room.
- An esthetic environment that encourages activity.
- Storage baskets and containers for the materials that suit the size and volume of the materials; the containers should be of made of the same material and the same color.
- The station should be at the children's eye level. The children should be able to see easily what is in the basket they put their hand in to prevent surprises, especially for children who are more sensitive to touch.
- There should be a range of connective materials and adhesives to bind things together.

Properties of the various materials

- A range of natural and other materials that have different properties.
- A variety of textures
- Different sizes
- Different shapes

- Different thicknesses
- Different colors – both pale and bright
- A range of different levels of rigidity
- A range of different levels of flexibility

Recommended materials

- Natural materials – leaves, pinecones, acorns, conkers, twigs, gravel, pebbles, sand, clay, water, wool.
- Processed natural materials - work platforms made of recycled materials, matches, various kinds of paper, cardboard, magazine pages, Styrofoam, containers and decorative accessories, threads, cork, metal, cloth, jute, felt, stickers.
- Synthetic materials – sequins, plastic bottle tops, bubble wrap, cellophane, sponges, Scotch pads, netting, ribbons.
- Adhesives – sellotape, different sized staplers, glue, paper clips, thumbtacks.
- Work tools – scissors (hands can also be used for tearing).

The work processes

- Children are given free choice throughout their creative work. They choose the size of the work platform and the basket they use to gather up the materials they need. The work may be a child's personal expression with no prior definition. It may begin with no aim in mind, and later, surprising ideas, interpretations or a message for the product might emerge.

Activity duration

The duration of the activity may vary. A child may finish the work that same day or carry on with it over several days. In this case the materials the child has chosen should stay in the place intended for them.

A space to develop fine motor skills, graphomotor function and writing readiness

Graphomotor activity includes the use of utensils for drawing, coloring, and writing. The aim is to ensure effective graphomotor functioning that does not require too much effort, does not feel uncomfortable or quickly cause fatigue. The children's pace of work should be effective, and they should be able to produce a quality product to attain good graphomotor skills, the basic (vestibular, proprioceptive, and tactile) function systems as well as muscle tone, normal force regulation, the ability to differentiate, effective internal brain coordination and regular dominance, visual functions and more.

Plentiful exposure and practice from a young age in gross and fine motor activities, properly holding objects in general and writing tools in particular, effective use of the dominant and the auxiliary hands, and visual attention to the level of accuracy are all important. Hence the kindergarten children should engage in a variety of appropriate

activities they will enjoy as well. These provide encouragement and reinforcement for all children and particularly those who may be struggling. Below are examples of vestibular and proprioceptive activities that strengthen muscles and improve muscle tone and fine motor skills as well as the coordination between both hands.

Exercises for the hands and fingers

- Strengthening hand muscles. Squeezing a sponge in a bowl of water, squeezing a flexible ball, kneading and flattening dough or plasticine with a rolling pin, sculpting and smoothing in plasticine.
- Rotation of the wrist and arm. Hand-squeezing juice, opening lids and corks and closing them again, screwing nuts and bolts, drawing circles with the fingers, rotating a small hoop on the arm, and twizzling spinning tops.
- The thumb and index finger pincer hold. Playing with clothes pegs, picking up objects using tweezers, threading beads or ribbons into a net, making a chain of paper clips, sticking pins onto a Styrofoam or foam board, sticking tacks into a corkboard.
- Finger differentiation. Playful songs using the fingers, drawing with finger paints or any other kind of paint, creating a hole with different fingers in a ball of dough, painting and drawing in foam, using each finger separately.
- In the artwork corner. Working with sheets of paper and different writing tools, practice hanging up the products.
- At home. Some of the above activities and others can also be done while the child is enjoying helping with chores at home:

- helping in the kitchen - preparing cookies, mixing, kneading, squeezing juice, spreading on bread, grating carrots, opening lids and cans.
- other kinds of help in the house - hanging washing using clothes pegs, using the pincer hold, pouring water from a jar or with a funnel to water plants.

It is important to allow the children to work with a variety of materials that can also be wet: shaving cream, dough, plasticine, clay, hand paints, watercolors, acrylic paints, tube paints and papier mâché.

Colors

To develop skills, there should be plenty of practice with colors and writing tools. In terms of the softness: from brushes to pens and pencils and everything in between (crayons, chalk, paint tubes and more.) In terms of thickness: both thick and thin writing tools (with young children it is best to start with thicker ones so that they have a comfortable hold and easier control.) It is important to keep crayons and pencils of all sorts when they become very short because using them requires oppositional holding of the fingers as this is very valuable tactile, proprioceptive and coordination training.

Varying the positions and height of the body

As mentioned earlier, children can work on a wall, a window, or a board where the drawing or painting is done standing up and the arms are raised, as this requires better holding of the tool and shoulder muscle strength. In this position, several activities are possible: drawing on a window with erasable markers, drawing with a brush on Bristol paper or sheets of paper hung on the wall, drawing with shaving foam on a board. Children can also draw and paint sitting or lying on the floor or while playing.

In the playground: children can climb a ladder, swing on the swings, go round the carousel and play with a ball.

Practicing cutting techniques

Cutting differentiates and strengthens the fingers used to hold a pencil, thereby improving the quality and flow of drawing and writing. For this reason, there should be a table assigned for cutting practice. This is appropriate from the age of three onwards, under the supervision of an adult.

It is important to remember that children develop their dominant hand naturally. It should not be chosen for them by others. Thus, every cutting table should offer both right-handed and left-handed scissors.

The prerequisite skills that will affect accurate cutting performance

- Good sitting posture
- Normal balance
- Normal muscle tone
- Force regulation
- Finger differentiation
- Full range of motion in the finger joints
- The ability to focus and eye-track
- Eye-hand coordination
- Coordination between the cutting hand and the helping hand
- Coordination and the skill of planning

Teaching children how to cut

1. Draw a smiley on the thumb nails so the thumbs are always facing upwards.
2. The thumb and the middle finger are placed in the handles, with the index finger as the guide. Scissors should be vertical.
3. One hand is the cutting hand the other is the helping hand.
4. Ask the children: 'If the scissors were an animal what animal would it remind you of? A fish? A whale? Then have them start taking "bites" with the scissors one after the other.
5. While cutting round shapes, the "bites" should be small as they move around in a circle. The cutting hand should not turn.
6. When you get to a corner you take another 'bite' and then turn the page around with the helping hand.

Starting the cutting process

- Practice cutting a plasticine snake
- Cutting straws (opening and closing the scissors)
- Cutting strips of colored Bristol paper. The bits the children have cut can be glued to make a product.
- 2 popsicle sticks or two strips of cardboard are glued in parallel with a space in between and the child cuts between them. Gradually the level of difficulty is raised by bringing the strips closer and closer, until the child can cut along a thin line.

The building space

An important space that can be set up in the kindergarten is the building area where children can engage in free or planned construction using a range of materials at hand, such as building blocks of different shapes and sizes, pieces of wood, paper rolls, cones, cardboard, and recycled boxes, etc.

This kind of activity should begin with a conversation in the plenary group to bring up suggestions of what space to create, either relating to the children's choices and desires, or initiated by the teacher in order to implement core curriculum content. The children should be active partners in all stages of the planning, expressing their opinions and ideas and reaching agreement about the location of the physical space for building within the kindergarten and the place for the equipment and materials.

