

A Proposed Programme Based On Sensory Integration Theory For Remediating Some Development Learning Disabilities Among Children

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Abstract

The current research aims to prepare a proposed Programme based sensory integration theory for remediating some developmental learning disabilities among children, researchers prepared a Programme based on sensory integration through reviewing studies related to the research topic that can be practiced by some active teaching strategies (cooperative learning, peer learning, Role-playing, and educational stories). The Final format consists of (39) training sessions.

Key Words:

1. Training Programme.
2. Sensory Integration.
3. Developmental Learning Disabilities.

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Research problem:

Specialists have found themselves in front of a large, heterogeneous group of children, who share some general problems, mainly the inability to learn in a way that corresponds with their abilities and their ages, but they differ greatly in the reasons that lead to this, and they cannot be classified within the known basic categories of children with disabilities (El-Shakhs, 2007).

These children are considered to have learning disabilities, as they possess sufficient mental capacity to learn and provide them with experiences. However, their acquisition of

information is less than their normal peers in one aspect or more that affects their general performance.

It was found that the developmental problems necessary for the learning process; Like attention, perception, and recall, are very common among children with learning disabilities. It may also appear clearly in pre-school children, and it may be discovered when a child fails to learn school academic subjects, so these disabilities fall within the primary difficulties. The basic mental functions are intertwined with each other, and if they are affected by disorders, they affect the thinking

processes and the verbal language, which are considered secondary difficulties, as they are affected by the primary disabilities (El-Shakhs & Al-Tantawy, 2011).

Children with learning disabilities cannot remember letters or words easily. Therefore, it is useful to use methods that contribute to their more active participation with the study materials to better study and remember them. The abbreviation VAKT is often used to refer to the multisensory techniques, which are visual, auditory, kinesthetic, and tactile. The VAKT method involves the act of the child following letters or words while uttering the word, hear, and see it at the same time (Westood, 2003).

Sensory integration theory is used to explain the relationship between the brain and behavior, it explains why individuals respond well to sensory input, and how the senses affect behavior and learning. There are five basic senses; the sense of hearing, the sense of sight, the sense of touch, the sense of taste and the sense of smell, in addition to the two strong senses; which are the sense of balance and movement which are responsible of the vestibular system, which provides us with the position of the head and body in space and its relationship to the surface of the earth. The sense of tendons, muscles, and joints, which is responsible for the body's sense of proprioception, provides us with knowledge of where the body parts are and what they are doing (DiMatties & Sammons, 2003).

Sharon (2010) indicates that sensory integration inputs are motor and sensory activities that help children to organize the sensory information that they received, and any disturbance in the sensory process that includes merging, modification and planning, or the organization and arrangement of events; it leads to learning disabilities and disabilities in developing appropriate behavior for the child's chronological age.

Both Lyn Horowitz and Cecil Rust (2016) emphasize that when children do not develop sensory integration, they suffer several problems. As children have problems preparing sensory stimuli, that means a sensory integration disorder, so that sensory integration therapy is useful in dealing with some other problems such as learning disabilities, movement problems, and behavior.

The results of several previous studies, such as the study of (Dian & West study, 2004), and Reynolds & Reynolds (2010), have confirmed the

effectiveness of sensory integration as an entry point for treating and improving developmental learning disabilities, and the American Academy of Pediatrics (2012) emphasized that the use of sensory integration as a therapeutic approach helped treat sensory problems for children in addition to improving their behaviors.

Given the lack of Arab research and studies that dealt with the role of sensory integration with people with developmental learning disabilities, so the current research seeks to prepare a training Programme for developmental learning disabilities based on sensory integration.

In light of this, the problem of the current study can be summarized in the following question:

To what extent can a Programme based on sensory integration be developed to treat some developmental learning disabilities for children?

Purpose of the research:

The current study aims to prepare a proposed Programme based on sensory integration to treat some developmental learning disabilities for children.

