



## **THE MAIN AREAS THAT SHOULD BE CHECKED WHEN ASSESSING CHILD'S STUDY SKILLS AT THE END OF THE 1<sup>ST</sup> GRADE**

### **INTRODUCTION**

Learning disabilities is a term used to describe difficulties in skills such as writing, reading, arithmetic operations, speaking and reasoning (APA, 2013). In some countries, the terms “learning disability”, “learning disorder” and “learning difficulty” are used interchangeably, while in others a clear distinction is made among them. Nevertheless, it is a fact that many children, who have difficulties at school, are often excluded from classroom and extracurricular activities because of their poor learning skills. Their difficulties are the reason for the growing lack of interest in schooling and low self-esteem, which often leads to low academic achievements, early school leaving and poor performance later in life, thus affecting their well-being. Another serious problem is that only a small percentage of children, who experience learning difficulties, are identified early enough, which means that they do not receive the needed support in order to succeed.

In different countries, those concepts are considered and interpreted depending on the ideas, norms, language, historical heritage and scientific paradigms that shape the education and the educational system in the respective country. Thus, the understanding of the concept of “learning difficulties” varies from its acceptance as a disorder characterized by average and above average level of intelligence, but lagging behind in one or more specific areas (e.g. reading, writing, arithmetic) to a state very similar to what was defined some years ago as “mild mental retardation” (nowadays this term is considered politically incorrect and is no longer used).

In some countries (e.g. the USA), the terms “disabilities” and “difficulties” with regard to learning are used interchangeably. According to the National Institute on Neurological Disorders and Stroke (NINDS), “learning disabilities” are disorders that affect the ability to understand or use spoken or written language, perform mathematical calculations, motor coordination or concentration.

In other countries (such as the United Kingdom), a distinction is made between “learning disability” and “learning difficulties”. The learning disability refers to developmental disorders

or conditions that are almost always associated with more severe generalized cognitive impairment. People with learning difficulties have a hard time learning, they need more time and support to develop new skills, comprehend complex information and interact with other people. The presence of specific learning difficulties does not mean that the person is unable to learn and achieve good academic results, but that it is difficult for him/ her to do it in the traditional way. The most common specific learning difficulties include dyslexia (difficulties in mastering the ability to read), dysgraphia (difficulties in mastering the ability to write), dyscalculia (difficulties in mastering mathematical skills) and dyspraxia (motor and coordination difficulties). This group also includes the condition known as Attention Deficit/ Hyperactivity Disorder (ADHD). Specific language impairment has become another common category of learning difficulties.

The causes of learning difficulties have not yet been well studied, but experts, although not sharing the same opinion, agree that there is no single factor that can be indicated as the only cause of learning difficulties. Possible causes include delayed maturation of the left hemisphere, central nervous system dysfunction, perceptual deficits or information processing problems.

There are different classifications of learning difficulties, but we will describe here only one of them: the classification according to the area of difficulty.

**Dyslexia** is the most common specific learning disorder of a neurological nature, accounting for about 80% of all cases of learning skills disorders (Donfrancesco et al., 2010). This is a specific learning skills disorder, associated with difficulties in learning to read, which also affects writing skills. People with dyslexia usually have average or above average intelligence, and despite the difficulties, if the problem is identified in time and addressed adequately, they can achieve very good academic results.

**Dysgraphia** can be defined as spelling difficulties and/ or problems with expressing thoughts and ideas in writing, as well as problems with the technical aspect of writing (handwriting). Dysgraphia can manifest itself in different ways - incorrect/ unusual grip when holding a pencil, different size and distance between letters, illegible and sloppy handwriting, slow and pressure writing, misspellings, non-compliance with grammatical and punctuation rules, difficulty in expressing thoughts and ideas, etc.

**Dyscalculia** is a term referring to a wide range of mathematical difficulties: it affects the ability to understand and/ or work with numbers, performing arithmetic operations, perception of numbers as an abstract representation of comparable quantities (Pierangelo & Guiliani, 2008).