The children work together to prepare a model, or a drawing showing the planning of the chosen space and then start building together according to their planned model. During the building, many senses are activated and integrated: the children get to see and name the various geometric shapes, feel their different shapes and textures, estimate their weight, and carry them from place to place as they appropriately regulate their muscle tone and strength, for example, while placing one block precisely on top of another with suitable strength so as not to topple the structure. The children place the objects in the space, using both sight and the vestibular system, while learning and naming the spatial relations (above, below, in front of, behind, to the left/right, etc.). They do all the above in coordination with other children engaged in the construction activity.

A large space is allocated for building so that the children can execute their ideas and wishes using their imagination. The space should be rich in age-appropriate stimuli for playing and exploring; it should be esthetic, inviting and challenging.
The variety of equipment should include building blocks of different shapes and sizes, pieces of wood, cylinders, cones, and recyclable boxes.

Building in the carpentry space

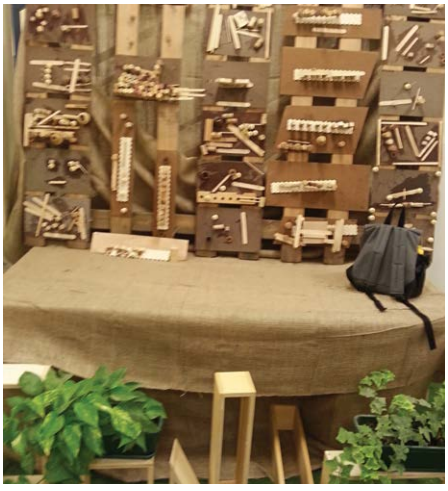
In this space, the children are introduced to pieces of wood of different shapes and sizes, planks of different thicknesses and suitable tools they can use while applying clear rules of safety. The educational staff encourages children to plan and make preliminary drawings of their work, measure the pieces of wood, and look at how the two-dimensional plan on paper turns into a three-dimensional construction.

The carpentry work enables children to create freely and put their ideas into practice. Thus, the space encourages imagination and leads to creative thinking.

This is a productive space that enables children to be active and be part of the decision-making about how to put their plan into practice. Teamwork develops, in which the children take initiative, invent, solve problems and, with the mediation of the teacher, build new games with recycled materials, all while enjoying both the process and the products.

Children can be included when considering giving their products to others, and thereby put into practice the values of giving and reciprocity.

The carpentry space is very important. In addition to getting to know geometrical shapes and their properties, the children get plenty of practice for their tactile and proprioceptive functions. Connecting the pieces of wood and using the different tools requires applying the right amount of force and thus helps with strength regulation and requires them to learn about caution needed to avoid pain or injury. Eye-hand coordination is also practiced. All these occur alongside the children's understanding of the process through which they can take their own ideas and turn separate pieces into a complex whole.



The carpentry space is equipped with pieces of wood and various tools. The activity familiarizes the children with geometrical shapes and activates the tactile system.

The tea house

The kindergarten tea house enables plenty of learning, from thinking together how to set it up, choosing a name, the equipment needed, and role-playing (cashiers, cooks, waiters, customers who order and pay, etc.). All of this encourages social interaction, practice in writing signs and menus, as well as arithmetic thinking. This space is extremely popular with the children, especially in the winter months.

In the tea house, the children can practice making and tasting healthy cookies, dips and juices and brewing teas using herbs growing in the garden. These activities allow children with poor tactile and olfactory regulation to experience the smell and taste of the different herbs and feel their different textures.

Different types of tea leaves to be touched and smelled.

Brewing teas made of herbs from the garden

The tea house hosts the kindergarten children.

The active yard

The kindergarten yard offers children a range of experiences and activities that can promote functional skills. For example, children can improve muscle tone, which is so important for freedom of motion, effective writing, sitting up straight, carrying a schoolbag and endless other actions. As the children move, they receive meaningful proprioceptive feedback, gain physical control, differentiation, and gross and fine motor skills. They activate their vestibular system, improve balance, and receive important stimulation for effective mental alertness, which, in turn, improves learning ability and high-level executive functions. They also experience other sensory activities, such as tactile and olfactory exposure. The children engage in shared play and learn important social skills such as eye contact, following instructions, imaginative and creative thinking, developing curiosity and investigation. They also practice transitioning from one situation to another, which increases their mental flexibility and their ability to solve problems.

In most kindergartens the yard has basic equipment and fixed activity corners. Activities can be diversified with additional focal points, using inexpensive or recycled consumable materials. The combination of the existing equipment and the changeable additions will contribute to a meaningful and well-used yard.

Important points for setting up an active yard:

- Safety: make sure the equipment is safe for the children using it and those near them.
- Match activities to the age group.
- Respond to developmental needs, knowing that the children need to move around and enjoy it.
- Match activities to the conditions of the terrain allocated.
- Match activities to relevant curriculum content.
- Choose activities that involve the children in an area they are curious about so they will express ideas and opinions, show initiative, plan, and execute.

Learning physics in the kindergarten yard with no formula – what is faster and why?

Strengthening stomach muscles

A lever with a fulcrum – a seesaw

A fireman's stick: A challenging device that activates arm and leg muscles, shoulders, obliques, coordination, and willpower.

An example of planning the yard in one of the kindergartens

The kindergarten teacher sets up an active yard to challenge and interest the children and to arouse their curiosity. The goals were to relax tensions, eliminate aggression, and raise children's self-esteem – to create a place for children's personal expression and promotion of their social skills.

To this end the children were asked the following:
We have an opportunity to do something really special in the yard. What do you want us to put there? How do you want the yard to look? What name shall we give the yard? Which consumable and recycled materials can we use?...

The children proposed:
Different track games, a change in the existing rules of playing in the yard, challenging social games including soccer, and implementing children's programs they watch. Some suggested converting the shed in the yard into a Fire and Rescue station while others wanted to turn it into a café.

After discussion a decision was reached together:
The café would be set up on a grassy area in the yard and the shed would be used as the Fire and Rescue station. Moreover, the children set the rules for playing in the yard and then the rules of behavior. Equipment was gathered from various materials such as bottles, milk cartons, all kinds of containers, corks, pots, pans, etc.

The children set the rules for the games and divided up the roles, for example, for soccer - who would be the referee, who would be the players and who would be the goalkeeper.

The children prepared cards with instructions for the games, numbered dice, signs with the rules of play, medals for the leader and prizes for participants and winners, etc.

The garden

It seems that today children are less exposed to outdoor nature, and so it is important that they touch, feel and use natural materials that satisfy their sensorimotor needs.

The yard should provide a sense of nature and outdoors and familiarize the children with natural materials such as logs, branches, leaves, rocks, stones, pebbles, water, all kinds of soil, sand, and they should get to know what is growing in and around the kindergarten.

A greenery garden should help cultivate children's values of loving nature and the environment, compassion, and care for animals, and maintaining the quality of life in their immediate and more distant environment. The garden should contain corners for growing different things suited to the local climate, e.g., vegetables, fruits, herbs, seasonal flowers, and a fallow area. The children can make compost, hoe, plant, rake, and irrigate to help grow whatever has been planted.

This type of environment can provide a range of sensory and motor experiences, while nurturing the children's love of nature. The smell and feel of wet soil after the rain, looking at a rainbow, observing and listening to migrating birds – all these and more give children important experiences and satisfy their need for motion as well as sensory exposure to smells, tastes and touch with all kinds of natural materials, while using garden tools that develop coordination and strength regulation.

