

## PUPILS WITH LEARNING DIFFICULTIES – A FIVE-STEP MODEL OF ASSISTANCE

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***Abstract:** Society is aware of the importance of obtaining quality education. With education, a person extends knowledge, which affects on self-esteem, independence, success in finding a job, etc. Learning performance or failure is important in this regard. The student population in the classroom is very diverse and varied, which means that the teacher must be very flexible to explain the substance so that everyone understands it. It must take into account the adaptations of students with special needs. Children with learning difficulties are a special group in the educational process, therefore they require special treatment. They are different from each other, so teaching and learning methods must be adapted to them. Learning problems are already evident in lower grades of elementary school and can later be increased and can also escalate, the teacher tries to adapt the teaching process with appropriate tools, changing the learning environment, and a diverse approach to teaching. In this article will be described the consequences of the learning failure that society has on it. It will be also written the recommended solutions to this problem in mathematics. There will be presented a five-step model and how to use it in practice. Also, the review of evidence is based on a reading classroom-based research studies and a wider literature base.*

***Keywords:** five-step model of assistance, children with learning difficulties, didactic approaches, performance at school.*

### **Introduction**

For a diverse population of pupils in schools, among whom the majority of students with learning difficulties, significant changes are needed in practice by introducing new approaches in providing assistance and support. The process of change is not easy and quick, but it is indispensable as it requires school practice as well as various international documents.

The concept of a five-level model deals with learning support for students with learning difficulties. In this regard, the role of individual experts plays an important role. Some concrete strategies have been described, which proved to be successful in practice (especially in the first three stages) for students with learning difficulties in mathematics. This process is important because it affects student learning performance.

### **Learning difficulties**

Some students have problems only in one or two subjects, others are unsuccessful in most subjects. Learning problems range from lighter to heavier, from simple to complex, from short-term (transient) to those that are related to the time of schooling or lasting life.

Some authors divide learning difficulties on subsets: easier and moderate specific learning and language problems; learning problems due to attention deficit and hyperactivity; learning difficulties in pupils who gradually acquire knowledge; learning difficulties due to less developed self-regulatory skills; learning difficulties due to lack of learning motivation; emotionally conditioned learning difficulties (learning problems due to anxiety or depression); learning difficulties due to the multilingualism and social and cultural differences; learning problems due to existential socio-economic hindrances and threats (Magajna et al, 2008).

Children and youth with specific learning difficulties need a permanent form of assistance and programs that enable them to more effectively acquire new knowledge. For children with mild specific learning difficulties, the teacher's usual adaptation of forms and methods of work in the classroom is sufficient.

For many children with lighter and some with moderate specific learning difficulties, additional forms of assistance provided for in the Elementary School Act (1996) will be sufficiently effective, such as: supplementary education, adaptation of methods and forms of work in the teaching process and individual and group forms of assistance; for children and adolescents with moderate and some children with severe specific problems or deficits in individual areas of learning will be sufficient assistance, which will enable them to focus on the educational program of adapted implementation with additional professional help (Zakon o osnovni šoli, 1996).

General learning problems have a heterogeneous group of students who have significantly greater difficulties in acquiring skills in one or more educational subjects than peers and that the causes of their problems are not specific (neurophysiological, neuropsychological) nature (Magajna, 2009).

General or non-specific learning difficulties arise when the adoption and dissemination of knowledge or skills in a student is hindered by a variety of adverse environmental effects (economic and cultural impact, problems of multiculturalism, inadequate or inadequate teaching), internal factors (slower development of general cognitive abilities, emotional / behavioral disorders or personality traits in the individual) or inadequate

educational interactions between the individual and the environment (fear of failure, immaturity and lack of motivation and learning habits).

Such students can not demonstrate their potentials due to various internal or external factors, or due to the unfavorable intertwining of external and internal influences. The most common indicators of general learning problems are: lower school achievements in several school subjects compared to peers, difficulties in mastering basic skills in reading, writing and computing, increased speech and language problems, poor social skills, signs of emotional and behavioral problems, etc. There are secondary problems with many students with distinctive and multilateral learning difficulties (Magajna et al, 2011).