Research importance:

The importance of the current study can be summarized as follows:

- 1 -Contributing To increase the amount of information and facts about children with developmental learning disabilities, and about the types of these disabilities that are related to deficiencies in sensory integration, which may help in identifying deficiencies for children.
- 2 .Shedding light on the entry point of sensory integration and its role in treating developmental learning disabilities, as these Programmes are considered a natural extension of kindergarten programs.
- 3 .Providing a model for a program that can be used in the treatment of developmental learning disabilities in children, and includes procedures and steps that are followed in light of appropriate therapeutic strategies and techniques, depending on some activities that include sensory integration.

Research basic terms:

The current study includes the following terms:

First - Sensory Integration:

Sensory integration is defined procedurally as receiving information through the different senses and integrating them, and combining them to produce a purposeful behavior consistent with the nature of sensory inputs and stimuli (El-Shakhs et al, 2017).

Second - Developmental Learning Disabilities:

Deficiency in one or more of the following developmental processes: attention, perception, and remembering, so that this deficiency is not due to a mental disability, sensory disabilities (visual and auditory), motor disabilities, emotional disorder, or environmental and cultural factors and inappropriate economic conditions.

These processes can be defined as follows:

Attention: the child's ability to be aware and focus on clear and specific stimuli that are related to different situations, and his ability to exclude other unrelated stimuli.

B- Perception: This is the psychological process by which the child employs the sensory systems to receive stimuli, then interpret these stimuli and give them meaning and significance.

C- Remembering: It refers to the cognitive process by which the child can store information and retrieve it when needed (El-Shakhs & Al-Tantawy, 2011).

Third - The Proposed Programme:

This Programme is procedurally defined as a planned program organized in light of scientific foundations and includes a set of techniques and strategies such as reinforcement, modeling, simulation, induction, role play, repetition, feedback, and a set of educational tasks and activities prepared according to the theory of sensory integration which is represented in Visual-kinesthetic synergies, awareness of the relationship between shape and ground, position in space, copying of shape, the position of tactile stimulus, recognition of fingers, writing on the palm, and simulation of body position, all of which aim to treat some developmental learning disabilities for children.

The theoretical background of the study:

The first concept: developmental learning disabilities:

1 .Definition of Developmental Learning Disabilities

Many definitions addressed these difficulties, as follows:

Muhammad (2006) believes that developmental learning disabilities are considered as one of the most important factors that explain the low level of educational achievement for children, as they include disturbances in attention, memory, perception, and thinking as a result of an internal psychological or nervous process, or a group of disorders that appear in the form of clear disabilities in acquiring skills in reading, writing and arithmetic skills.

Al-Zayat (2008) defines developmental learning disabilities as those disabilities that are concerned with the pre-academic processes, which are the processes of attention, perception, memory, thinking, and language, on which academic achievement depends, and are the most important foundations on which an individual's mental cognitive activity is based. Hence, any disorder or defect affecting one of these processes necessarily generates many academic disabilities.

El-Shakhs & Al-Tantawy (2011) also define developmental learning disabilities as deficiencies in one or more of the following developmental processes: attention, perception, remembering, thinking, and oral language, so that this deficiency is not due to mental disability or sensory disabilities (visual, auditory), movement disabilities, emotional disturbances, or inappropriate environmental and cultural factors and economic conditions.

2 .Characteristics of children with developmental learning disabilities

Muhammad (2006) reviewed a set of characteristics of pre-school children, which can be viewed as indicators or predictive behaviors and indicate developmental learning disabilities:

The child finds it difficult to follow the various instructions given to him.

Has difficulty keeping track of adherence to a certain protein.

He often finds it difficult to understand what we request.

- experience a delay in speech development in comparison to his peers.

- a child faces several problems that are related to vocabulary, as he is usually unable to use it correctly on various occasions.

- He experiences obvious deficiencies in linguistic structures in terms of quantity and content.

- Usually linguistic structures, even simple ones, are delayed in their development.

- He finds it difficult to pronounce the words correctly, as he faces many problems related to pronunciation such as omission, substitution, or addition.

- He suffers from a clear deficiency in his social skills, which is usually below average.