Tracking growth and enjoying the produce

Setting up an ecological vegetable garden – a multi-sensory experience

Stalls to present products

Different work techniques presented in an exhibition

Arts fair

The arts fair is built at the initiative of the children who wish to exhibit their creations.

During the program, the children are introduced to local and foreign artists, getting to know certain works of art as well as a variety of materials and work techniques.

While looking at and being inspired by different pieces of art, free dialogue and activities develop. The children are offered a wide range of materials to choose from and work with. Each child in turn teaches their peers the work technique they learned and thus the children experience different techniques and substances of different textures. The children learn about art forms such as painting, sculpture, weaving, and jewelry making, and learn to show interest in and explore works of art.

Above and beyond the important tactile experience and improved fine motor skills practice in this space, some activities are done standing up with arms raised, a position that strengthens the shoulder muscles and improves posture while using different work techniques.

Later, the children partner in designing and organizing the exhibition, after which their products are donated to the community.

Enrichment with a variety of accessories: a microphone, costumes, hats, musical instruments, etc.

The theater space

Activity in the theater space is experiential and empowering for every child. It teaches the children about performing arts and the world of culture: theater, dance, and music. They practice dance and movement, listen to musical works, collaborate, and take part in joint creative work - dancing, playing, and singing.

The theater enables children to express themselves verbally and nonverbally and to share feelings opinions and ideas. Standing onstage helps develop positive self-image and self- confidence, imagination, and enriched language. The children plan and build the stage together; they suggest a suitable place, prepare, and collect accessories and distribute the roles between them, inventing plays of their own and appearing in front of an audience consisting of their peers. The children sing, act, and present; they get to know the various roles: producer, playwright, director, set designer, costume designer, actors, and singers. Moreover, they learn about artistic concepts and principles. Beyond the emotional contribution of this space, the children vigorously activate their vestibular and proprioceptive systems, as they are active in preparing the theater. They use their muscles to lift and organize equipment, thereby improving motor skills and strength regulation. During the activities they move and dance, and thus continue to activate important systems while also catering to their natural need to be in motion.

A corner/room in the kindergarten with no unnecessary stimuli, a pouffe, mats or armchairs and soft toys; music can be added for a calming background.

Giving the children a quiet, shaded area with mats, a hammock, large cushions of different textures and wind chimes; encouraging them to listen to different sounds of nature

Calm indoor and outdoor spaces

Children need dynamic activity spaces, but they also need quiet, relaxation and rest. It is important to balance between calm and active spaces in the kindergarten. The children need quiet corners to refresh themselves both indoors and outdoors. The daily balance between rest and activity enables children to rejoin activities refreshed and with renewed strength. A quiet and shaded place in a corner of the classroom and in the yard are designated for children who need to sit and calm down from the hustle and bustle of the kindergarten. This quiet corner may have a tree, a bench, a blanket, a beanbag, large cushions, wind chimes, soft toys, a hammock and more. The soft accessories chosen for these corners should be visually relaxing with quiet calming music, and preferably a green area with natural growth. This will help the relaxation and provide a sense of security.

Reinforcement / Individual work with children

In addition to having the program in place within the kindergarten routine for all the children, it also allowed working in a more focused manner with children with obvious functional difficulties and gaps. To this end, some of the kindergartens in the program were allocated extra hours in which coaches came to work individually with selected children.

The coaches, graduates of the NDFA course for diagnosis and therapy, are experienced in issues relating to child development and working to enhance functions and sensory regulation. They come to the kindergarten one or two fixed days a week, in coordination with the kindergarten director.

The signs of functional difficulties are as follows:

a. Difficulties with interpersonal skills, intrapersonal skills, and concentration.
b. Motor difficulties
c. Difficulties with sensory regulation systems, hyper- or hyposensitivity that can lead to motor cognitive, emotional, and social difficulties.

The different functions all affect and shape each other. The final evaluation is made only after a holistic observation of all aspects of a child's functioning. The earlier difficulties are addressed, the more it is possible to prevent and moderate gaps in the realms of movement, perception, and emotion.

Identifying needs and constructing a personal work plan

- At the start of the school year, in each kindergarten the teacher and the coach identify four to five children who need extra help.
- Initially there are observations and evaluations of the child's basic functions, such as senses, fine and gross motor coordination, spatial orientation, eye-tracking, dominance, as well as learning ability according to developmental stage.
- Based on these evaluations, the coach creates a personal coaching program for each child, while involving the kindergarten teacher and the parents.
- Documentation of the process is kept in a special file used for monitoring by the kindergarten teacher and the coach.

The personal plans are constructed by the coaches through a holistic approach addressing the reciprocal relations between the different areas of functional development: sensorimotor, verbal, and cognitive, emotional, and social.

The personal plan is designed to develop and enhance the child's level of sensorimotor and basic function skills, bringing them as close as possible to the norms for that age group. During the work, the child is encouraged and given a sense of success. The child's needs

and feelings are taken into consideration, using play and enjoyment to firmly establish the child's self-image and motivate them to continue with the activities in the plan.

The parents are informed that their child is a candidate to join the individual work group and are given a report on the child strengths and the weaknesses that may need to be addressed. The parents sign an internal consent form, which is kept in the kindergarten file and during the year they are given recommendations for practice at home. Cooperation from the parents is essential to help the child advance. If, during the year, the desired progress is achieved, the parents are informed, the child will exit the individual work group and be replaced by another child who needs help, as the kindergarten teacher and the coach see fit. Coaches and coordinators meet once a month to discuss the status and progress of each individual child.

Principles and guidelines for coaching

- Ensuring the child's safety and dignity - the directive for safe use of equipment and accessories in the kindergarten, for example, checking the intactness and function of an accessory and how it is placed for practice in a safe space.
- Individual or small group practice as needed to create emotional security, multiple role models, and increasing motivation to practice and improve social skills.
- Gradual exposure - the intensity of the stimuli and the level of difficulty of the activities are adjusted to the child's abilities and difficulties. Initial activities are easy, so that the child can experience success, and then they gradually increase in difficulty and stimulus intensity so as not to overwhelm, threaten, or scare the child. For example, a child having difficulty maintaining balance will begin by simply walking along a straight line, then walking heel to toe, then walking over obstacles, picking up clothes pegs and attaching them to the opposite sleeve while maintaining balance, saying words connected to the topic of study, and walking along a raised a platform combined with these activities.
- Repeated practice of the same skills – "Perseverance is the secret to success!"
- Diversity and experience – The coaching activities should be diverse, playful, and experiential and match the child's level of functioning. For example, to improve and strengthen finger differentiation and prepare the child for writing, a range of activities can be used, such as copying a model using tweezers, sticking pins into a Styrofoam board while practicing symmetry skills, and coloring using a Q-tip or swab stick.
- The coaching should take place in a location that is as free of distractions as possible in accordance with the child's needs. The area should be tidy and quiet with a calm, pleasant and plain wall color, with very few stimuli.
- The child should be involved in choosing activities that cater to the enhancement of their functions, for example, using materials the child finds pleasant to touch.
- The child should be given the responsibility of practicing on their own in the kindergarten

and at home. Each week, the coach gives the child a personal practice plan of things to do every day. The kindergarten teacher also encourages the child and gives them time and space to do this.

- Involving the parents - the parents are partners in enhancing their child's functions, ensuring practice at home after receiving recommendations and instructions.
- Including knowledge, interpersonal and intrapersonal skills and values in the coaching program, for example, behaving according to accepted norms, showing a restrained response when frustrated, and so forth.

