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THE TREATMENT OF SPECIFIC LEARNING DIFFICULTIES IN THE CLASSROOM

Introduction

The aim of this study is to provide effective knowledge for teachers to treat specific learning difficulties (SLD) in the classroom.

Our starting point was that SLDs are not the consequence of a single cause. Specific learning difficulty is a broad term that covers a pool of possible causes, symptoms, treatments and outcomes. SLDs can show up in many forms, and it is difficult to diagnose or to pinpoint the causes. However, we may decrease the number of possible endangering factors, and compensate for their injurious effects. The earlier we start, the more we can achieve. As to education, nursery years are the first opportunity for intervention, however, SLDs result in real problems mainly in the school years.

Specific learning difficulties

Specific learning difficulty (SLD) is a summing name of a syndrome which is controversial in its definition, origin and even in its symptoms. Thus it is not surprising that several different names are used for the concept: specific learning difficulties, learning disabilities, or dyslexia. In the UK, the term *specific learning difficulties* is often regarded as a synonym of dyslexia. Indeed, the British Dyslexia Association states on its headed notepaper that it is "The national organization for specific learning difficulties".

However, an increased understanding that there are many different underlying cognitive modules (Anderson, 1992) that affect the learning process has led to a plethora of different terms, the meaning of which will change depending on context and users. Examples include dyspraxia, dysgraphia and dyscalculia, which are subtypes and syndromes of SLD.

Given this lack of a consistent name, there are many misunderstandings in research, in the relevant literature and in practice, as well. Since the syndrome is best described by the term "specific learning difficulties", this name will be used in this work. Exceptions are made for citations, where we keep the original terms used by the authors cited.

Description and related syndromes

Specific learning difficulties as a category is rather new. Initially, Samuel Kirk used the term "learning disabilities" (Kirk & Bateman, 1962), and it became generally accepted at a conference, where specialists argued the issue (Kirk & Becker, 1963). However, the syndrome under different terms was described as early as the 19th century.

Morgan (1896) referred to "congenital word-blindness", while Hinshelwood (1917) defined word-blindness as a pathological condition due to a disorder of the visual centers of the brain, which produces difficulty in interpreting written language.

The Hungarian psychologist Pál Ranschburg – whose work is still in advance of what is currently carried out in dyslexia research, though his findings are still largely unknown – described *legasthenia and arithmetimia* (Ranschburg, 1905). He worked out the theory on homogeneous inhibition, which was an important point in the understanding of memory and its mistakes (Ranschburg, 1939).

The principle of homogenous inhibition (or Ra-effect, named after its describer) says that the more different the adjoining contents and processes of the mind are, the less they interfere with each other's development. Processes according to the degree of the uniformity endeavor to merge into a joint unit. This phenomenon operates, among others, in our perception, speech and in our memory errors.

Word-blindness, the specific reading difficulty, is called dyslexia in the literature now. If it is caused by a known injury, it is called acquired dyslexia, in contrast to the case when there are no diagnosable neurological injuries, and the syndrome is caused by hardly identifiable congenital differences in the nervous system. In this case the term we use is developmental dyslexia (Chase & Tallal, 1992).

Of the different types of SLDs, dyslexia has received the greatest attention. Most of the studies on SLDs deal with dyslexia, though there are many different types of SLD. The child whose development is normal otherwise, but the acquisition of speech seems to be difficult, suffers in developmental speech disorder. Similarly, developmental writing, counting and conduct disorders represent deficits in the given area.

Abbreviated as ADD or ADHD, attention deficit/hyperactivity disorders are related in their origin and in some of their symptoms to the above mentioned syndromes (there is a neurological disorder in the background, and SLD can be concomitant), yet usually they are treated separately from other SLDs, and they are considered more of a medical than an educational problem, as medicine is an important factor in its cure. However, behavior

therapy and appropriate child-rearing methods get more and more role in the treatment of ADHD.

ADD is underdiagnosed, because it causes fewer behavioral problems. Attentional deficit is often considered SLD, because it causes mistakes in reading, writing and counting. The characteristics of the mistakes help the differential diagnosis. In case of ADD, the mistakes are not consequent, as in SLD.