The term "specific learning problems" is a generic term that indicates a very diverse group of disorders, from lighter, moderate, to distinct, from short-term to those who spend the rest of their lives. These problems are common, that 'inner nature' is neurologically dependent. They are caused by disorders in the functioning of the central nervous system, which influence how the brain processes different types of information. Specific learning disorders can arise from a genetic variation, they occur due to biochemical factors or events in pre- and postnatal periods or events (Magajna, 2009).

### **Factors and consequences of learning difficulties**

Factors determining learning performance failure, diversity and range from psychological to social. These factors intertwine, which is reflected in the complexity of learning performance. The authors categorize these factors differently. The factors of successful learning are divided into two main groups, namely internal and external factors. The internal factors are in the student themselves, they are divided into physiological and psychological.

Among the physiological factors are the general well-being and the state of health of the person, the state of the senses, the functioning of the nervous system, the hormonal balance. Psychological include the intellectual abilities of an individual, personality traits, learning and cognitive styles, motivation for learning, emotion and behavior. External factors are in the student's environment, and they are divided into physical and social factors.

Physical factors relate to environmental conditions that affect learning: the arrangement of learning space, noise, lighting, temperature. Social factors come from a narrower and wider social environment. These include: socio-economic status of the family, relationships and interactions in which the individual is involved (Marentič, 2000).

On performance or the failure is influenced by several factors, which the various authors different define. Adelman and Taylor (1986) take into account the modern perspective, and they believe that the failure comes from three different ways. The first type of problems comes from the children's environment. These include problems that arise from cultural and economic disadvantages, the impact of stress (various family pressures). This type also includes problems with multilingualism (foreigners, immigrants from neighboring countries) and problems with multiculturalism.

For the second type of a problem, the causes are in the interaction between the individual and the environment. This means that there are internal factors in the individual that cause problems, for example, concentration. This leads to the development of learning difficulties, since the student does not follow a particular substance and thus loses many of the data. If the problems are not detected and not resolved, it is getting stronger: the substance is increasing and the student is unsuccessful in written and oral examinations and in the assessment. In the third type of a problem, the causes are in the child itself (developmental disorders, more specific disorders). This type of problem is chronic and includes several areas. It is also necessary to take into account several adjustments determined by experts (Adelman and Taylor, 1986).

Learning failures also play an important role in discussions of economic and social development, especially because people's knowledge and skills contribute to national competitiveness. Even in the European Union and other international organizations, greater attention is paid to knowledge and its impact on human development. Education and training are critical factors for the development of the European Union, and therefore, the Member States strive to achieve the Lisbon objectives. In doing so, the members are primarily concerned with the study of the consequences of costs for learning failures and what is the benefit if they invest in improving their performance (Psacharopoulos, 2007).

Learning failure is a broad notion that can be a failure of the school system, which means that a young person fails to work at the end of his studies. It may, however, mean that the pupil did not show sufficient knowledge to advance to the next grade (Magajna et al., 2008). The consequences of learning failure are visible in the economic, health and social fields. The economic consequences of diverse measures that allow minors to complete their education are large. They measure them in economic productivity, increasing the burden on the police and security services. These adolescents have longer periods of time without a job, which means they do not have regular income. This means that consumption will

be less, less tax revenue, lower economic growth, higher social expenditure, etc. In the case of less educated young people, the level of criminal activity increases, therefore greater security is needed, which means the cost to the state (higher costs of the police and criminal justice). People with less education also have a poor health condition, which is also a cost to the state (higher expenditure on public health), they have lowered satisfaction with the standard of living, and the inter generational connection is worse (Psacharopoulos, 2007).

### **Children with special needs**

Children with learning difficulties fall into a group of people with special needs. This is also regulated by the Act on the Directing of Children with Special Needs (2011), which defines these pupils as:

- children with intellectual disabilities,
- blind and partially sighted children,
- deaf and hard of hearing children,
- children with speech-lingual disorders,
- physically impaired children,
- long-term ill children,
- children with deficits in individual areas of learning,
- children with autism disorders,
- children with emotional and behavioral disorders.