- He is unable to express himself appropriately.

Gets distracted easily

Unable to focus on a specific stimulus for a long time.

-He does not play a specific game for a long time but rather moves from one game to another quickly.

Often he faces many problems related to visual perception.

-He finds it difficult to visually distinguish between different stimuli.

-He finds a problem in pasting the pictures in the places specified for them.

It is difficult for him to know the days of the week.

-He finds it difficult to remember the specific details of the situations he is going through.

3 .Assessment and diagnosis of developmental learning disabilities

The process of diagnosing people with learning disabilities is difficult, and this is due to the heterogeneity of this group. They differ in terms of characteristics, which makes the process of diagnosis not easy. The most important learning disabilities are the following:

1 -Some children seem to have some educational difficulties as normal children.

2 -There are no clear characteristics of these children that would facilitate their identification.

3 .Some of the behavioral symptoms shown by those with learning disabilities may approach the

level of visual or auditory disability, or close to the behaviors shown by children who suffer from health problems, family problems, or cultural differences.

4 .When a child suffers from a disability in addition to learning disabilities, the learning disabilities overlap and intertwine with this disability, and attention is usually directed to diagnosing this disability and leaving learning disabilities (El-Shakhs & Al-Tantawy, 2011).\

Identifying and diagnosing indicators of developmental learning disabilities

It is worth noting that dealing with children at this young age to identify the presence of indicators indicating learning disabilities, whether academic or developmental, is a difficult matter in reality, as it requires the diagnosis of the child as suffering from learning disabilities to ensure that he has many conditions based on several actions are:

1 -Observing the child's behavior closely:

That is done by the parents or the teachers of kindergarten. This observation has great importance because it represents the important first steps that can save a lot of time, effort, and money to identify such children, and therefore we ask the teacher to nominate or identify for us that child who is the lowest in his performance's level Which is considered low concerning his level of intelligence, and then we complete the diagnostic procedures with this child.

2 .Analyze this behavior more precisely:

Behavior analysis or performance analysis is an important means to identify the most important strengths and shortcomings that characterize the child, in the light of which such children are accurately identified, then discovered early and subjected to an early intervention Programme, and it is known that the analysis of that behavior is from it would explain to us the aspects of the child's deficiencies in the light of which the level of his performance is judged.

3 -Determine the most important behavioral and psychological characteristics of the child:

Which is considered at that time an indication of learning disabilities, and makes him more at risk of later learning disabilities, whether developmental or academic.

4 -Using one of the neurological survey tests:

It can be ascertained that the deficiency or defect that he suffers from is not due to psychological causes, but rather to neurological ones.

5 .Whereas at present there are no accurate measuring tools at this age that can be relied upon in this regard, but the accurate and codified observation of the child's behavior and the analysis of the performance that it brings remain among the most common and used tools in this regard and thus it becomes one of the most important of them. Besides, the use of one of the neurological survey tests is of great importance because the goal is to determine whether the main causes of the problem are external psychological or internal neurological.

6 .Furthermore, those problems that they suffer from can be diagnosed with children's toys and their play tools, and to identify the extent of any indicators that may show learning disabilities, whether academic or developmental (Muhammad, 2008).

The second concept: sensory integration:

a. Definition of sensory integration:

Rasmussen (1995) considers that sensory integration is an innate neurobiological process, referring to the integration and interpretation of sensory stimuli coming from the environment by the brain, as Nelson (2004) indicates that there is several innumerable sensory information entering our brain at every moment, not only through our eyes and our ears but also from everywhere in our body. the brain has to organize and integrate all these sensations that flow to it steadily and at a very fast rate, it needs to be activated, organized, and coordinated if a person wants to move and learn effectively, and if possible. managing these feelings, the brain can be the perceptions, then the concepts and draw the meanings, and then it can learn.

Ayres & Robbins (2005) define sensory integration as the process by which individuals record, modify, and characterize sensations received through the sensory system. the sensory system aims to produce purposeful adaptive behavior in response to the environment.