Trends in the research and the therapy of specific learning difficulties

There are some main trends in the research of the syndrome according to the researchers' viewpoints. Different trends highlight different aspects of the concept:

Neuropsychological theories represent the first widely accepted theory. Neuropsychological approaches describe various brain injuries that may cause the problem. Children with SLD show symptoms that are very similar to symptoms of persons with cerebral lesions.

The idea that SLD is a result of minimal brain injury is based on the similarity between the symptoms of children with SLD and brain injured persons. The injury is slight enough not to cause general mental retardation, thus it has only selective consequences. The name POS (psycho-organic syndrome), which referred to the symptoms of this specific brain injury, became generally used very quickly, especially in the German language area. This expression, emphasizing the psychic factors as well as the organic symptoms, drew attention to the need of psychological intervention.

Specialists have drawn attention to the fact that the early injury of the brain does not lead to local deficits, but causes unusual processing. According to Wewetzer (1959), brain-injured children are characterized rather by the deficits in processing, control and arousal, than by deficiencies in whole functions or difficulties in isolated, well-defined functions.

Wolfensberger-Haessing (1985) analyzes a less known weakness of children with POS, which causes learning problems. The learning and memory difficulties of 'serially weak' children are caused by the disability of storing successive information. These children have serial problem because they can grasp only a limited time-Gestalt. Tasks not requiring serial time processing are solvable for them. Slowed-down speech makes the speech more difficult to understand for the 'serially weak' child, because the short time-Gestalt does not allow him to connect the next word. Rather small units and longer breaks before the next unit should be used to help these children in the processing of the information.

However, proven organic damages are very rare, thus SLD is increasingly explained by brain-dysfunctioning (Kirk & Becker, 1963). The term MCD (minimal cerebral dysfunction) arose with this change of the viewpoint. There are two approaches to this term. The "continuum notion" hypothesis argues that the seriousness of the dysfunctions is in accordance with the degree of the brain damage.

The "syndrome notion" theories attribute the dysfunctions to genetically defined biochemical deviations (Rutter, 1982). Recent findings corroborate this theory. The appearance of SLD shows familiar accumulation (Pennington, 1990; Smith, et al., 1990), and genes were found that are responsible for the deficits (Cardon et al., 1994).

As early as the beginning of the eighties, according to his fetus studies, Geschwind (1979) assumed that the temporal area of the brain develops differently in children with SLD. The brain structure of these children does not sufficiently facilitate verbal processes, more precisely, they are not inclined to acquire reading, writing, and other verbal abilities. Geschwind found a poor inclination for drawing or singing analogous, which are more widely accepted disabilities, and nobody assumes neurological dysfunctions behind these difficulties.

The *perceptional and perceptual-motor* theories can be classified in three groups according to the dysfunction emphasized.

Some specialists deal only with perception and its deficits. They do not examine the background factors, they deal with the adjustment of perceptional deficits, and try to work out methods and programs to improve the weak abilities (e.g. Frostig).

Theories emphasizing the role of visual-motor integration and eye-motion consider the deficit of eye-movements and the balancing system to be the cause of SLD. For more information on these theories, see, for example, the work of Rayner (1983).

The *perceptual-motor* theories consider the insufficient integration of the perceptual-motor functions to be the cause of the learning problems (Hallahan and Cruickshanck, 1973). Insufficient integration of the perceptual and motor system causes that the visual processes cannot provide well-structured patterns for the motor activity.

Ayres (1972; 1979), among others, also considers sensory-motor integration to be the cause of SLD. According to her therapeutic conception, a continuous interaction must be built between the sensory input and the motor output. Her program is to develop adaptive behavior with the help of tactile, vestibular and proprioceptive stimuli in children with SLD.

Brigitte Sindelar considers the proper functioning and synergy of the part-abilities important. Her program aims to develop the sensory-motor

system (Sedlak & Sindelar, 1993). The program is based on Affolter's three dimensional perception-developing model (Affolter, 1972).