These children need an adapted implementation of education programs with additional professional assistance or a tailor-made education program or special education program (Zakon o usmerjanju otrok s posebnimi potrebami-ZUOPP-1, 2011). Such children have problems with tracking and advancement in the wider educational field due to lack of basic management skills. Frustration and reduced self-confidence are the result of all the problems described above. All together leads to general non-motivation for learning, lack of instruction and emotional and behavioral problems (Magajna, 1999).

Children and adolescents with specific learning difficulties for optimum potential development need constant help:

- for children with mild specific learning difficulties, the teacher's usual adaptation of forms and methods of work in the classroom is sufficient;
- for a number of children with lighter and some with moderate specific learning difficulties, sufficient additional forms of assistance will be sufficiently effective, such as: supplementary education, adaptation of methods and forms of work in the teaching process, and individual and group forms of assistance;

- for children and adolescents with moderate and some children with severe specific problems or deficits in individual areas of learning will be sufficient assistance, which will enable them to focus on the educational program of adapted implementation with additional professional help (Pulec et al, 2011).

### **How to teach children with special needs**

A more precise criterion and standard of assessment is contributing to a better learning success. Heacox recommends that the evaluation criteria are:

- clear, concise and precise: this means that the performance should be clear what it means is a tidy volume that is judged (not torn, a beautiful font, ....),
- the language must be easy (without foreign objects),
- describe the highest expectations (what should be the highest quality seminar work),
- it should be written in the form of statements (what the teacher wants and what he does not want),
- a minimum criterion is determined, with higher achievements being promoted (Heacox, 2009).

If there are a lot of learning difficulties in a particular student and the situation does not improve, this affects the individual's self-confidence. Tomori argues that failure is a factor of risk for overall personality development and also increases other adverse effects. Disorders can also occur in adulthood (Tomori, 2002).

In all courses, even in mathematics, an important role have motivation. The degree of motivation differs among pupils. Some are low, others highly motivated. The difference between them is that learners with low motivation quickly stop learning, they are not ready to participate in lessons, while highly motivated they are more concerned, they use higher cognitive processes during learning and consequently learn more in comparison with less motivated pupils (Puklek et al, 2009).

Two kinds of motivation are important: internal and external motivation. Internal motivation is of interest, interest in the subject matter, curiosity, external motivation is a factor of the environment, pressure, rewards/penalties, stress, competition. A student, who is internally motivated, searches for tasks that are challenging for him because he has the desire to find meaning, and external motivation ensures that the student persists in this activity. The teacher can strengthen internal motivation with tasks of excitement, wonder, are composed of divergent questions. In

solving such a task, the teacher encourages pupils, boasts them, exposes quality products / solutions to tasks, thereby reducing the fear of the unknown (Marentič, 2000). Apart from motivation, important factors are fun (enjoying solving mathematical problems), stress, the importance of mathematics in life (using knowledge in a concrete life situation) (Vidić, 2016). Optimism and pessimism also play an important role. Positive attitudes affect grades, success, and satisfaction in a pupil's life (Rijavec et al, 2017).

It is also important where a child with special needs is stationed in the classroom. This is also dependent from teachers' organization of space and seat order in the classroom. A pupil with learning difficulties is sitting close to a teacher, away from the door and windows, which allows him to focus more on schoolwork and exercises (Magajna et al, 2008).

It is advisable to introduce many real-life cases into the substance. The tasks should be presented differently, different learning styles should be taken into account, the complexity of the language is adapted (Babuder et al, 2011).

Parents are also very helpful in resolving learning problems: encouraging a child to do homework, helping with it if he does not understand the problem, promoting interest in the classroom (asked a teacher what he does not understand) (Dimić et al, 2017.)

### **Help with mathematics - the five step model**

The teaching of mathematics is intended to learn about processes, new concepts and new mathematical ideas. Students learn this through various learning processes: numerical performances, logical thinking and reasoning, reading and understanding of the text, using different strategies in solving problems, using formulas (Žakelj, 2014).

