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Early Intervention and Prevention of Students with Specific Learning Disabilities

Biljana Pesova^a, Despina Sivevska^{b,*}, Jadranka Runceva^c,

^{a,b,c}*Faculty of Educational Science, University "Goce Delcev", Krste Misirkov bb, Stip, 2000, R Macedonia*

Abstract

The main focus of this study is a particular group of students who have learning difficulties although they are not mentally disabled, do not have emotional disorders, are not educationally neglected, and have normal vision, hearing and speech. The only explanation for their learning difficulties is the presence of Specific Learning Disabilities (SLD).

The educational practices, especially in our region, show lack of concern for these students. Within our regular schools, students with SLD are rarely correctly identified, much less receive adequate intervention.

Therefore, the purpose of this study is to give a definition of SLD and to emphasize the importance of early identification of students with such difficulties. Furthermore, it will give a description of effective teaching methods designed to match their specific needs which will provide successful progression in their education and in the outside world. These studies have very important practical implications (primarily educational) and they are a research challenge that deserves attention.

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1. Specific learning difficulties

The term specific learning disabilities have long been present both in research and in the immediate educational work. The term "learning disabilities" was first used and defined in 1963 in Chicago by Kirk (1963 apud Heward & Orlansy, 1988) who used the term to describe a group of children who have developmental disorders of language,

* Corresponding author. Tel. +389 32 550 517.
E-mail address: despina.sivevska@ugd.edu.mk

speech, reading and other communication skills.

A number of definitions have been formulated in the attempt to define specific learning difficulties, but unfortunately there is still no comprehensive, universally accepted definition. The number of definitions, resulting from the complexity of the phenomenon, often makes understanding of the essence of the problem difficult.

Because of this situation we will list definitions that are commonly mentioned in the literature and we will try to point out some features that capture the essence of this problem.

The most commonly used definition, which first was written in 1968 by IDEA (the Individuals with Disabilities Education Act), says:

Specific learning disability (SLD) is “a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which disorder may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations. Such term includes such conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. Such term does not include a learning problem that is primarily the result of visual, hearing, or motor disabilities, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage.” (Cortiella, 2009).

According to NJCLD (National Joint Committee for Learning Disabilities) this is reasonable definition, but at the same time it has some disadvantages. Because of this they offer another definition of learning disabilities (LD):

“Learning disabilities’ is a general term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical skills. These disorders are intrinsic to the individual, presumed to be due to central nervous system dysfunction, and may occur across the life span. Problems in self-regulatory behaviors, social perception, and social interaction may exist with learning disabilities but do not, by themselves, constitute a learning disability. Although learning disabilities may occur concomitantly with other disabilities (e.g., sensory impairment, mental retardation, serious emotional disturbance), or with extrinsic influences (such as cultural differences, insufficient or inappropriate instruction), they are not the result of those conditions or influences.” (NJCLD, 1990, Cortiella, 2009).

International Classification of Mental Disorders DSM-IV (Diagnostic and Statistical Manual of Mental Disorder) uses the term "learning disorders", and earlier they used the term "Academic Skills Disorders". According to this classification:

Learning Disorders are diagnosed when the individual's achievement on individually administered, standardized tests in reading, mathematics, or written expression is substantially below that expected for age, schooling, and level of intelligence. Problems with learning significantly affect the academic level achieved or daily activities that require math skills, writing skills and reading skills. There are many different statistical procedures to determine significant differences. ‘Significantly below’ is defined as a difference greater than two standard deviations between results and IQ. Sometimes a smaller difference between the result achieved and IQ is taken (i.e. between 1 and 2 standard deviation), especially when the results of tests of intelligence are affected by additional disorders of cognitive processes (thinking, memory, perception, intelligence, speech etc.), mental disorder, general health of the individual, and ethnic (cultural) background of the individual. If sensory lack is present, learning disorders need to be supplemented by what is usually associated with this lack. Learning disorder can continue in adulthood "(according to DSM-IV, 2004).

The following common components can be singled out in most definitions of specific learning difficulties: discrepancy, heterogeneity, exclusion, constitution factors and special education (according to Heward & Orlansky, 1988; Fletcher, Coulter, Reschly & Vaughn, 2004).