The model describes the development of higher cognitive functions. The visual, auditive and tactile-kinesthetic perception leads to the superior abilities through three cognitive areas: memory, perception and attention, and on three different developmental levels: modality specific, inter-modal and serial processing. The achieved higher abilities make the acquisition of reading, writing and counting possible. A deficit on any point of this trestle-work may be the impediment of the development of the abilities and cause SLD. Sindelar's assessment methods are to discover these weak points, and the exercises strengthen or restore the problematic part-abilities.

In the eighties, Katalin Porkolábné Balogh started a wide-ranging research on early identification and prevention of SLD, which she considered most important. As the sensitive period of the sensory-motor functions is mainly the nursery period, she focused on nursery school children. She worked out a program which can be involved in nursery activities. The program develops sensory and kinesthetic sensation of children on an enhanced level (Porkolábné Balogh, 1981; 1992).

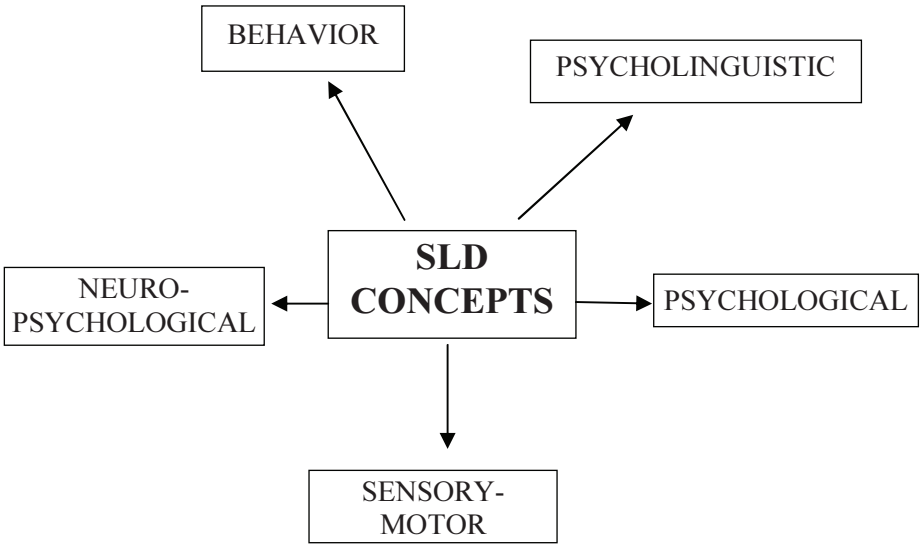
There are approaches dealing with the *psychological* aspects of SLD. Kirk (Kirk & Bateman, 1962), and Ranschburg (1905, 1939) described SLD as a special learning problem.

Psycholinguistic theories attribute learning and behavior problems to abnormal psycholinguistic processes. According to Francis-Williams (1970), difficulties in articulation can indicate problems likely to arise later. For example, she experienced with many children who later developed SLD that they did not use language as a symbolic function. Based on such theories, developmental programs were worked out to decrease the linguistic disadvantages. Dyslexia prevention and therapy was built on psycho-linguistic bases in Hungary. Meixner and her colleagues used linguistic improvement to prevent and treat dyslexia (Meixner & Justné Kéri, 1967; Meixner, 1974).

Behavior theories consider SLD a kind of behavioral abnormality, and they refuse to deal with the background factors. They consider behavior therapy the most appropriate treatment. They only deal with the symptoms, though the treatment of impulsivity and attention deficit brought very little success. This way the right behavior treatment with the total ignorance of the basic causes is questionable.

As we have seen, different approaches concentrate on different factors. Neuropsychological and perceptual-motor theories deal with the biological and physiological aspects of SLD. Psychological theories emphasize problems with learning, psycholinguistic theories blame the deficits in

language use and low level of linguistic abilities. Behavioral theories consider SLD a disturbance that is due to environmental factors.