A key framework in establishing improvements and progress towards achieving learning performance is a five-step model of assistance, which also represents a model for the discovery and monitoring of students with learning difficulties. With this model, children receive an appropriate level of support and support, since they are different at each stage. This model comprises:

- step one: a teacher adjusts lessons in class, remedial classes, supplementary classes and after school classes;
- step two: assistance of the school counseling service;
- step three: additional individual and group assistance;
- step four: opinion and assistance from an outside professional institution;

- step five: a program with personalized implementation and additional professional assistance (Magajna et al., 2008.).

First step is teacher's help with mathematics in remedial classes, supplementary classes and after school classes. These hours are intended for pupils with problems in math, have and learning deficits. Supplementary classes are intended for remarkably talented pupils.

The teacher is a key person in the process of treating pupils with a general and specific learning difficulties at all stages of a five-step model of assistance. On the first level, it does not have the help of other educators, but at all other levels, together with other school professionals, peers and parents, ensures the optimal development of children with learning difficulties. The first step of the five-step model includes only a good teaching practice for a teacher that enables successful learning of mathematics at least 80 percent of children in the classroom (Babuder et al, 2011).

On the basis of the child's strong strengths and deficiencies, the teacher can successfully plan individualization and differentiation of the mathematics teaching process. The teacher chooses and implements appropriate general strategies for differentiation and individualization of requirements for a student in the process of teaching mathematics with:

- different conceptual knowledge (life problems, activities with natural and other materials, illustrated, ...),
- various tasks presented (with a natural materials and problems, symbolic, pictorial, with graphic and color support, ...),
- different complex tasks (simple problems with one arithmetic operation or complex problems),
- different types of questions (motivational, sub-questions for leadership in solving problems, open questions, among which are the first to answer students with major problems, ...)
- taking into account learning styles (from the type of motivation which child needs, perseverance, the need for structure, forms of work, communication skills, reaction modes,
- mobility needs, visual or auditory information, ...),
- taking into account skills (the degree of control of the technique of reading, writing, automating arithmetic facts, the use of learning and technical tools, tools, ...)
- adapting the complexity of the language (the complexity of the expression, the differences in performance on the oral or written expression, the language structure of the instructions, tasks,...),
- taking into account fine-tuning skills (especially in geometry, writing, using illustrations),

- adapting expectations (different expectations in different areas of mathematics learning, but not too low) (Babuder et al, 2011).

As an example of good practice it turned out that when dealing with bodies in mathematics, pupils get geometric bodies in which they can perceive concepts that they get to know (for example: body diagonal, flat diagonal, basic and lateral surfaces). Occasionally, I introduce an explanation of the substance as a thought pattern of interesting forms, in a substance with more than one theory (statistics and statistical variables). Students who have a problem with speaking and oral questioning in front of a board, I adjusted the clock (the rest solved exercises) and allowed them to write a concept on the sheet (the answer to the theoretical question and solving equations, accounts) and answered me from the bench.

When dealing with a linear function, students were drawing graphs using the GeoGebra computer program. By this, they were better represented by the meaning of the directional coefficient (slope) and the initial value.

When we repeat and consolidate the learning material, students solve tasks in pairs, because they explain the substance to him in a closer way.

Transformation information with ICT into different representatives helps students with disabilities, to learn better because the learning contents are presented to them verbally, visual and graphically. So they can form parallel mental models and engage multiple perceptual system reception. By using some gestalt psychological principles of stimuli organization in multimedia e-learning support can they better keep in mind. Creative, interactive activities, visual presentations, project-based learning, school experiments, which are based on student engagement and activities, are suggested to the students with learning difficulties (Obradović et al, 2015).

A student who has learning deficits that can not be reduced only by differentiation and individualization within the framework of good teaching practice at level 1 requires a more intensive treatment at the second level. The second level of assistance for a child with learning difficulties, organized on the initiative of a teacher or parent, is provided by the school counseling service (psychologist, social pedagogue, pedagogue, special pedagogue). The counselor must have more special skills than the teacher has to do to supplement and deepen the diagnostic assessment of the child's strong areas and shortcomings, and advise the teacher, and offers a periodic practical learning assistance to mathematics. However, the teacher must continue to implement good teaching practice at classroom. Without child motivation for learning assistance, there are no positive results, therefore we must inform the student about the purpose, goal, duration, methods of work and the possible results of the treatment (Babuder et al, 2011).