**Specific language impairment (SLI)** is a language based developmental disorder which affects the acquisition of language. The deficiencies may lay in the area of expression as well as in the area of reception of language. SLI cause difficulties to comprehend the language and a difficulty to use verbal tools appropriately even though one hears and learns their mother tongue naturally in the course of their development.

**Non-verbal learning disorders**, though less obvious, can also have a major impact on a child's academic performance. Among them - dyspraxia, hyperactivity and executive function are worth mentioning.

Dyspraxia causes difficulties in performing activities related to both fine and gross motor skills. In children of preschool and early school age, it manifests itself as a difficulty in mastering skills such as colouring, cutting, ball games, etc. Dyspraxia is a lifelong condition but if diagnosed and treated in time, children's motor skills can be significantly improved. (Gibbs, Appleton & Appleton, 2007).

Attention deficit disorder and Attention deficit hyperactivity disorder are concepts that were considered separately until 1984, but in contemporary literature it is accepted that all forms of attention deficit disorder are called “Attention deficit hyperactivity disorder”, even when the person is not hyperactive (Mayes & Horwitz, 2005). Children with attention deficit have difficulties following instructions, do not complete tasks and do not pay attention to detail. If this is combined with hyperactivity, children have inexhaustible energy, cannot follow rules, and cannot concentrate on school tasks, etc. (Sroubek, Kelly & Lee, 2013).

Executive functions are a group of mental skills that include working memory, flexible thinking and self-control. These skills are essential for effective learning. Deficiencies in their development cause difficulties not only in learning but also in everyday life, as they affect many neuropsychological processes: time management, planning, organization, memorization of details, etc. (Reiter, Tucha & Lange, 2005).

Learning difficulties affect all aspects of students' lives, not just their academic performance. This does not mean that students with learning disabilities cannot learn, they simply cannot learn in the same way and/ or as fast as their peers can. They need an adapted approach that best suits their learning style. With adequate and timely intervention and support, these students can compensate for their difficulties and succeed. It is the responsibility of adults (teachers and parents) to provide students with learning disabilities with all the opportunities to be included effectively in mainstream school.

### **The areas that should be assessed:**

#### **Perceptions**

Perceptions are influenced by a person's life experience. From an early age, the child learns about the surrounding world using perceptions. According to Miller (Miller, 2002) adults are those who have the important task to make the environment interesting and diverse. In early childhood objects are perceived emotionally, while at preschool age perceptions lose their spontaneity and become conscious, purposeful and analytical (Burman, 2008). At primary school, children's perceptions are not yet sufficiently differentiated. It is only after the age of 8 when a child is able to describe what she/he perceives. After the age of 9, a child can add to the information of the perceived objects logically. The connection between perception and thinking

begins to develop (Shaffer Kipp, 2013). Perception is a mental process of reflection of objects and phenomena from reality as a whole upon their direct impact on the sensory organs.

We perceive the world around us through our eyes. This type of perception is widespread and is one of the main sources of information (Jung et al., 2014). You may have found that a child with the preference of visual information processing perceives information best by visual tasks - pictures, maps, illustrations, etc., but he/ she can be confused easily by noises and sounds. A relationship has been established between the ability to perceive letters and words on the one hand, and literacy on the other (Baluoti et al., 2012; Lipowska et al., 2011; Bellocchi et al., 2017).

Auditory perception, which is equally important for the formation of good learning skills, is linked to the ability to “structure the surrounding sounds, to separate the ones that must be analyzed immediately” (Myklebust, 1954). Children who have difficulties with phonological perceptions and phonological processing can hear sounds, but they are not able to determine their significance.

A child with a dominant auditory perception likes taking part in conversations and discussions on various topics; he/ she can listen carefully and is able to speak correctly and reasonably. It is recommended that such a child should be included in discussions, commenting on topics and problem solving.

A child, who has a kinaesthetic type of perception, memorizes and learns new information best when it is presented through practical activities and movement. Therefore, it is important that teachers explain the learning material by including similar tasks or giving examples from the every-day life.