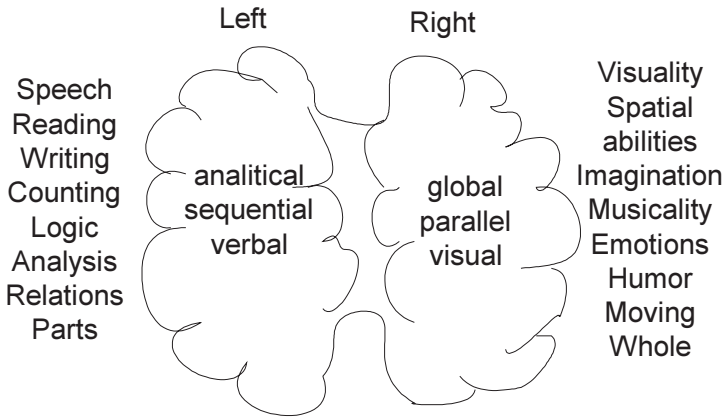
The factors of neurological background, sensory-motor abilities, literacy skills and environmental influences differ in emphasis on different factors in different ages. Thus the emphasis of the treatment changes with the age.

	Sensory-motor abilities	Literacy skills	Learning and teaching style and methods
Age 3-8			
Age 7-13			
Age 13-			

There are three areas of the treatment that should be considered in practice. All the three have some importance in the treatment. In nursery age the developmental work should focus on sensory-motor abilities. In the school years, the literacy skills are in the focus. From secondary-school age the learning and teaching styles and methods should constitute the main part of the treatment.

Our definition of specific learning difficulties

SLD is a neurologically based delay or deviant development in literacy skills. It is independent of general intelligence. Usually, the overfunctioning of the right hemisphere of the brain causes the dysfunction.



Analytical thinking (function of the left hemisphere) and global thinking (function of the right hemisphere) could be equally effective in problem solving on a higher level of thinking. However, the school prefers analytical, step by step information processing, which is the function of the left hemisphere. That is why those mainly using their right hemisphere and this way a holistic approach are disadvantaged and called persons with SLD. However, specific learning difficulties mean a specific way of thinking, which does not mean disability.

There are two types of SLD: acquired and developmental. Acquired SLD stems from mild neurological injuries, called MCD. Developmental SLD develops on a genetic base. However, the proportion of those suffering from SLD is increasing due to environmental causes. On one hand, as medicine has developed, more and more children with less severe syndromes can be saved and kept alive, and they are able to live normal lives. Though they are likely to develop SLD, education should help their further development.

On the other hand, nowadays, as multimedia is so advanced, children are provided with full visual experience. They do not need to use their imagination, as they have to when listening to the tales their parent read or they hear from the radio. The more visual environment hinders the integration of the different perceptual modalities. The environment does not help to compensate for deficiencies in particular sensory domains, so the genetic base is more likely to affect their school achievement.

Specific learning difficulties in practice

In the first two-three years of primary school, the practicing of reading and writing and other literacy based activities should be supplemented with games, which develop basic sensory-motor abilities. From the age of 6-7, more and more the preparation for reading and writing has to be part of the development, and more paper-pencil tasks are necessary.

At the age of 8, the sensitive period of the sensory-motor abilities is about to end. The focus of the remediation should turn to the specific literacy skills, but the sensory-motor abilities can still be developed. Thus developmental games and exercises can be useful at this age, as well.

From the age of 12-13, mainly the right learning and teaching methods are helpful. Techniques that use the whole-brain approach, giving visual as well as verbal materials, are appropriate for effective learning.

Nursery and primary	Body scheme, spatial orientation, sense of balance, fine movements, perception, seriality
Primary and secondary	Phonological abilities, visual abilities, vocabulary, counting, spelling, reading
Secondary and higher	Complex learning techniques: mind map, visualisation, drama, experience based education

Techniques in the treatment of specific learning difficulties in the classroom

Individual educational plans can be developed for those suffering from SLD. There are some techniques that can be particularly helpful for them. Furthermore, everyday teaching in the classroom should be more SLD-friendly, as well.

Here are some hints, how the teacher can help children with SLD in the school:

- Spelling rules, reminders, associations and other little tricks give aid for good spelling.
- It is inappropriate to just underline the spelling mistakes. Teachers should always correct the spelling of children with SLD. Children should not see the incorrect version, because it leads to confusion.