The discrepancy in most definitions is represented by the presence of a difference between the abilities and accomplishments of the individual. Individuals with specific learning disabilities have average or above-average intellectual abilities, while their achievements on standardized tests for reading, mathematics and written expression are significantly below those expected according to their level of intelligence, age and education.

The heterogeneity shows the complex structure of specific learning difficulties. In describing this phenomenon, a variety of disorders is situated under the same term among which the most commonly included are dyslexia, dyscalculia, and dysgraphia, and they imply variance in reading, writing and calculating.

The exclusion is the component which indicates that the term specific learning difficulties excludes all learning problems that are exemplary the result of hearing, visual, motor or emotional difficulties, mental retardation, social and cultural deprivation.

These three components represent the basis of the fourth component of most definitions, and that is the belief that specific learning disabilities are caused by *constitution factors* of the individual. It is assumed that individuals who meet the criteria dictated by the first three components have problems with achievements that are a consequence of certain neuro-biological factors. It is thought that specific learning difficulties arise from certain neurological differences that exist in the structure and function of the nervous system and they affect its ability to store, process, and use information.

The last component indicates that students with specific learning needs had the need of *special education* which should include exercises that are unique, special, and unusual and that actually complement regular education. This component prevents students who did not have appropriate conditions for learning to be identified as students with specific learning difficulties. This is important because students with specific learning disabilities are those who show specific and serious learning problems under normal conditions of education. From here, special education should help these students to improve their achievement.

Beside the already mentioned other common features, can be singled out, but it is necessary to emphasize that any student or individual with specific learning disabilities is a unique individual with his/her own "strengths" and restrictions. In addition, it is important to highlight the unjustified stigma of lazy and unintelligent child, which is often present in the daily lives of these children and individuals.

2. Identification of students (pupils) with specific learning difficulties

Identification is an important process that enables detection of children with specific learning difficulties, with the ultimate goal to provide appropriate treatment and support needed for successful functioning in and out of school.

Usually, the first signs of specific learning difficulties appear as early as in kindergarten. But identification is rarely performed before the end of kindergarten, or before the first grade. Suspicions of specific learning difficulties are generally confirmed in the course of elementary school. Many pupils are not properly identified as pupils with specific learning difficulties over an extended period of time. Especially, that is common for children with high intelligence. In such a case, specific learning difficulties are noticed around the fourth grade, and sometimes later. Late identification among students creates significant learning difficulties and a fall in motivation and self-esteem development, and difficulties in learning can continue in adulthood.

Because of this, *early identification* which aims to detect children with developmental problems at an early age which may be an obstacle to further learning and the cause of these children being treated as "children at risk" is of essential importance. The development of children in preschool period is characterized by great variability in the pace of maturation. Among some children, slower growth is temporary and resolves itself with time, while in others it is retained within the various areas of functioning, suggesting the need for referral of the child for targeted testing and / or detailed assessment.

For a long time *discrepancy* was used as the primary criterion for identification of students with specific learning difficulties are used (Kavale, 2002). Typically, discrepancy is defined as the difference between the abilities of the students and their achievements. To determine discrepancy, it is necessary to set the intelligence of the child which allows us to see if the achievements of the child are in accordance with his/her potentials and possibilities. If there is a discrepancy in the results of various parts of the IQ test, this may be indicative of "strong" and "weak" sides of the child. In psychological assessment tests of perception, cognition, memory and language skills can be used as well. Existing academic skills are assessed with tests of achievement. Tests of intelligence and academic achievement tests help to clarify the discrepancy between the potentials and the achievement of the student which is one of the essential characteristics of children with specific learning difficulties.

But recently the use of discrepancy as a criterion for identification of students with specific learning disabilities is under question. Primarily, discrepancy has been criticized for not providing reliable and valid information (Kavale, 2002). According to other authors, the primary problem of discrepancy is not a psychometrical one, but a much bigger problem is the lack of rigor in its application. It is found that more than 50% of the population of students with specific learning disabilities did not meet the criterion of discrepancy (Kavale & Reese, 1992; according to Kavale, 2005). Another criticism of the use of discrepancy as a criterion for identification of students with specific

learning difficulties is the fact that discrepancy is an indicator only of poorer outcomes. Thus, when students meet the discrepancy criterion, what is confirmed is lower achievement, which is not equal to specific learning difficulties.