When discussing perceptions in relation to learning skills, we cannot miss to highlight the fundamental role of the speech perception in this process. Speech perception is unconscious cognitive processing of the language sounds in a specific region of the brain. Well-developed speech perception is a prerequisite for the formation of phonological awareness (related to the conscious ability to take into account the unique differences among the words in the spoken language). The phonological processing centre in the brain usually works unconsciously when we listen and speak. It is designed to extract the meaning of what is being said and not to register every single sound in each word. It works automatically and supports effective communication. However, reading and writing require a certain level of metalinguistic speech, which is not easily and naturally achieved. (Moats and Tolman, 2009)

Engaging the right perception in the learning process creates the foundation for building abstract knowledge. As children may have a dominant type of perception or a mixed one (Barbe and Milone, 1981), it is very important that the teacher is able to identify the type of perception of each child (especially in the case of a child with learning difficulties), because based on the relevant perception type, he/ she can select or prepare appropriate training materials.

## **Attention**

Attention is at the heart of cognitive processes and it is one of the important skills needed to achieve great academic success. J.R. Anderson defines attention as a behavioural and cognitive process of selective focusing on a particular aspect of the information, ignoring the rest, unnecessary part. Attention can also be defined as the distribution of the limited resources a person has for information processing (Anderson, 2004). Attention can be voluntary or non-involuntary. Volitional attention is the one a person directs to a set goal, while involuntary attention is determined by external factors, such as new objects or a change in the environment. Children with learning disabilities tend to have unsustained attention. They get easily distracted from what they are doing by any external stimulus, such as sound, light or movement.

The main characteristics of attention are sustainability, concentration, distribution, volume and switching. These components are developed to a different degree in each person. It is possible that one of them is very well developed yet another one is deficient.

With age, most children improve their ability to focus (concentration) and hold attention (sustainability) long enough to complete the task. However, children with learning difficulties lose concentration easily, their attention is unsustained and they are influenced considerably by external factors. Moreover, their attention is often focused on insignificant features of the information provided, rather than on the important ones. The desire to stay focused on working on the task for a longer period of time leads to internal tension and quick tiredness.

## **Memory**

Memory is responsible for using the language, applying knowledge and controlling body movements. According to Sherwood (2015) memory is the retention of information over time for the purpose of influencing future action. Memory influences our life on every-day basis, plays role in formation of our personality and gives us the opportunity to gain new experience. Memory is one of the key factors in the learning process because it allows a person to memorize information, store it and reproduce it as needed or use it in the future to tackle a problem or task. The Russian psychologist G.K. Sereda defines memory as “a mental process, which is a product of a previous action and a condition for a forthcoming one.” (G. Sereda, 1967)

When testing a child with learning difficulties, specialists must include a memory abilities test. Memory affects speech, reading, writing and arithmetic skills as well as learning skills in general.

We distinguish several types of memory and they are all equally important in the learning process. Deficiency in any of them leads to some kind of learning difficulties.

Visual memory is the ability to memorize the characteristics of an object for immediate recall. It describes the link between the processing of visually perceived information and the process of its encoding, storage and recall of images received in the brain. (Berryhill, 2008). If we relate this to the acquisition of reading and writing skills, we can say that visual memory helps the child to reproduce the sequence of visual stimuli (such as letters and words), to connect them correctly in a word, or to spell the word correctly, so that all letters are in the correct order.

Having the mental image of a word, the child can recognize it without having to decode it each time, and over time, this leads to automatic reading and writing skills.

Auditory memory, in turn, is the ability to process orally presented information, analyse it, and store it for later use. Unlike visual memory, in which our eyes can repeatedly scan visual stimuli, this is not possible with regard to auditory stimuli. Clark defines auditory memory as a “holding tank”, in which the sound is retained and stored unprocessed until the following sound is heard, and only then can it be made meaningful (Clark, 1987). Children with learning difficulties have poor auditory memory and hence difficulties in remembering information provided by hearing.

The ability to keep in our minds the information received in an active and easily accessible state for a short period of time is provided by the short-term memory (Baddeley, 2018). It stores both visual and auditory stimuli. With this type of memory, there is no conscious effort to store the information, but it is possible to recall the stored information at a later stage. Only the basic elements of the perceived images or words are stored in the short-term memory. The short-term memory capacity is strictly individual and when it is filled up, some of the old information is replaced new one.