Bundy et al. (2007: 250) explain that Sensory integration is the interaction of the brain with the environment through its sensory systems to bring about the process of interaction, reaction, and learning, which is a cyclical process for collecting

information for interaction and thus learning takes place and the course components consist of: sensory integration, sensory magnitude, planning, organizing, adaptive behavior, learning, and feedback.

Reynolds (2008) defines sensory integration as a sub unconscious process in the brain to organize and process information received from different body senses, and to give appropriate responses to different situations.

Kirk & et al (2009) indicated that sensory integration is the ability to use two or more senses simultaneously and comfortably, and the inability of pupils to listen and take notes while studying is an example of a sensory integration disorder. Because these actions require merging the integration of auditory and tactile perception and the sense of joints and muscles.

Nimbalkar (2015) defines sensory integration as the neural process that regulates sensation from one's body and the environment, as makes it possible for the body to be used effectively in it.

El-Shakhs et al (2017) define sensory integration as the reception of information through the different senses, their merge, and their integration to produce a purposeful behavior consistent with the nature of the sensory inputs guidable.

B. Sensory integration theory:

The theory of sensory integration investigates the interpretation of problems related to learning and behavior that are not due to damage in the central nervous system. Ayres (1978) is the first person who lays the foundations of the theory of integration of nervous senses into functional treatment, and it has added to the five senses known to us. Other hidden senses are the associated vestibular sense. in the inner ear, which provides information about gravity (space, balance, movement); and that by placing the head and body relative to the surface of the earth, and the deep sensations associated with the muscles and joints, which provide the sensory information received from the joints, muscles, and ligaments from parts of the body (Thompson, 2011).

Ayres (1978), focus on neural function and learning processes, helped advance the understanding of intelligence as a result of sensory perception, sensory integration, and sensory processing, and her work led to many studies to improve learning capabilities through the treatment

of neurosensory integration as a result of human reception of information from different senses. sending it to the brain, then process it and give the appropriate responses to it.

Ayres has identified five interconnected basic steps that explain how sensory integration occurs, as follows:

1 -Sensory Registration:

The sensory recording is the first step of sensory integration and it occurs when we are aware of a sensory event, and we express it in terms such as "something touches my hand, or I hear something". Sometimes we are not aware of certain types of sensory input until they reach a certain intensity or "threshold". This sensory threshold varies throughout the day, depending on the sensory and emotional experiences, how the stimulation is, its intensity, and our expectations about the stimuli.

2 -Orientation:

Sensory orientation allows us to pay attention to the new sensory information that comes to us. The brain distinguishes between sensory information that arouses our attention and information that can be ignored. This occurs through sensory modulation, facilitating functions, and sensory inhibition. The brain automatically adjusts and balances sensory inputs to work efficiently.

3 .Interpretation

The brain interprets sensory information and describes its properties. The phrase "something touches my hand" is interpreted by the phrase "my arms gently touched a piece of silk cloth." The ability to interpret sensory information allows us to determine what we are responding to and how we respond to it. Archaic sensory experiences, language, and memory all participate in interpreting sensory stimuli.

4 -Organizing a response

The brain regulates the response to sensory stimuli and determines the quality of the response, whether it is physical, emotional, or cognitive. A sensory experience, such as a mosquito standing on your body, the brain regulates the response to it in various ways, such as:

Kinetic response: I'm going to hit the mosquito.

Emotional response: I will make sure that the mosquito does not bite me.

Cognitive response: I'll ignore the mosquito.

5 -Execution of a response:

Implementing a motor, cognitive, or emotional response to sensory messages is the final stage of the sensory integration process. If the response is movement, such as "hitting a mosquito," this procedure generates a new sensory experience, as the brain receives information about the movement of the body and touch, then the process begins again(Yack et al, 2002: 22-27).