Below are three examples of children with functional difficulties in kindergarten and the activity plans created especially for them.

Examples

CASE 01

A., the older (5.3 years) of two children in the family, second year in the kindergarten. A shy and quiet boy, passive and slouched in plenary sessions, but appearing attentive. He avoids approaching the kindergarten staff to ask for help, he does not initiate anything and needs mediation. His movements are clumsy, he often falls and bruises himself, he avoids activities such as climbing, running, and ball games. In the yard, he prefers to play on the patio and avoids touching sand, he doesn't like materials and doesn't like arts and crafts work.

The activity plan for A.

For tactile activity: sense in the palm of the hands: trying to work with different materials and textures from soft to hard and from smooth to rough; playing with shaving cream or soap foam and gradually adding and mixing materials with different textures to them.

Recommendation to parents for practice at home: spreading cream on his body (mainly the limbs) with gentle massage, while taking into consideration what the child wants; use of sponges of different textures in the bath and playing with foam.

For the vestibular system - balance practice:

- Standing on one leg for a gradually increasing period while alternating the legs.
- Jumping off the ground at first with both feet and then on each foot.
- Jumping from a step, first with help and afterwards on his own.
- Jumping along a path of hoops from one hoop to another, jumping from a hoop in different directions.
- Different jumps (two feet, frog jumps, bunny hops) and types of walking, using the

area leading into the kindergarten.

- Practicing rotations and rolling to reduce sensitivity to movement in a space with three axes of movement (up-down, around himself, backward and forward).
- Turning around on the spot while standing, or rotating while seated on the vestibular plate, counting forwards and backwards, with or without a learning task.
- Gradually doing a 'pencil roll' lying down on a mattress. The roll involves lying down with the body straight and the arms stretched above the head.
- Slowly moving the head backwards and forwards and up and down.

Recommendations to parents for practice at home: playing in the local playground and using the climbing frames, walking at a height, gradually running, and jumping for a sense of self-efficacy and confidence.

In the area of memory and recall:

- Practicing crossovers (the hand touching the opposite knee) together with a learning task: the "animal game" where the child says the name of an animal (a different animal each time). Words can be added from other categories, or for example, rhyming words, opposites, etc.

Through combined efforts at home and in the kindergarten to persevere with practicing the tasks the child became stronger, improved in the selected areas, and became motivated to take part in the kindergarten activities.

CASE 02

M., the third child in the family, is 4.6 years old and is in her first year in the kindergarten. She is a child with low self-image who has difficulty connecting with the kindergarten teacher and the other children. She does not take initiative and needs mediation, otherwise she does not perform the required task. The kindergarten teacher reported verbal and recall difficulties: M. does not recognize colors, letters, and numbers.

The results of her evaluation indicated normal gross motor skills functioning. M. can jump on one and on both legs, move around a space and has strong shoulder muscles. She has difficulty naming basic shapes (e.g., circle, triangle, square), naming and identifying colors, and understanding instructions.

The activity plan for M.

The plan for M. was designed to emphasize her strengths and was carried out by using playful means that incorporated learning tasks and included simple instructions gradually increasing in complexity.

Examples

For motor and language skills:

- Going through a motor skill track several times using different kinds of movements.
- Using her gross motor skills and coordination to practice basic terms such as colors, naming numbers and the letters of her name (to start with).
- Five hoops laid next to each other – jumping with both feet together from one hoop to another, while counting from 1 to 5.
- Five cones in different colors in a row where she must throw a ring onto each one, according to color.
- In the sensory box, numbers, and shapes in different textures such as sponge, velvet, felt, etc. are hidden. The task is to identify the shape or number using the sense of touch, first with eyes open and then with eyes closed.
- Identifying basic geometric shapes such as a triangle, a rectangle, and a square, while walking in different ways along a track made of corrugated plastic connected with paper clips. Each time the shape of the track should be changed. Walking alongside the track in different ways:
  - heel to toe
  - elephants' walk
  - jumping from side to side, jumping out of the shape and back into it while naming the shape.
- In addition, concepts in space are learned such as up, down, inside and outside.

M. was given an illustrated activity plan that she used independently every day, encouraged by her parents at home and by the teacher in the kindergarten. The child enjoyed the movement activities, and the consistent practice contributed to improved performance, which further encouraged her to continue experiencing success.

CASE 03

O., 4.10 years old, is an only child and is in his first year in the kindergarten. O. seems immersed in his imaginative, inner world; he is very fond of dinosaurs and seems not always to be alert and responsive to his environment, although he does manage to make eye contact. At the kindergarten he has difficulty interacting with other children, protects his personal space and gets angry if another child enters "his space". He often has temper tantrums during which he can throw things.

Sometimes he manages to play with one or two children, but only for a relatively short time. His attention span in kindergarten plenary sessions is very short. He moves around a lot, mainly running in circles around the room or around a table. He prefers to watch and listen from the side, while sucking his thumb. He often talks aloud to himself. Sometimes

he makes comments from the side that are connected to the subject in question and then returns to his own activities. He is very distracted by stimuli around him. He usually needs mediation and encouragement for the various activities in the kindergarten. He avoids doing craftwork but is ready to sit at the table if he is offered help. He very often reacts to situations of frustration with loud crying and shouting. He likes assembly and construction games.

In the yard he has difficulty delaying gratification and does not wait his turn. He very much likes the swing, he takes it over and doesn't give it up, or is not prepared to wait. He also likes is to spray sand upwards and sideways, and grab toys other children are holding and toss them away. The children have learned to stay away from him.

According to the parents, there are similar difficulties at home. As a baby he was "difficult" and restless. There are outbursts that have no apparent reason. Various food textures upset him.

The activity plan for O. (In the kindergarten and at home)

The plan was put together after a holistic observation and evaluation of his functions and how they changed in the cognitive, physical, emotional, and social areas of development. His skills and strengths were used as a starting point from which to begin function improvement, together with frequent positive reinforcement. These activities included:

- vestibular practice catering to the need for controlled movement, combined with a learning task.
- proprioceptive practice activities linked to using the large muscles in the learning garden in the yard, (activities he really enjoys). This kind of activity is given several times a day for short periods to address his weak sense of proprioception.
- activities in the quiet room without stimuli to help focus his attention.
- having another child from the kindergarten join him in games and tasks that have rules and need restraint. The length of these sessions is gradually increased.
- listening to quiet, calm music with headphones while doing activities he likes.

After consistent experience of these activities in the kindergarten and at home, O. built a relationship of trust with his environment, his frustrations and outbursts diminished, and he enjoyed the praise he received for his restraint and cooperation. The parents' awareness of his sensory difficulties and how they took this into consideration also contributed to a more relaxed and pleasant atmosphere at home.

The Maor Ben Zion Education Program in promoting learning skills in elementary schools

Based on the NDFA, programs can be created that offer opportunities and tools for developing functional skills for learning and social connections. The program is dynamic, flexible and can be developed according to the child's functioning and developmental pace. As such, it can be used in elementary schools as an organic continuation from that in kindergarten.

Grades 1 and 2 are the time periods for acquisition of school learning skills such as reading, writing, arithmetic, understanding instructions, etc. which function as the basis for future learning.

The basis for these skills should develop before the child starts school, but sometimes this does not happen, which may lead to functional gaps that, in tun, could inhibit learning in elementary classes and even more significant gaps in the future, as well as problems with behavior and adjustment to the school setting.