Long-term memory allows the perceived information to be stored for a longer period of time - from a few days to several years. In fact, the long-term memory capacity is unlimited, but a person's ability to memorize information consciously or unconsciously depends on how well his/her long-term memory is organized. We often hear the phrase “helpfulness of the memory” and it is usually used to determine a person's ability to recall the necessary information quickly from his/her memory. Long-term memory can be divided into explicit (memories that we remember consciously) and implicit (memories that we use to perform certain actions without thinking, such as swimming or riding a bike).

One of the earliest and most influential distinctions of long-term memory was proposed by Tulving (1972). He proposed a distinction between episodic, semantic and procedural memory.

Episodic memory (related to events we have experienced in our life) and Semantic memory (related to knowledge and concepts) are two aspects of the Explicit memory. Semantic memory plays a special role in the learning process, as it allows us to remember facts out of context. It stores our knowledge of the words, symbols and concepts we use to have a conversation or to study a new subject; it helps us understand the information we hear or read.

From the other side, the procedural memory (which is part of the Implicit memory) is responsible for our knowledge how to do things and helps us to complete many tasks in our every-day life.

A very important role in the process of learning plays the Working memory. It is a cognitive system that can hold information temporarily and has a limited capacity (which is very individual). Some authors think that the working memory is just the same as the short-term memory, but there are many, who see the difference between them. While the short-term memory is responsible for storing information, the working memory allows us to manipulate this information in order to complete a task.

## Thinking

Thinking is the most complex cognitive mental process through which a person comprehends the phenomena, principles, rules and norms of life. As a result of thinking, one can plan and act purposefully and manage and control one's behaviour. Thoughts are formed in the mind, not perceived through the senses. Thinking gives us a generalized knowledge of reality. It is related to practice and arises based on it.

Thinking processes are very complex and closely linked to other cognitive processes. We can view them from the perspective of cognitive operations. These are basic cognitive operations which organize, change and manipulate with the information to conduct a complex thinking process (Piaget, 1997; Feuerstein, Feuerstein, Falik, & Rand, 2006).

The operations can be divided into three groups according to their complexity:

- I. “elementary” operations
  - a. identification (“what is it?”)
  - b. distinction / differentiation (“what is this and what is not this?”)
  - c. naming (“what’s its name?”)
  - d. comparisons (“what is the same and what is different?”)
- II. operations which organise thinking
  - a. analysis / synthesis (“what parts can we see?”, “How will the parts make the whole?”)
  - b. classification / categorisation (“what belongs to the group?”; “what groups have we got here?”)
  - c. deduction / induction / generalisation (“what stems from this?”; “what does this all mean?”)
  - d. seriation / sequencing (“what is the strategy of work?”; “what is the plan?”)
  - e. hypothetical thinking (“what happens if...?”)
  - f. permutation (“how does the group of information change?”)
- III. higher-ordered operations
  - a. analogies (projecting relations)
  - b. syllogisms (logical consequences)
  - c. transitive thinking (transfers, transmissions)
  - d. inferential thinking
  - e. logical multiplications

There are also classifications, which divide thinking into conventional, innovative (creative), critical, etc.

## Creativity

Robert Franken defines creativity as the tendency to generate or recognize ideas, alternatives, or possibilities that may be useful in solving problems, communicating with others, and entertaining ourselves and others. (Franken, 2004) The same author adds that in order to be creative, a person needs to be able to view things in new ways or from a different perspective; to generate new possibilities.

The main characteristics of creativity are innovation, originality, etc. in fields such as art, science, technology, pedagogy and so on. Bebre (Bebre, 2010) understands creativity as a manifestation in various fields, which can take many forms. Creativity should not be seen as inherent in people of the art (artists, actors, composers, etc.). It should not be limited to certain subjects in the children's curriculum. It can convey itself in any direction, in solving any task and dealing with any problem. The more creative the teachers' and students' approach to the learning process is, the more interesting, motivating and effective it will be.