- Children with SLD should regularly write short copying of interesting text. First little jokes, stories, later short news of the child's interest can be copied.
- Children with SLD need more time for learning by heart. Teachers should consider it.
- Tape recorder, computer, spell checkers and any other devices that can help the child should be used.
- It is very difficult for these children to learn foreign languages, but they can acquire languages through communication, talking and other social activities. Videos and tapes are good aids.
- Children with dyscalculia use different visual aids for counting. Teachers should support it, rather than forbid it.
- For example soroban can be a good device to learn counting.
- Children with SLD should be allowed to use their aiding devices also during the tests.
- Complex tasks are proper to teach systematic thinking.
- Mind Mapping should be taught for children with SLD. Mind Maps help a lot in studying, essay writing, organizing thoughts. Visualization and finding relevant concepts give detailed understanding.
- Reading syllables and non-words helps children to pay attention to the sequence of letters and become aware of the linguistic rules.
- Using children's own favorite books for reading enhances motivation for reading.
- Reading aloud is essential for dyslexic children.
- Reading in pairs can help to go through difficult words.

Reading aloud

One of the most important elements of the prevention of SLD and its secondary deficiencies is reading aloud.

Parents should sing and recite poems from early age, already in infancy. The baby can perceive the melody and rhythm of the language, and it helps to develop the verbal skills. From the age of two, short tales and stories can supplement the songs and nursery rhymes. Beyond the developmental effect, reading can make the atmosphere of the bedtime pleasant. Reading aloud should be an everyday program in the nursery and primary, too. Teachers can read tales and stories at the beginning of the day and/or after lunch. 'A tale for every day' should be the rule for the families and schools where little children are reared.

Reading aloud has a many-sided effect. Not only the child's vocabulary will develop, but the child can also learn the literary language, the phrases

and idioms of the written language. Oral and written language are different, therefore, when the children start to learn to read, if this is the first time they meet the oral language, it is like they have to acquire a new language.

Another developmental effect of reading aloud is that the child has to follow the sequence of the events. This way, he/she has to create his/her own image about every element of the story, without or with very little visual support. That way the child's successive information processing and the ability to form own images can develop. Those children to whom the parents read aloud regularly will read significantly better than those who hardly have the possibility to listen to tales and stories.

There is a third effect of reading aloud, which is at least as important as the former two effects: it is that the child will learn that reading can be fun. The TV, video and computer are very important, and with appropriate use, they are very useful elements of the child's world, but they are rivals of books. The child has to learn very early that reading gives a wonderful experience, and literary experience differs from the sensations that imaging devices provide. After the need for literary experience developed, the child will be motivated to read. Otherwise the easy-to-acquire sensations will turn the child away from reading.

Reading aloud should be continued even after the child has learnt to read. Poor reading skills will frustrate the child, and so the child will not enjoy the literary experience, and may lose interest in reading. It is the best to continue reading aloud until the child can read short novels alone, too. It means that regular reading aloud should not be stopped before the child is 8-9 years old.

Cognitive training

Right hemisphere dominance has many advantages, like having a good overview of things, good visual abilities, holistic approach. However, systematic thinking, analytic abilities and verbalization may be poor. These areas are important developmental parts of the treatment.

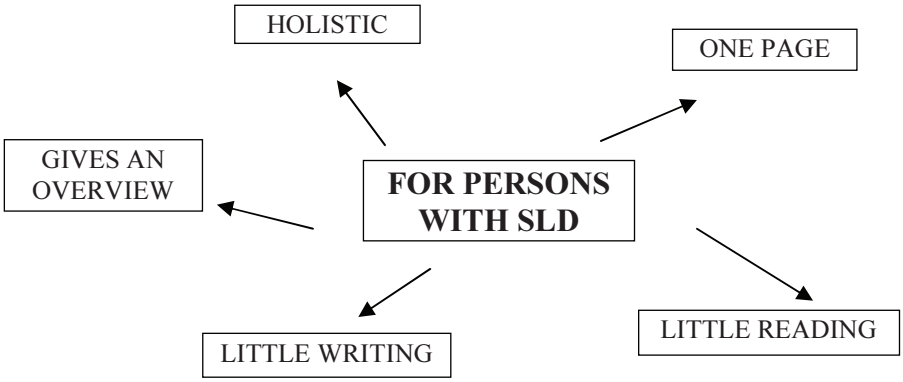
Areas like arts, acting techniques, in which persons with SLD can be effective, are useful elements of the cognitive training. Projects, organizational tasks, teaching other children, acting, technical descriptions, categorization and analysis of art works, observing natural elements like stones and seeds are proper activities for the training of cognitive abilities.