During the years the Maor Ben Zion Education Program was in operation only in kindergartens, the desire and need to continue with it in school emerged to allow for the following things to happen:

- Continuity in the child's experience after entering the school framework.
- Staff acquisition of practical tools to ensure experiential and active learning that combines the core curriculum with daily skills practice.
- Provision of opportunities and tools for development of age-appropriate learning and social skills, reflecting the maturity expected of a grade 1 class.
- Teachers' familiarization with the developmental functions and variables expressed in behavioral-functional symptoms influencing the child's conduct in class.
- Creation of a comfortable classroom climate, thanks to the possibility of studying in different sitting and body positions.

The main functions required of children in elementary school

As mentioned, when children enter school, the tasks, abilities, functions and coping skills expected of them are not the same as in kindergarten. Some motor and sensory processing difficulties, especially if untreated in kindergarten, may remain, and children who suffer from them are likely to experience functioning difficulties relating to movement, as well as emotional and social interactions.

According to the NDFA, there are several sensorimotor functions that directly influence a learner's ability to function and study optimally in school. Following are some examples that are particularly relevant in elementary school classes.

- Gross and fine motor skills affect the ability to hold a pen and write effectively, spatial organization, hand-eye coordination, and the ability to sit with a healthy posture in class.
- The proprioceptive and vestibular systems affect children's behavior in class, their comfort, fidgeting, use of excessive or insufficient force, as well as their ability to pay attention and concentrate effectively.
- The ability to focus and track properly with one's eyes is necessary for effective reading and graphic functions (writing and drawing).
- Auditory and visual memory are part of the foundation for learning written and spoken language.
- Coordination between both hemispheres of the brain, expressed by correct midline crossovers, is also essential for developing reading, writing and arithmetic skills.
- Sensory regulation- a large part of one's learning ability is based on receipt of bodily and environmental stimuli through different senses and processing them in the brain. Some children have trouble with sensory regulation and since senses are the only way to experience the world and our bodies, such children's behavior and reactions to the environment may differ from those of other children, in accordance with their subjective experience of the surrounding stimuli. For example, sensory hypersensitivity may cause children to avoid social contact or closeness and suffer greatly in loud, busy places. They might defensively stop paying attention, and this can acutely interfere with their learning.

Introducing the program at schools

The training staff leading the Maor Ben Zion Education Program included a municipal coordinator and a coach who had both attended the comprehensive two-year course on the NDFA. The teachers at the participating schools received in-service training once a week on the program's principles and its integration with the official curriculum.

A flexible program was created for each school to suit its unique characteristics, and clear outlines for program success were drawn up. It is the principal's choice whether to implement the program for a whole grade level or for classes with interested homeroom

teachers. Parental involvement and participation is encouraged for the advancement of their children's progress, by identifying and accommodating difficulties and helping to provide a response both in the classroom and at home.

Prerequisite conditions for running the program

Proper management of expectations will ensure successful implementation of the program also in schools. The operation of its principles and rules and the speed of implementation must be matched with the resources schools can make available. To be considered are teaching hours, staff training hours, spaces for activities to take place, etc.

The school management must:

- make sure all teaching staff take part in the theoretical training on the principles underlying the NDFA and its tools.
- set aside one weekly lesson within the homeroom teacher's schedule for every participating class.
- set aside time for training sessions of program staff and school staff for counseling on program implementation, planning the educational-functional activities, peer-learning and sharing ideas pertinent to the program.
- schedule events during the school year to introduce the program to the parents - how it integrates with the core curriculum and how it adds to the school's uniqueness.

Target population and stages of implementation

Implementation of the program in schools among the staff, the children and the parents is a three-year process, at least. Each year has its own goals and aims specific to the target group and is divided into the following elements:

Training the teaching staff

- Theoretical training- the school's teaching staff must attend theoretical training sessions on the NDFA.
- Practical instruction—the program staff runs group and individual counseling sessions as needed.
  - Led by the program team, the guideline is to move from general to specific, from large to small, from a general overview of a class to the point where specific plans are drawn up for individual children. In other words, application of the program principles and examination of its outcomes should be divided into small and clear steps.
  - The goal at each stage is to raise awareness of the importance of a child's spatial experiences with understanding of and empathy for their functional needs, and to provide a solution to any problem manifested by the child's behavior.
- Modeling- Weekly modeling lessons are given to the class by a member of the program

staff in the presence of the teacher. The lessons focus on teaching knowledge about "learner's functions" in age-appropriate language, using experiential aids. The goal is that both teachers and pupils be partners in the process of:

- understanding the physiological factors in their body that influence their functioning.
- identifying one's own sensory regulation causing hypersensitivity or hyposensitivity.
- individual practice following what is learned in class.

An example of a lesson plan is included at the end of the chapter.

Designing a classroom and learning environment

The teachers receive help in designing a learning environment that enables differentiated learning, activating various functions throughout the school day routine. This may involve making the classroom space age-appropriate, relating to the number of desks and chairs needed, the manner of seating, the lighting, the computer location, regulating and decreasing the visual and noise load in the room, as well as re-examining and adjusting the inventory of available games.

An individual response for children with functional gaps

- The identification process. The program staff observe and evaluate the children while in class based on several functions that are relevant for school. The observations focus on the children's behaviors at different times, and focus on those that may affect learning, such as fidgeting, the holding of a pen, and the ability to copy.
- Selecting children for individual work. This is done in conjunction with the homeroom teacher.
- Coaching and adjusted practice to advance those who are selected
  - Practice is led by the program staff according to a personal functional evaluation.
  - Based on this functional evaluation, an appropriate personal activity plan is put together.
  - The personal activity plan is practiced routinely with the help of the program staff in an individual or group setting within or outside the classroom routine.
  - The individual session is designed to advance functional skills and abilities so that at every stage the child experiences success.
  - The personal support enables practice of appropriate motor function training as well as pedagogical content and reinforcing the child's sense of self-efficacy.
  - All stages of progress are documented.
- The school staff is regularly updated, with an emphasis on enabling practice during classroom routine.
  - Parallel to the regular practice under the guidance of the program staff, the teachers receive regular updates on the status of the individual plans and are provided with instructions and emphases for further practice during the classroom routine.

- Sharing with the parents
  - Parents' permission – participation in the group or individual practice sessions takes place only after information has been shared with the parents and is conditional on their consent.
- Updating parents and emphases for further practice at home.
  - Individual meetings with parents are usually conducted twice a year.
  - The first meeting is to show parents a complete picture of their child's functioning in class, compared to other children of similar age.
  - After several sessions of practice with the child at school, the parents are invited to another meeting to hear about their child's progress and receive written instructions so that they may also work to advance their child's functioning at home.
  - Other meetings with parents are scheduled as needed.

Examples of individual work

Any space at school or at home can be used for personal advancement. Individual work involves a variety of experiences intended for sensory regulation through the various sensory channels, improving crossing the midline, developing spatial orientation, enhancing the proprioceptive and vestibular systems and gross motor skills, and individual work in a sensory environment at different heights to strengthen muscles and enhance fine motor skills. Below are several examples that can be implemented both at school and at home:

- A "soccer" game to practice addition and subtraction by blowing Styrofoam balls to strengthen mouth muscles for children with weak mouth muscles who drool, or for finger differentiations for children whose grip is ineffective and balled up in a fist, as they have to push the ball into the "goal" with their index and middle fingers.
- Blowing paint splotches through a straw to help regulate the amount of air needed to control speaking volume and spitting.
- A shared game connecting words and categories using clothes pegs to differentiate and strengthen fingers.
- Practicing auditory writing without supporting flashcards using plasticine, which helps with sensory regulation and strengthens fingers for more effective writing (Grade 1).
- Copying complete words using tweezers and matches to strengthen the holding fingers.
- Writing with snacks, enabling the player to use appropriate strength for breaking them and for olfactory regulation.
- The "fisherman's game", using a magnetic fishing rod and arithmetic cards to improve eye-hand coordination and for two-sided coordination between the movement of the hand and eye muscles and practicing crossing the midline.