Creativity is something that can be very difficult to assess and in all cases this assessment will be subjective, dependent on the knowledge, perceptions and feelings of the assessor.

### **Speech development**

There has been a recent tendency for the number of children with language disorders to rise. When assessing school readiness of 5-6-year-olds, it is found that almost half of them have some kind of language disorders: inaccurate pronunciation, poor vocabulary, agrammatical speech or inability to express oneself freely. These disorders can lead to reluctance to communicate, isolation or self-isolation, and subsequently to learning difficulties. Speech development is the result of the interaction between the general development of the child and the environment in which he/ she grows up and develops. As early as preschool, a child's speech is close to the adult's one, but it needs more time to develop in phonetic, phonemic, lexical and grammatical aspects.

Children with language disorders have problems with understanding and processing of verbal information, which has a great impact on the child's ability to perform the task in such a way that it is expected from him/her. A child with language and speech impairment is likely to have difficulties in following instructions, particularly if they are given only orally and if they are multi-step directions (requiring several consecutive actions).

In addition, children with speech impairments are very likely to face serious difficulties in mastering reading and writing skills and in developing good learning skills in general.

### **Mathematics**

Mathematical skills are one of the key skills, which together with reading and writing, ensure our normal functioning in everyday life. Mathematics promotes logical, critical, creative, abstract and spatial thinking, problem-solving ability and even effective communication skills.



According to D. Purpura and C. Ganley mathematical skills development can be divided into three stages. In the first stage, children learn to compare objects and to count forwards and backwards. During the second stage, they learn to connect the numbers with the corresponding quantities and numerals. In the third stage, children start to comprehend how to perform simple operations with numerals.

Difficulties in mastering mathematical skills are the most complex and complicated disorder of the specific learning difficulties group, mainly because success in mastering these skills depends on the development of both the language system and the basic mental processes. Mathematical abilities include many different skills and difficulties may be caused by a deficit in each of them.

Language skills are an important component in the process of building and developing mathematical skills in children. Math skills, like language skills, can be defined in two main areas: basic concepts of numbers and quantitative representations that children acquire before they start going to school (Purpura, Ganley, 2014; Raman, 2002) and real mathematics, which is related to mastering arithmetic operations and more complex mathematical operations. Language skills are closely related to the understanding of mathematical problems, which is crucial for performing mathematical operations correctly. In fact, children's understanding of addition and subtraction principles can also be measured through problems when manipulating specific objects and problems with storytelling (Purpura and Lonigan, 2013).

In order to identify learning problems in mathematics, the following skills (corresponding to the age of the child, of course) must be tested and assessed:

- Spatial and temporal orientation;
- Forward and backward counting from any point;
- Understanding the significance of a numerical depending on its place in the number (ones, tens, hundreds, etc.);
- Comprehension of quantities;
- Automated ability to perform basic arithmetic operations - addition, subtraction, multiplication and division;
- Solving word problems;
- Comprehension of mathematical and logical rules;
- Memorization of numbers

Undoubtedly, thought processes, their characteristics and level of development have a significant impact on an individual's learning skills.

### **Spatial and time orientation**

Spatial and temporal orientation are discussed separately here because of the essential role they play in the formation and development of young learners' learning skills - both in the period of initial literacy and throughout their later years at school.

Spatial orientation is vital for our adaptation to a new environment and for moving from one location in space to another. Without this ability, we would be moving in endless circles, we would be constantly lost, we would have a number of other problems that we do not even suspect now (Maxwell, 2013).

Spatial orientation is one of the key skills that must reach a certain maturity (level of development) in order for the child to easily master reading and writing and to cope with learning in general. It is necessary for the child to be able to learn to recognize letters, numbers and other graphic symbols, by paying attention to their specific characteristics that distinguish them from each other - shape, components, location and orientation in space. Otherwise, if the child has not developed a good spatial orientation, this can lead to mirror writing of letters and/or numbers, poor memory for shapes and words, problems with reading, writing and spelling as well as maths. Because of impaired or underdeveloped spatial orientation, poor coordination (including eye-hand coordination, which is very important for writing), clumsiness and balance problems can also be observed.