In the context of identifying students with specific learning disabilities, discrepancy and data about weaker achievements are only an initial step in diagnosis.

Since the validity of discrepancy as a criterion of identification is under question, RTI was added as an alternative model of identification model (responsiveness-to-intervention) (Kavale, 2005). This model replaces the traditional psychometric methods with a protocol that connects identification and intervention through emphasizing student outcomes, rather than their shortcomings. This model offers the opportunity to provide early intervention and prevention and to build a preventive model for students. Early intervention suggests that schools should not wait for difficulties to arise, but they should try to discover the "at risk" students as early as possible.

The main characteristic of the RTI model is an intervention aimed at students whose achievements are below the achievements of their peers. The core concept of RTI includes:

- a) Application of interventions in regular education that are based on data obtained from scientific research;
- b) Measuring the reaction of students to the intervention;
- c) Using the data obtained from these measurements to modify the type, frequency and intensity of intervention.

In fact, there is no one universally accepted model of RTI, but most variations include access to three levels, which include:

1. High quality interventions given to all students in regular classes,
2. Mentoring students in small groups (e.g. 3-6) whose achievements and pace of progress are still behind those of their peers,
3. Intensive individual interventions in special education and initiation of the process for determining the qualifications of special education (according to Kavale, 2002).

3. Early intervention and prevention in students with learning difficulties

Early intervention suggests that schools should not wait difficulties in students to reinforce, but they should try to find students "at risk" as early as possible.

The main goal of special education is to enable students with learning disabilities to be educated and to have benefit from it. This means that these students will be provided with free and appropriate regular education, just as it is given to their peers (according to Vaughn & Linan-Thompson, 2003).

Teaching approaches that have a significant impact on the achievement of students with learning difficulties are well defined, clear, and carefully designed in relation to the area in which instruction is required (e.g., reading, writing, mathematics). Although these techniques are not specific and unique only to special education, their application is necessary.

Torgesen (1996, according to Vaughn & Linan-Thompson, 2003) states that special education differs from regular education in being clearer, more intense, and more supportive.

Effective educational approaches for students with learning difficulties and their effects can be summarized as follows (according to Vaughn & Linan-Thompson, 2003).

- Controlling the difficulty of the tasks (e.g. allocation of problems and examples of parts that will ensure high achievement and adjustment of tasks according to the abilities of the students and their skills) is associated with improved academic outcomes;
- Teaching students in small, interactive groups is associated with increased achievement;
- Modeling and teaching strategies for creating questions and thinking aloud while reading, writing or solving a particular math problem (e.g. self-asking questions, meta-cognitive strategies) are characteristics of teaching which is associated with improved outcomes;
- Direct and clear instruction is associated with improved academic outcomes;
- Higher order processing skills may facilitate the integration of knowledge and skills in solving complex mathematical problems;
- Learning when, where and how to use strategies to support students in the development of action plans that direct learning;

- Tracking progress in academic skills related to effective outcomes in academic areas;
- Building blocks for reading and writing is essential to improve the reading and writing outcomes,
- The process of writing and its organizational and mechanical aspects are associated with improved outcomes in writing;
- Teachers who provide systematic feedback on the outcomes assist students with learning disabilities.

One of the approaches to prevention and early intervention is *education to be allocated in arrays or levels*, whereupon it starts with effective exercises designed for the whole class, then support is offered to students who need it by including monitoring of outcomes and monitoring of progress as part of teaching within the whole class

For example, O'Connor (2000) tried to reduce reading errors made by preschool children through teaching which consisted of four levels that varied in terms of length, intensity and duration. This instruction lasted 2 years. At the end of the first grade, the mistakes made by the children with specific learning difficulties were reduced. However, the number of children who were directed to the centers for special education was not reduced. O'Connor believes this is related to the limited resources available to them in schools, thus preventing the effects of the most intense level of instruction that is designed for students with the most progress.

Dickson & Brusuck (1999) also applied the system of three levels that varied within the dimensions of O'Connor's survey. They found a lot of progress in reading among students with reading difficulties who were taught in small groups. Dickson & Brusuck highlight that deficit of time and resources needed to provide intensive instruction which is necessary to the students with learning disabilities.