Sharing with all parents

The introduction of the program to the parents can be done through evening presentations, parent-child workshops, and shared activity sessions in classrooms. These will introduce parents to:

- various learning methods that allow for functional advancement.
- unmediated observation of their child in a classroom setting and seeing how their child copes scholastically.
- an experiential opportunity for shared creation and learning which generate closeness and quality time.
- ideas for playing with the child and advancing them at home.

The introduction is done in conjunction with curriculum content. It can be done for the whole grade level, where, in each class, the program coordinators combine games with learning activities.

Expanding the program within the school

In the first two years of the program, the focus is on the teachers, pupils and parents. Emphasis is placed on familiarization with the program's principles and its implementation in the classroom.

In the third year, the program moves quite significantly beyond the classroom to external learning spaces and the school playground and, where possible, setting up unique classrooms in the spirit of the program.

The program is appropriate for all ages. Activities and experiences outside the classroom create an opportunity to develop and strengthen abilities, as well as cause pleasure even for older children in the school.

The learning spaces

The learning space within and near the classroom is a meaningful area for both study and play. To make the space experiential in the spirit of the program, walls, doors and windows are used for games played standing up, which strengthen shoulder muscles to enhance effective writing and balance. If possible, it is a good idea to have a sturdy, shaggy rug or a parquet-like flooring which allows sensory play at floor level. It is important to maintain esthetics when combining the colors of the toys and games and the walls, and to avoid overwhelming the children with too many stimuli.

We integrate the program's principles into the learning space:
Activities at three heights: sitting on the floor/rug, standing up near an active wall or door, and

seated at a table. Each position contributes in its own way both to the body's proprioception by sending messages to the brain through the muscles, and to the vestibular system.

Playfulness and experientiality: combining games and activity corners familiar to the pupils from kindergarten to facilitate the transition to school.

A variety of learning and activity areas: corners that allow the class to spread out and be less crowded, as they learn independently within the space.

A cafe and a learning space for first grade classes. The program principles are integrated using authentic objects with different textures for tactile regulation, using work with screwdrivers to strengthen the wrist, in combination with reading, writing and copying.

A changeable mesh board for use in different positions, working standing up, and strengthening fine motor skills for effective gripping. The goals for this mesh board are copying geometric shapes by threading laces.; **A portable board and table** for copying skills.

A wall niche that has been turned into a texture wall for tactile regulation and correctly matching left and right. Another use of the tactile wall is turning it into a memory game based on texture recognition while blindfolded.

A blank porcelain wall turned into an active place to practice matching directions using one's palms and the path for strengthening the different parts of the hand (fists, fingers and palms) while understanding and visually matching, all without words.

A path for motor skills, finding directions and proper foot placement. This path enhances gross motor skill development, positioning one's body in space, and is an opportunity for vestibular practice.

A motor skills path combined with the social guessing game of "20 questions". Its purpose is positioning one's body, proprioception, exercising muscles and tendons, memory recall and cooperating with classmates.

Using objects at hand as climbing structures (ladders, tabletops, candle holders) to practice eye-hand coordination, and throwing and catching games that are good for copying from a board and for graphomotor efficacy. Threading words through a string, a music area and a social Tic Tac Toe game using objects close at hand such as stones, leaves, pinecones, and more.

Suspended screens with differently textured fabrics. The goal is to strengthen shoulder muscles for effective gripping and writing and to strengthen fingers for graphomotor purposes and to practice palpation.

The school playground

The playground is a meaningful place for all age groups. Recess provides an opportunity for physical release by stretching the limbs, as well as for social encounters among pupils. Enriching the playground in the spirit of the NDFA program allows full use of its potential to develop functional skills outdoors while also furthering social skills. The ones shown here were set up according to original ideas based on functional-developmental needs, using available materials found in school storage rooms and recycled materials.

In the examples shown here, we see aspects of enhancing gross motor skills, proprioceptive and vestibular systems (contributing to balance and spatial orientation), neurological alertness, attention and concentration. There are also games to reinforce and improve gripping and writing skills.

A classroom dedicated to learning according to the NDFA

The environment in general is a significant factor influencing a child's development and social and learning abilities. More and more schools understand that combining a typical learning environment with a more dynamic and experiential model which makes the children curious and inquisitive is both essential and suited to the current generation of children.

In one of the schools in the program, the staff chose to change their typical way of thinking about learning together with the help of the NDFA program staff.

A different learning environment was created in terms of features, appearance, colors, rules of behavior in the learning and play corners, and they even named this special room "A place in our heart". This was set up as a unique classroom adapted for grades 1 and 2, but where physically possible, it is a good idea to set up classrooms like this for all age groups.

The design of this room and its content is based on the learning skills program, with a broad view of the learners' various functions, sensory regulation, and experiential play as tools for learning and success.

To cultivate independent learning, each child was given a personal "Waze", i.e., a comprehensive instruction sheet telling them which corners and activities to work at. Moreover, to develop personal responsibility, each child had an organized chart in a folder where they had to fill out a reflection and feedback page showing in which corners they worked, what they succeeded in doing, what points there might be for improvement, what difficulty they coped with, and so on.

Recommended equipment for this classroom

- Tactile surfaces with pleasant, quiet colors
- A ball and texture pool
- Tables of different heights, shapes, and sizes
- Erasable tabletops
- Sand and light tables
- Magnetic walls
- A vestibular plate
- A trampoline
- Beanbag chairs for comfortable, calm, alternative seating
- Chairs at different heights with different supports and textures
- Dice for playing games made of recycled materials
- A punching bag that stands up when knocked over
- Disposable equipment to translate learning content into functional games: bottlecaps, clothes pegs, sandpaper, pipe cleaners, laces, mesh boards, balls, massage brushes, hoops, mats with letters and numbers on them, shaving foam, plasticine, etc.

Emphases and rules for operating the special classroom in school

- The relevant classes must have a schedule for use of the room.
- For optimal advancement, each child should have at least two opportunities a week to perform activities in the room.
- The learning and play corners should be updated and changed after four or five active sessions.
- The size of the room will affect the number of children who can go in at any one time (depending, of course, on average class size in the school.) Consequently, to be able to keep track of how each child is coping with the activities, see their difficulties and strengths as they progress, the teacher might prefer to come with only a group of children rather than with the whole class.
- Introducing the children to the room must be accompanied by an explanation of the rules designed to keep the special corners and equipment safe and how they should cooperate among themselves. It is important to include "You are allowed..." rules, such as: "You are allowed to take your shoes off when you come into the room because some of the surfaces in it are sensory"; "You are allowed to jump up and down in the room in the right places and with the appropriate equipment"; "You are allowed to play in the sand in the classroom"; "You are allowed to, and should, enjoy yourselves!"