If, even in the second stage, the student did not sufficiently advance in spite of the help he had, because his specific needs were more pronounced, he needed regular weekly and more intensive assistance provided by the third stage. Individual or group assistance (usually 1 hour per week) is carried out by a teacher, a mobile special pedagogue or a consultant, as they have special knowledge in the field of learning problems. Group forms of assistance and support enable the involvement of more learners in reading and more communication among pupils, which is important for their progress in learning mathematics. Among the external experts in the help network is the most frequent and the most important mobile special pedagogue. Special pedagogues are especially well trained to help students with specific learning difficulties. As counselors in the project of helping a learner with learning difficulties, they can include earlier than the mobile special pedagogues as providers of additional hours of individual and group assistance (Magajna et al, 2008.).

For pupils who needed help but did not have any decisions, after discussing with the social pedagogue and parents, they agreed to attend classes with a special pedagogue. Before the start of the hour, he used relaxation techniques and Brain Gym. This proved to be a successful practice, as learners perceived the learning substance more easily and more relaxed.

If, from the evaluation, which is written at each stage of the level, it is evident that despite all the help, the student had, did not meet the minimum standards of knowledge, the school may request additional expert advice and additional assistance from an external specialized professional institution (counseling center). This involves external assistance, with measures being carefully planned, documented and evaluated. If, on the basis of the final evaluation of the fourth-level assistance, the expert opinion of the school (teacher, psychologist, special pedagogue) is that a student with more specific learning difficulties needs more adjustments and assistance, then parents are encouraged to be directed to an educational program with tailor-made implementation and additional professional assistance. This assistance is provided by a special pedagogue (Magajna et al., 2008).

### **Conclusion**

The introduction of a novelty involving the diverse population of pupils with learning difficulties in the school system is a very complex process that needs to be addressed through a well-planned policy and systematic introduction into school practice and implementation with all

necessary professional and material resources. We need to find all possible resources, first those that already exists in the school system, and then include new ones. The teacher is a key person in the inclusive educational process, and therefore he needs support for quality work and the help of all other school professionals. As teachers, we should be more aware of the impact of learning failure on society as a whole. These affects are not only the economic and political layer, but also the social and psychological layers of a young person and consequently other people in society. This article is based on learning pupils with learning disabilities and immigrant learners and how they can relieve learning. However, it should be noted that in the classroom is also gifted and talented pupils. They also need to devote themselves to the highest standards of knowledge.

### References

- Adelman, H. S., Taylor, L. (1986). *Summary of the survey of fundamental concerns confronting the LD Field*. Journal of Learning Disabilities, 19 (7). 391–393.
- Babuder, K. M., Velikonja, M. (2011). *Učenci z učnimi težavami: pomoč in podpora*. Ljubljana: Pedagoška fakulteta.
- Davies, P., Florian, L. (2004) *Approaches for pupils with special education needs: a scoping study*. Research Report RR516.
- Dimić, V. J., Zuckerman, Z., Pestić, M. S. (2017). *Pojedini aspekti uključenosti roditelja u školovanje učenika sa specifičnim teškoćama u učenju i učenika bez teškoća*. Napredak, 158(1-2), 49–68.
- Heacox, D. (2009). *Diferenciacija za uspeh vseh: predlogi za uspešno delo z učenci različnih zmožnosti*.
- Jurišević, M. (2012). *Motiviranje učencev v šoli*. Ljubljana: Pedagoška fakulteta.
- Jurišević, M. (2006). *Učna motivacija in razlike med učenci*. Ljubljana: Univerza v Ljubljani, Pedagoška fakulteta.
- Kavkler, M. (2000). *Otroci z učnimi težavami*. Ljubljana: Društvo defektologov Slovenije. Pedagoška fakulteta, str. 57–60.
- Kavkler, M. (2002). *Razvijanje potencialov otrok in mladostnikov s specifičnimi učnimi težavami*. Zbornik prispevkov za konferenco, str. 55–59.
- Kozina, Ana (2014). *Spodbujanje čustvenega in socialnega učenja kot ena izmed možnosti doseganja kakovostnejšega znanja. Učna (ne)uspešnost : pogledi, pristopi, izzivi*. Ljubljana: Pedagoški inštitut, str.150–166.
- Magajna, L. (1999). *Preprečevanje učne neuspešnosti: problemi, pristopi in pomen za varovanje duševnega zdravja*. Prva nacionalna konferenca o duševnem zdravju otrok in mladostnikov, Ljubljana.
- Magajna, L., Kavkler, M., Vogrinčič Čacinovič, G., Pečjak, S., Golobič Bregar, K., (2008). *Učne težave v osnovni šoli: koncept dela*. Zavod RS za šolstvo.
- Magajna, L., Kavkler M., Košir J. (2011). *Osnovni pojmi*. Ljubljana: Pedagoška fakulteta Univerze v Ljubljani, str. 8–20.