Teaching in small groups. One of the key variables in the models of early prevention / intervention in students with learning disabilities is the proportion of teacher-student (i.e. the size of the group) which is included in teaching. Smaller groups allow for greater interaction between teachers and students, individualization of teaching, focus on task, monitoring by the teacher and feedback (Slavin, 1996). For effective teaching of reading the size of the group is important for several reasons:

- Smaller groups enable students to achieve better results;
- In smaller groups the variability of students in terms of their ability to learn is reduced, thereby reducing the variability of ways of teaching required by students;
- The size of the group affects the quantity and quality of verbal speech among students;
- Teaching reading can be customized to the individual needs of students.

Elbaum & co. (1999) examined the outcomes of teaching groups of children who have difficulties in reading. The results of this study show that the effects among students who were taught in small groups and in pairs were significantly greater than the effects on the students who were taught within the whole class (according to Vaughn & Linan-Thompson, 2003).

Similarly, other studies show that teaching in small groups has major effects versus learning within the whole class (Slavin, 1996).

Individual instruction. For some students even teaching in small groups may not be sufficient to provide the required level of focus, intensity and specificity of teaching, so individual teaching becomes a necessity. Several studies support the effectiveness of such instruction for students identified as "at risk" or with learning difficulties. More recent research shows that additional individual instruction to "at risk" students allows the results achieved by these students to surpass the results of the control group by an average of 0,41 SD. Teaching mentored by trained volunteers or students were highly effective (Elbaum & co., 2000 apud Vaughn & Linan-Thompson, 2003) .

Two new studies of intensive, individual instruction for at risk students gave impressive results.

Vellutino & co. (1996, according to Vaughn & Linan-Thompson, 2003) conducted a two-semester mentoring in the identification of letters, phonemic analysis and reading skills. This mentoring was conducted in the duration of 20 minutes each day for first graders who have reading difficulties. The results of this research show that individual mentoring helped most students to have a GPA in reading.

Torgesen & co. (2001, according to Vaughn & Linan-Thompson, 2003), found significant improvement in decoding skills for students with reading difficulties who attend 80 hours of instruction in which they were taught strategies for phonological decoding. Teaching was carried out individually in two sessions per day lasting 50 minutes. The results of this study show that the accuracy in decoding in these students exceeds the national average, but that is not the case with the speed of decoding. These studies suggest that key features of teaching reading, when

combined with individual instruction in sessions with appropriate intensity, can affect the adoption of reading skills among students with learning disabilities.

Duration of teaching. Another variable that can influence the effectiveness of teaching is its duration or intensity. The duration of teaching can be represented by the previously designated number of sessions or it can be determined by acquiring the predetermined criteria specific intervals. Another way to increase the intensity of teaching is to add one more session each day.

Torgesen & co. (2001) conducted intensive, individual instruction of students with learning disabilities which consisted of two sessions a day (50 minutes for each session). Students had significant improvements and most of these improvements were kept in the next two years. In addition, 19 of the 49 students were able to return to regular classes and no need was identified for additional instruction.

To determine the length of teaching that is appropriate for students with reading difficulties of second grade, Vaughn and Linan-Thompson & Nickman (2003) performed teaching in small groups of 54 students from the second grade through 10, 20 and 30 weeks. Students with learning disabilities continued to receive additional instruction until they reached a predetermined criterion at each level. Of the 45 students who were present in all assessments, 11 students failed to reach the criterion after 30 weeks, 10 students reached the criterion after 10 weeks, 15 after 20 weeks, and 9 after 30 weeks.

The results support the importance of varying the size of the groups and the intensity of intervention.

4. Model of primary, secondary and tertiary intervention

This is a special approach to teaching students with learning difficulties, which is systematically divided into levels and links regular and special education. This model uses existing research on teaching, grouping and duration thereof. It accepts the view of Keogh (Keogh 1994 by Vaughn & Linen-Thompson, 2003), in which prevention and intervention are inextricably linked. According to Keogh, the same procedures or services may provide treatment or prevention depending on the context in which they take place or on the time in which they are implemented.