An example of a differently shaped table, working on a "semicircle" to achieve different organization in smaller surroundings. The chairs are also different – sitting on or in a wooden box. The activity is meant for students who lack physical sensation and need to feel the boundaries of their body. The picture shows an activity in which office supplies (a hole puncher, staplers, paperclips) are used to improve one's grip for better graphomotor skills.

Examples of differently styled erasable tables: a "half table" and a "horseshoe table". In the picture the activity is matching capital and small letters using plasticine for tactility and strengthening the fingers.

A table at standing height divided into two sunken sections meant for several goals: crossing the midline as a basis for graphomotor skills and fluent reading practice, copying skills and the ability to accommodate different textures through tactile writing using sand, beads, rice, salt, etc.

Part of the "Place in our heart" classroom where the floor has varying textures from a calm colored parquet to sensory AstroTurf, a heart shaped table for group work and corners meant for activities to be done standing up.

A portable mesh board that can be used while standing or sitting for graphomotor practice via threading. In the picture the mesh functions as a means of copying and visual understanding of the letter "alef", the first letter of the Hebrew alphabet.

An erasable magnetic board as a center for stand-up activities. Any board on a wall can be used for function-based activities relating to crossing the midline, strengthening shoulder muscles and eye tracking. The activity in the picture involves matching amounts with numbers.

A ball pool as a corner for social, scholastic, and tactile learning. In the picture, the girls are performing a learning task where the words are hidden inside a tactile bedding inside the ball pool. They have to find the words and hang them up.

Experiencing shared learning of a tactile-based sensory task.

Function-based problems in Grades 1 and 2

Following are some typical examples of function-based problems in the classroom and suggestions for how to solve them.

Do you feel the classroom is crowded and overloaded? Do children complain of noise or smells? Do the students constantly ask to be seated somewhere else?

Try combining sitting in rows with sitting in groups. This combination is meant for children who are auditorily or tactilely hypersensitive. A classroom arranged to make the learning aids accessible at the back of the classroom prevents reactions to distracting and unnecessary visual stimuli.

Another possibility is to set up individual work in a group setting. The goal is to regulate tactile, auditory and olfactory sensitivity as part of making social connections.

Has the lesson started but the children are still drowsy? Are the lessons too long? Are the children losing eye contact and concentration? Is it the end of the day and is it hard to get the children together?

Movement and motor activity have been found to greatly influence scholastic achievements. Frequent movement contributes to skills development and raises the level of functions such as alertness, sensory processing, perception and thinking. Daily practice and "Learn to move" videos enable this, for example:
https://www.youtube.com/results?search_query=learn+to+move

Does the child constantly stand up or change seating position? Does the child claim that a task is hard or boring? Does the child tend to sprawl out on the desk or lean on their hand?

The NDFA encourages varied and experiential learning that combines three levels of height in the classroom: sitting, standing, or lying down. Diversifying learning through function-based games, as well as more typical games, through different body positions and tactile means in the classroom will all lead to a significant decrease in the abovementioned behaviors.

- A table with no chairs for a math game played standing up
- Practicing writing while standing and strengthening shoulder muscles
- Studying while lying down to regulate the proprioceptive system and distractedness
- Varied learning that includes functional play for fine motor skills while seated (for the benefit of those children who sprawl out and have lax muscles)

Problems with coordination? Does the child respond to instructions slowly? Can you see the child has difficulty controlling movements? Does the child run into objects in space? Does the child refuse to take part in sports or extracurricular activities?

Motor awkwardness due to vestibular, proprioceptive or muscle tone issues causes difficulties that influence the child's behavior and functioning regardless of cognitive development. These children may avoid activities requiring balance, display difficulty regulating their movements or with sensory processing, and even in using objects that require fine motor skills. It is, therefore, important to provide many opportunities at school to strengthen, enhance and regulate gross motor skills and proprioception. For example, one can have various motor skills-based paths to strengthen proprioception and reduce clumsiness.

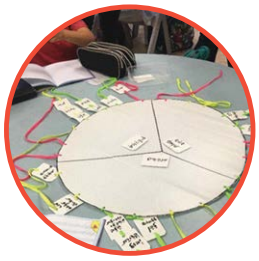
Have you noticed that a child avoids writing or drawing? Is there a problem copying shapes and is the penmanship poor? Is the child ineffective when cutting? Is the child's grip on writing implements stiff and is their hand balled up or alternatively is it too loose?

In the early elementary classes, much of the activity is based on cutting, pasting, coloring, writing and so forth. These activities require fine motor skills which are directly influenced by how gross motor skills, proprioception, other sensory systems, and muscle tone all develop.

One can use many improvement exercises with these children, for example:

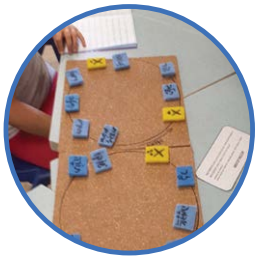
- Threading numbers made of corrugated plastic on a pipe cleaner
- A group-based activity designed to develop language skills using a math series combined with a game of threading words onto a string by category
- Tactile sensation and learning directionality
- A language-based game using clothes pegs (for finger differentiation) while standing up through games using fine motor skills, strengthening the wrist for continuous writing, and different playing positions (seated on the floor) creating social groups that work together.




- Free play involving the use of the screw movement
- Auditory writing using snacks. This is also suitable for children with tactile or olfactory sensitivity.

Is the child reluctant to read or immediately tired by it? Have you seen that the child does not manage to copy from the board effectively or skips over lines of text while writing or reading? Do the eyes tear up or does the child rub them often after studying? This is probably a sign that vision issues or eye muscle weakness should be checked out. To strengthen eye muscles, the child's eye tracking should be checked by having the child track a moving object (such as a pencil). During these eye tracking sessions, we move the pencil from side to side, up and down, diagonally, and in the infinity shape (a horizontal figure eight ∞). This way the eyes are trained to move in all directions, as is required for reading writing and copying.


Example of a Grade 1 lesson plan

Plenary session: Objective – effective copying from the board.

Functional goals: visual recall, eye-hand coordination, eye tracking, following instructions

Secondary behavioral functions: waiting, restraint, and meeting age-appropriate time limits

Lesson procedure

- Daily "Learn to move" exercise (YouTube music and movement videos) https://www.youtube.com/results?search_query=learn+to+move
- Theoretical explanation using images and a story about how memory works and how the brain listens.
- A general practice session to understand the idea, using personal erasable boards.
- A personal in-class session where every child tries to improve their performance based on age-appropriate measures of time and number.

What we did during the practice session

- On the board we drew a simple picture of some familiar items such as a house, the sun, a cat, etc. For Grade 1 we presented up to five items and for Grade 2, five to seven items.
- The children were asked to look at the board for 20 seconds while being told what to look at and where, and to remember.
- The children were told to put their heads on their desks while the picture was erased from the board.
- When the children raised their heads, they were asked to draw the picture from memory (items and placement) on their own erasable boards or in their notebooks, with no time limit.
- We checked how many items they remembered. Each child noted which items they didn't remember and which placements they missed.
- We started practicing. Instructions were given for where to look, from which direction to start scanning, how to accompany the scanning with "talking" silently, counting to check the number of items.
- We repeated the activity while keeping track of time. We saw improvement.
- The children still having difficulty continued practicing and were given another helpful tool: writing a funny song or story about the items in the picture.
- The children who succeeded moved to a higher level of difficulty: an added item and a shorter time limit.