- Magajna, L. (2009). *Prepoznavanje in diagnostično ocenjevanje učnih težav-problemi, modeli in nove usmeritve. Odkrivanje učencev z učnimi težavami in oblikovanje pomoči*. Ljubljana: Pedagoška fakulteta, str. 31–41.
- Marentič, P. B. (2000). *Psihologija učenja in pouka*. Ljubljana: DZS.
- McKeown, S. (2000). *Unlocking Potential: how ICT can support children with special needs*. Birmingham: The Questions Publishing Company.
- McMaster, K. and Fuchs, D. (2002) *Effects of co-operative learning on the academic achievement of students with learning disabilities: an update of Tateyama-Sniezek's Review*. Learning Disabilities Research and Practice, 17 (2), 107-117.
- Obradović, S., Bjekić, D., Zlatić, L. (2015) *Creative Teaching with ICT support for students with specific learning disabilities*. Procedia - Social and Behavioral Sciences 203, 291 – 296.
- Peček, M., Čuk, I., Lesar, I. (2006). *Ali ocene res odražajo le znanje učencev? Vzgoja in izobraževanje*, 37 (2), str. 23-28.
- Peček, M., Lesar, I. (2006). *Pravičnost slovenske šole: mit ali realnost*. Ljubljana: Založba Sophia.
- Psacharopoulos, G. (2007). *The costs of school failure: a feasibility study. Analytical Report for the European Commission prepared by the European Expert Network on Economics of Education (EENEE)*.
- Puklek L., M., Zupančič, M. (2009). *Osebnostni, motivacijski in socialni dejavniki učne uspešnosti*. Ljubljana: Univerza v Ljubljani, Filozofska fakulteta.
- Pulec, L. S., Velikonja, M. (2011) *Učenci z učnimi težavami – izbrane teme*. Ljubljana: Pedagoška fakulteta Univerze v Ljubljani
- Riccomini, P. J., Smith, W. G., Hughes, E. M., in Fries, K. M. (2015). *The language of mathematics: the importance of teaching and learning mathematical vocabulary*. Reading and writing quarterly. 31(3), 235-252.
- Rijavec, M., Ivanković, M. (2017). *Dispozicijski optimizam i pesimizam kao prediktori školskega uspeha, ciljnih orientacija u učenju, straha od ispitavanja i životnoga zadovoljstva učenika*. Napredak, 158(4), 397-417.
- Tomori, M. (2002). *Šolska neuspešnost kot dejavnik tveganja za celostni osebnostni razvoj*. Ljubljana: Inštitut za psihologijo osebnosti.
- Vidić, T. (2016). *Stavovi učenika osnovne škole prema matematici*. Napredak, 157 (1-2), 11-32.
- Zakon o usmerjanju otrok s posebnimi potrebami-ZUOPP-1* (2011). Uradni list RS, št. 58.
- Zakon o osnovni šoli* (1996). Uradni list RS, št. 12.
- Žakelj, A. (2014). *Procesi učenja z vidika učnih težav učencev pri matematiki*. Revija za elementarno izobraževanje, 7(2), 5-22.

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