C. Parts of the brain and processing sensory information:

Ayres pointed in her book *Sensory Integration and Learning Disorder*, that the sensory problems that her children were suffering from; It was the reason for the difficulties they showed of careful attention and learning disabilities that affected all aspects of their lives at school, home and society, and then it focused its efforts on those children who suffer from behavioral and educational problems due to the difficulty of sensory perception due to unknown reasons, and how to process the brain for sensory signals that do not come from the eyes and ears only, but also from other parts of the body, the nervous system was described as an interconnected network of nerve cells distributed over the whole body, where the brain and spinal cord together know the central nervous system, and indicated that this system is mainly responsible about receiving sensations from outside and inside the body and sending signals to the brain where they are organized and processed, and where the response to those signals is formulated and sent (Emmons & Anderdon, 2006).

These areas of the brain are involved in coordination, attention, arousal, and involuntary functions. After the passage of sensory information through these centers, where this information is directed to the areas of the brain responsible for emotions, memory, and high-level cognitive functions, and therefore we find that sensory processing disorders not only affect the interpretation and reaction to the influence in the regions of the middle brain only, but it also affects several higher functions, and any damage to any part of the brain that is involved in multisensory processing can cause difficulties in adequately functionally treating stimuli, and therefore research and studies in the field of sensory processing focus on finding genetic and neurological causes of

sensory processing disorders (Davies & Gavin, 2007).

Sensory integration is a necessary step to achieve development, and it is also believed that the basic aspects of sensory integration are located in the lower nerve centers of the central nervous system, especially in the brain stem and thalamus, and most of the central nervous system processes for vestibular information occur in the brain stem, and many treatments occur. The physical and sensory structures of the thalamus, because of the dependence of the upper nerve centers in the nervous system on the lower nerve centers, the increase in the effectiveness and efficiency of the brain stem and the thalamus will improve the function of the higher centers (Ayers, 1978).

D: Mechanisms of sensory integration:

Nelson (2004) indicates that the brain possesses the tremendous ability to organize living information about the current requirements and needs of the environment, and the individual needs the following four mechanisms to self-regulate:

1 .Modulation:

Where the brain directs the nerve switches either on or off mode to regulate its activities then our level of activity. It organizes the task or activity that we do. To play volleyball, we need the neural keys to be directed to focus on reading a book.

2 .Inhibition:

As the brain weakens the connections between the sensory input and the behavioral outlet. This is when we do not need that sensory information to perform a specific task. While we are sitting in the classroom, the sensory input needs to dampen the sound coming from the buzzing of the fan. This is so that we can focus our attention on the teacher as our sensory system becomes over-excited so that we can block out unnecessary outside information.

3 .Habituation:

When we become accustomed to familiar sensory messages, our mind will automatically adjust them. For example, when we take a car, the process of fastening the seat belt on our body occupies our attention in the beginning, but in the end, we do not even notice the presence of the seat belt.

4 .Facilitation:

Where the brain strengthens the links between the sensory input and the behavioral outlet, by sending messages of dissatisfaction (for example feeling dizzy) or messages of pleasure (for example feeling calm), and that when sitting in a rocking chair, the facility allows us to know when we need to stop the activity It will also give us the signal to continue the enjoyable activities.

Program preparation procedures:

Program goal:

It is a Programme designed and planned in light of theoretical and practical foundations; through its reliance on the theory of sensory integration to treat some developmental learning disabilities for children.

The following is a brief overview of the Programme elements:

The researchers took the following steps in preparing the study program:

Sources relied upon preparing details of Programme sessions:

-The theoretical framework of the study and the books that could be read; Especially books on children's activities and foreign and Arab references in the field of sensory integration and developmental learning disabilities.

-Arab and foreign studies that used training programs that dealt with sensory integration and developmental learning disabilities for children, and the strategies, techniques, methods, and activities they contained, including, but not limited to, the study of Diane & West (2004), Reynolds & Reynolds (2010), Anne et al (2012), Noddings (2012).

Access to several educational sites that dealt with sensory integration in the treatment of developmental learning disabilities, including: (Gulf site and forum for people with special needs, Shamaa website, new education site).

-Access to the curriculum of kindergarten for the first and second levels.

Children literature and educational stories.

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