Another important prerequisite for the formation of good learning skills and achieving good academic results (in addition to the purely life aspect) is the ability to orient oneself in time. Temporal orientation presents many perspectives that shape our perceptions of time. These perceptions affect how one perceives and defines the boundaries among past, present and future. This ability directly affects our time management, organization and decision-making skills and is of great importance in our daily lives. Forming a notion of time is important for decision-making and taking actions (Alavina, 2016). Each person has the so-called biological clock, which starts functioning in early childhood. Temporal orientation begins to develop at the age of 7, and the clearer sense of how time is organized allows young students to think ahead and plan their actions more effectively. However, there are certain skills that a child must develop before starting school, such as: to know the days of the week and their sequence; to know the seasons and their main characteristics; to know the order of the months of the year and which months are in each season; to know the meaning of “tonight” and “last night”, “before” and “after”, and so on; to be familiar with the clock as a tool for measuring time, etc.

When we talk about orientation in space and time, we should add how important the ability to work with sequences is in the learning process. This is a skill that should be formed in the child from a very early age in order to reach the required level of development by the time he/ she starts school. Mastering the reading, writing, arithmetic, storytelling, logical thinking, etc. skills is directly linked to how well we perceive, comprehend and reproduce sequences.

## **Motor skills**

**Physical development** plays an important role in the overall development of a person. Not only does it **contribute to gross and fine motor skills development** but it is also important for **building endurance, motor coordination, speed and flexibility**. At the same time, good physical development is a factor also in the **development of thinking, concentration, perceptions and temporal and spatial** orientation and so on.

As the majority of students with learning difficulties have problems with writing, coordination and balance, the level of motor skills development is another important prerequisite for building good writing skills. Impaired or underdeveloped motor skills of such students have been observed and documented for a long time. For example, a team led by Nicholson, has studied a significant number of children with dyslexia (the most common learning disability) and have reported that about 80% of them had problems with both gross and fine motor skills and almost all of them had disturbances in balance, muscle tone and coordination.

At preschool age, when the child is tested for school readiness, a mandatory assessment of his/her motor skills development is made, too. Gross motor skills require enough amount of energy for the child's body to cope with the workload. Fine motor skills, in turn, require patience, allow a better use of the small muscles that control the hand, fingers and thumb. Therefore, the level of fine motor skills development is essential for the learning process, especially in the first years when the child has to learn the basic literacy skills (reading, writing and arithmetic).

Most students, whose fine motor skills were not well developed at the time of starting school, have problems with writing. Eye-hand coordination, which is so important for mastering the handwriting, is the one necessary for the child to be able to cut along a line, to colour within the lines, to draw, to catch a ball, to tie the laces of his/ her shoes, to button and unbutton his clothes, etc. The same goes for controlling the hand movement. If the student has problems with balance and gross motor skills, it is very likely that he/ she will not be able to keep the letters on the line when writing, the letters will be of different sizes or the handwriting will be uneven, clumsy and illegible.

## **CONCLUSION**

Given the very individual needs of each student that are based on the specifics of their perception, way of thinking, memory and other skills, as described above, it can be clearly seen that a successful learning and teaching process requires individual approach and new methodologies that would comply with the capacities of differently-skilled children. In order to support pupils who struggle at school because of their poor study skills, to increase their interest, improve performance, and, which is even more important, to help them be successful in their future life, it is urgent to create an environment where these children can show the maximum of their capacities, thus growing their self-esteem and potential. Undoubtedly, to reach these goals adults need to notice warning signs indicating possible risks as soon as possible, because studies and practical experience shows the importance of early intervention. School teachers should be prepared to recognise these children as soon as possible, which requires both knowledge and methodological support. On the other hand, it is also very

important to assist teachers by creating new tools and possibilities that would help them adapt to the requirements of the modern world. Collaborative teaching, which, along with creating new pedagogical materials, is one of the goals of the project “CoTIC”, is a good possibility to help and consult each other, while creating a new e-learning training course is a way to make the teaching materials more accessible. Thus, the new project addresses the needs of both parties involved in the learning process.

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