As persons with SLD have less affinity to details, they have to learn to concentrate on parts of the words, like letters and syllables. Instead of guessing from the picture of the word, they have to learn to analyze the words.

One of the most effective methods of teaching literacy skills is the Meixner-method. It uses letter-reading and differentiation, reading syllables and non-words. It helps to differentiate similar elements by analysis, enhances concentrating on details, and increases the vocabulary of the inner lexicon.

Mind Map

Mind map is a useful tool to learn, to memorize, to organize studying material, and has several other uses. It is advantageous for anybody, but especially for those who have deficiencies in the literacy skills. Mind maps do not cure dyslexia or other deficits. They are just a way of processing material, organizing thoughts and ideas in a very effective way.



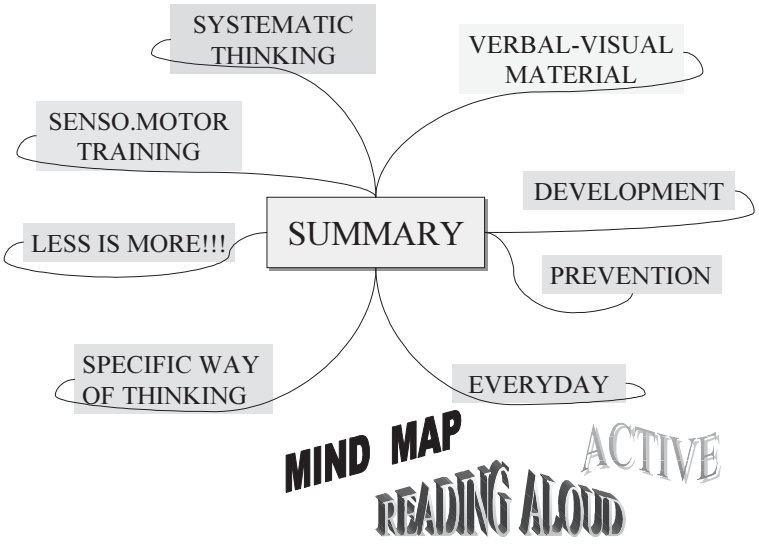
Traditional western education prefers left hemisphere functions. Therefore, those who have good verbalization skills and can process information in a sequential way, are at an advantage in the school, whereas those whose information-processing is rather visual and have global thinking, often feel uncomfortable in the current education. Most of the underachievers are visual and are global thinkers. However, these persons can be very successful in real life.

The whole-brain approach means that we use tools that activate as many functions of the brain as possible. This way, learning and all other cognitive functions will become far more effective than by using only one way of information processing. Mind maps are good tools of the whole-brain approach. You can create mind maps with A pen or pencil and paper. However, a computer program designed to create mind maps can also be very helpful.

Summary

Specific learning difficulties can be considered a specific way of thinking. Therefore it can be called specific teaching difficulties, because persons with SLD need ways of teaching that fit their abilities.

Appropriate teaching has to give more emphasis to sensory-motor training, has to develop systematic thinking, has to use analytical methods to acquire literacy skills, and has to prefer both visual and verbal information processing in learning.



There are methods that are good for teaching persons with SLD. Reading aloud, projects, Meixner method, mind mapping and other ways should be used in the everyday teaching. Active participation in learning gives deeper understanding, because when children act, they use their own way of thinking.

Two types of support have to be considered in any solution of the teaching of SLD persons. On one hand, underfunctioning abilities have to be developed, and on the other hand, further losses and secondary symptoms have to be stopped.

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