Summary

The Maor Ben Zion Education Program is based on the NDFA theory, which sees the child as having abilities, the development of which can be enhanced within an environment that offers a variety of functional experiences that can be fully integrated into the core curriculum of kindergartens and elementary schools.

The program offers a wide variety of ideas for play-like activities and ways to make the learning accessible to children in a success-oriented manner that validates their abilities. The program can be flexibly applied to both individuals and groups with every accessory as a means for a functional experience. After years of running the program in kindergartens and elementary schools, the NDFA-based program has become a significant platform for teachers and pupils alike. It creates emotional connections, motor skills enhancement and social change.

Every year, teachers enthusiastically comment on the variety, sense of refreshment, innovation, and refinement the program brings to the entire learning process.

The program and its tools have become an integral part of the school culture and are expressed in lessons, in how the classroom looks, in how the learning space is used, in the playground, and during the active recesses.

A secondary, but no less important contribution, is how the teachers have adopted the program and bring it home to their own children.

The NFDA theory based Maor Ben Zion Education Program is prominently evident in every school visit, party, or school event.

Program evaluation

Since its very first year, the Maor Ben Zion Education Program in Petach Tikva was accompanied by the Muvanim Evaluation Team, an external body specializing in the evaluation of short- and long-term projects in fields such as education, welfare, shared life, the non-profit sector, and contributions serving the community.

This evaluation of the program has had two main objectives:

- Formative assessment designed to provide real-time relevant information to assist decision making about enhancing the format of the program.
- Summative assessment designed to examine the outcomes of the program in each year of operation.

Evaluation activities included the following:

- Observations of the program activities in the kindergartens and in the schools
- Interviews with the teaching staff in the kindergartens and in the schools, and with other stakeholders
- Analysis of relevant documents
- Participating in ad hoc decision-making meetings
- Administering a yearly questionnaire among teaching staff of kindergartens and elementary schools to get their comments in relation to the impact of the program on the children, the parents, the kindergarten staff, the class atmosphere, the underlying theoretical course, their practical training and the support from program coordinators and coaches.
- Preparing and presenting their yearly evaluation report to representatives of the Maor Ben Zion Foundation and the representatives of the Petach Tikva educational authority, and to all other members of the program team.

Selected findings

During each year, multiple ad hoc meetings took place at which the evaluation team presented the program team with its interim findings that enabled real-time adjustments to the program. At the end of each school year, an evaluation report was submitted with more structural results and recommendations.
Examination of the evaluation reports reveals consistent positive findings for several aspects.

Program impact on kindergarten and school staff

Consistently throughout the years of evaluation, staff members responding to the questionnaire referred to the program's positive influence (most average values were higher than 3.7 on a scale of 1 to 5).

From interviews with the school and kindergarten teachers and from observations of the activities over the years, it is evident that many staff members who participated in the program testify that they acquired the ability to observe children's functional difficulties, and understand what response is needed. They feel they have the skills and tools to implement the principles acquired through the program to help the children overcome their functional difficulties.

Staff comments:

> *We have a girl who doesn't like touching substances, has motor difficulties, general and verbal developmental delay. She has sensory problems and at the beginning of the year she did not touch things like glue and did not work with scissors. We gradually exposed her to different textures and materials. My assistant and I worked with her individually ... And we can already see progress. At the beginning of the year she didn't touch sand because she was afraid, and now she's playing in the sand. (Kindergarten teacher)*

> *A very lively boy, three or four years ago I would have been angry and annoyed. Today, from my experience and learning I understand that it is not his fault. I send him straight to the materials corner; in the plenary sessions he has a sponge ball or plasticine. He signals me and I allow him to go outside to calm down. When he is really lively, he goes outside for a task of jumping, running, and so on and then comes back calmer. (Kindergarten teacher)*

At school, too, the program has had a positive influence on the teaching staff and, among other things, a change in mindset about the importance and benefit of movement, playing, and experiential physical activity for effective learning.

> *Playful learning like in the kindergarten, I hardly use booklets. There is plenty to do without booklets and I feel that when we come to work with the booklets, the children are much better prepared to work. (School teacher)*

Program impact on children and class atmosphere

Consistently throughout the years of evaluation, the staff members responding to the questionnaire referred to the program's very positive influence (most average values were higher than 4 on a scale of 1 to 5).

Moreover, in the kindergartens and schools in the program, a very pleasant atmosphere was often observed, in conversations between staff and children, and children were observed being busy and active and, at the same time, relaxed and calm.

> *Children who have trouble sitting, for example, I allow them to go outside and jump up and down a few times ... or children who always need to be fiddling with something, I give them plasticine instead of them playing with their pens that make noise. they moved, had fun and laughed, and the whole class atmosphere changes ... The children feel they did something and enjoyed learning. (School teacher)*

> *It really helps. The program is very good. The children love [the program activities] and the teachers feel the children are more concentrated after their practice. (School teacher)*

> *You can see the influence of the program on their bodies, instead of walking to kindergarten, they feel comfortable skipping and turning around, they clearly feel confident in their movements and feel comfortable with their bodies, and they know they can tell us when their body feels restless. (Kindergarten teacher)*

Reduction of gaps between pupils who are struggling and those who are not

In the program, some of the children identified as have functional difficulties of gaps compared to their peers, benefited from regular individual practice of specific work in small groups with the program's professional coaches during the daily routine in the kindergarten or in school. This practice was designed to strengthen and enhance various skills, regulate and moderate a range of functional difficulties.

For two years the progress of children in the kindergartens and schools was examined via a questionnaire addressing various issues (motor restlessness, distraction, breaks in auditory attention, lack of social ease, difficulties with sensory regulation, lack of discipline and cooperation, problems with fine and gross motor skills, aggression, temper tantrums and violence). Analysis of the results shows progress from the start of the year to its end for various aspects for all children, but among the children defined as 'struggling' there was greater improvement. This suggests that the program helps bridge the gaps.

Program impact on parents

Consistently throughout the years of evaluation, staff members responding to the questionnaire referred to a mixed impact on the parents. Some of the values obtained were high (e.g., 4.2) while others were low (e.g., 2.7).

Parents who participated in the program's workshops with their children and were exposed to a variety of activities and experiences aimed at practicing different skills through games,

made the following comments:

> *Suddenly you discover how easy it is to use play to practice learning and social skills with the children. It is very enlightening and opens your mind in other directions."*

> *The very act of assembling games with simple, everyday items makes things more accessible, and more fascinating. We will certainly implement the games and create another interesting way to practice at home."*

> *I was happy to get to know the program and I think that continuation at home is very important - thank you for that. The ideas are so simple and so precise and focused that it's amazing how little it takes to give so much."*

> *I learned how to help my daughter learn. The ideas are great to apply at home. I think my daughter's learning by experience is wonderful!"*

Parents whose children received individual reinforcement with the program's coaches noted that there was a marked improvement in their functioning:

> *I see the big change in my son since the beginning of the year."*

> *I wanted to say that my daughter is simply flourishing. Learning letters and numbers and her endless desire to practice and know just amazes my husband and me anew every day."*

> *I have no doubt that the program has contributed much to my daughter's progress and development …. She's been such a 'sponge' since the beginning of the year and the results are amazing - simply a pleasure!"*

> *I was happy to know that during the year the staff worked with my son on cognitive and motor skills, mainly because he had difficulty in this respect and needed strengthening and improvement ... ."*

> *I noticed that my son's concentration ability improved, and the eye-hand coordination improved greatly.*

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