To optimize learning opportunities for students teaching at any level (primary, secondary and tertiary) is more intense and explicit, and the size of the group when teaching is reduced. Across the three levels of instruction monitoring is used of the progress in order to ensure that students have mastered the content and that their pace of development is appropriate. With this model mastering of the content and pace of development are observed that are used to make certain decisions about teaching and about the level of students' knowledge. Although this model focuses on the additional instruction, it comes from working on alternative models for the identification of students with disabilities, including the RTI model already mentioned.

The first level, *primary intervention*, takes place within regular education and includes lesson plans based on school years. Providing intensive and ongoing professional development for teachers in mainstream schools is essential to ensure that all students have access to the curriculum. A significant part of professional development is the practice of monitoring the, which is used as an important information for further instruction as a means of identifying students who are not progressing and who need additional instruction.

The second level of instruction, *secondary intervention*, can take place within the regular classes (or out of them) in the form of additional programs. This more intensive and clearer curriculum (which is an addition to the core) can be carried out by a teacher or other professionals in the school and it has the meaning of parallel teaching to what takes place in regular classes. Instruction that focuses on students' needs, which is determined by monitoring of the progress, takes place in small groups (one adult 4 students), five times a week. Sessions last between 20 and 40 minutes, depending on the level of education and the students' needs.

The third level of teaching, *tertiary intervention*, can be categorized as special education for some students. Students would be qualified for special education if they did not progress properly and did not satisfy the basic criteria despite receiving more instruction within the regular class and additional instruction in small groups with a duration of 20 minutes.

Moving between levels is fluid and is based on the monitoring of progress. For example, students who have difficulties in basic skills in a particular area (e.g., writing, reading, and math) in the first assessment are referred for further training in groups for secondary intervention. At the end of the first 10 weeks, students are evaluated and those that meet the prescribed criteria no longer receive additional secondary intervention. Those students who do

not meet the prescribed criteria after secondary interventions are referred for further instruction for another 10 weeks. Again, students who met the required criteria are removed from additional instruction. Those students who do not meet the established criteria after 20 weeks of secondary intervention may be referred to tertiary intervention or, if they are identified as students with learning disabilities, they can be directed to special education.

The degree to which the techniques used in tertiary intervention are unique for special education is important. It is believed that they are unique because they are adapted to the needs of students, they are more intensive, they contain more monitoring and they adjust teaching and materials in order to reflect the progress of the student or his difficulties. Students in tertiary intervention are still regularly assessed along with their peers. Students included in tertiary intervention receive the most intensive and most specific intervention in which their progress is monitored weekly and the teaching is tailored to their needs.

5. Conclusion

In attempting to define specific learning difficulties a number of definitions are formulated, but unfortunately there is still no single comprehensive, universally accepted definition. In most definitions of specific learning difficulties the following common components can be singled out: discrepancy, heterogeneity, exclusion, constitutional factors and special education. Specific learning disabilities are not only disturbing, but in themselves comprise a group of specific disorders that commonly include: difficulties in reading (dyslexia), difficulty in calculus (dyscalculia) and difficulties in writing (disgraphia).

Many students with specific learning disabilities are not properly identified over the long period of time, which creates additional difficulties in learning, their motivation and confidence. Because of this, early identification is essential which aims to detect children with developmental problems from the earliest age that may be an obstacle to further learning and treats children as "at risk".

For a long time discrimination was used as the dominant criterion for identification, but lately the RTI model has become more actual. This model connects identification and intervention through emphasizing students' outcomes, rather than their shortcomings. An effective approach to early prevention and intervention is to allocate teaching into arrays or levels, whereupon it begins with effective exercises designed for the whole class, and then provides support to the students that need it by monitoring the outcomes and the progress as part of teaching within the class. Students who are diagnosed with specific learning disabilities are exposed to specific treatments, whereby the two main models of study treatment commonly cited are the model of practicing skills (process model) and the model of training skills (model of task analysis). Despite the differences that exist in these models, researchers still do not agree which model is better and more efficient.

Because of this situation, there is need for additional scientific-professional research in this area, which would have significant educational and practical implications and would contribute to a more successful identification of students with specific learning difficulties and opportunities for more effective identification, prevention and treatment of these students.

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