

LEARNING PROBLEMS IN CHILDREN WITH MILD INTELLECTUAL DISABILITY

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ABSTRACT

School failure is one of the more complex, more difficult and unfortunately frequent problem that modern school meets. Many factors can cause school failure, such as: child development characteristics, family and school-originated factors. The purpose of the research is analysis of the specific learning problems in students with a mild intellectual disability. For our research we used ACADIA test, which contains 13 subtests for assessing the overall individual functioning. The research involved 144 students. We divided the sample into two groups, children with intellectual disability (our target group) and control group. We found that generally all students with the intellectual disability have special learning problems. According to individual subtests analysis we concluded that the ability for visual association is best developed among these students while on the subtest for auditory memory they achieved worse results. With the analysis of the control group we found that 13.75% of the students have special learning problems.

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1. INTRODUCTION

Schools easily understand the importance for adaptation according to the students' needs once they have visible problems – such as sensory disorders or physical impairments, however, these institutions have less understanding of meeting the needs of students with “less visible (noticeable) disorder”, such as students with mild intellectual disability, as well as students with specific learning problems.

Learning problems range from light, moderate to severe, from short-term to life-long learning disabilities, thus schools have to prepare with various forms of assistance offered to every child with learning difficulties. Children with learning problems differ from one another - different children have diverse

types of learning problems related to different reasons (origin) (Kavkler, 2003).

Child development characteristics can cause learning difficulties and school failure, i.e. (Kos, 2005): low intellectual disability, mental problems, specific learning disorders, hyperkinetic syndrome, language problems, diseases and disabilities (especially diseases that affect the brain), visual and hearing impairment, emotional problems, psychosocial disorders and lack of motivation for learning.

Learning problems can be caused by family and school-originated factors as well. Family-originated factors vary among:

- A family of sociocultural environment that does not stimulate learning;
- A family that does not motivate and stimulate a child to learn;
- A family that burdens the child with work obligations;
- A family with bad interpersonal relationships, severe social conditions, low educational level of parents;
- A family that is unable to help.

Important school-originated factors that can cause learning problems are:

- Poor professional level of teachers;
- Poor organization of school work;

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- Non-stimulating school environment;
- An unattractive and non-motivating approach and pedagogical work;
- Bad ecological conditions in the school;
- Inadequate teaching staff for children with special educational needs;
- Biological and psychological factors.

According to [Fisher and Cumings \(2008\)](#), there are seven types of learning difficulties: problems in speaking and listening, in reading, in writing, difficulties in learning mathematics, in organizations skills, problems with social skills and motor skills.

Regarding the modern perspective of interaction, children with learning difficulties can be divided into three basic categories ([Adelman and Taylor, 1986](#)):

The first category of problems includes the problem in learning as a result of cultural and economic deprivation, inaccessibility, multiculturalism or some chronic stress in the children's environment.

The second category of problems consists combination of factors (reciprocal interaction). This group includes children with mild specific learning disabilities. The characteristics of the child such as: his activity, approaches in new situations, acceptance of new individuals, ability to adapt in new circumstances, his mood, endurance, mental strength, occur as a result of interaction between biological and environmental factors.

The third category includes children with problems that are created by primary causes (neurological disorders, developmental or motivational problems and severe disabilities). These children are often with impaired rhythmic physiological activity (e.g. sleeping disturbance), they have difficulties to learn from experience, have a bad psychic organization, and there are many hyperactive children among this group of children with adaptation problems, usually in a bad mood.

Children with mild intellectual disability (ID) have a lot of learning difficulties. They are developing according to the rules that apply to all children, but their development process is slower than usual, and limited according to the level of the ID ([Ajdinski, Keskinova and Memedi, 2017](#)).

Among the students with intellectual problems, developmental disabilities can occur in the forms of:

- Lack of motor control and poor coordination;
- Sensory barriers of varying degrees;

- Language and speech disorders;
- Problems in cognitive functions.

Developmental process of the child with ID is characterized by delayed and longer duration of individual phases of development ([Bala and Novak, 1991](#)). An intellectual deficiency entails a series of changes in the characteristics of the child's personality. A large number of studies point out in the mental representations, emotions, memory, attention, speech and language abilities, as well as changes in sensory perception, motivation, behavior, social characteristics and overall functioning in everyday activities, which creates a complex person of the child with ID ([Ajdinski, 2000](#)). The complexity of the development results with a series of problems in the learning process, which requires an individual process of identification and individual work plan.

Similar learning problems can also occur in a group of students who do not have ID, but they achieve poor results in one or more areas, thus of their potential, education and child motivation ([Wong, 1996](#)). These are students with specific learning disabilities - SLD (students with dyslexia, dysgraphia and dyscalculia) owning development potential which usually allows the typical psychosocial development, but is facing difficulty in timely recognition and treatment of these disabilities ([Lester and Kelman, 1997](#)).

It is important to distinguish these two groups of students, students with ID and students with SLD. Without adequate treatment they both have poor academic achievement, but these are groups of students with different problems and developmental abilities, with the need for different individual approach and expectation of their progress.

To assess the learning opportunities and the specific problems that can occur during the educational process, it is particularly important to define, delineate and assess the opportunities and potentials of the learner himself. The auditory, visual and motor skills, as well as the skills for vocal communication, are very important for expression and establishment of contact with the environment, additionally for presentation of their own experiences and knowledge.

Moreover, we will give an overview of the connection between these abilities and the learning process, among children with intellectual disability and children with typical development.

2. MATERIALS AND METHODS

The Aim of the research is analysis of the specific learning problems of students with a mild ID. In order to accomplish the aim we have set the following tasks:

- To detect the prevalence of specific learning problems among students with a mild ID;
- To detect the type of specific problems that can occur among these students (integrative, visual motor abilities and abilities for attention);
- To detect the prevalence of specific learning problems in the control group, among students with typical development;
- To detect reciprocal link between development and learning ability.

Research instruments - we used ACADIA test (Atkinson, Johnston and Lindsay, 1972). The test itself is consisted of 13 subtests for assessing the overall individual functioning, and in our research we used all of them. The maximum points for each subtest are 20.

For the need of our research, we divided them in three groups: subtests for *integrative abilities* (subtests for visual discrimination, audio-visual discrimination, ability in forming concepts, sequence and encryption, language development and visual association); *subtest for visual motor abilities* (subtests for visual motor coordination and forms drawing); *subtest for assessing of attention* (subtests for auditory discrimination, visual memory, auditory memory and automatic language). The last subtest (no.13, for assessing the ability for drawing) cannot be classified in the aforementioned groups. That subtest has been analyzed individually.

For the analysis and interpretation of the obtained results, we used the key of the test itself, where we have made comparison between the obtained points and calculate standard deviation (SD). Further, we have used Mode (Mo) values (of a set of data values is the value that appears most often, in other words, it is the value that is most likely to be sampled.). In the results analysis we used average scores of the children, so Mo value help us to have clear image for the real distribution of the scores.

Data analysis was accomplished by using the χ^2 test, for connection between two independent variables at a level of significance of 0.01, as well as percentages.

Sample - The research involved 144 students. We divided the sample into two groups.

The first group, our target group, consisted of 64 students with mild ID, who study in the special elementary schools (SES) in the Republic of Macedonia, in SES "Idnina" and SES "Dr. Zlatan Stremac". Further, the control group consisted of 80 students (from third and fifth grade) with typical development, from the mainstream elementary school "Vojdan Cernodrinski", in Skopje.

3. RESULTS

Table 1 presents the results obtained from the analysis of the subtests of students with ID and the control group. Subtests are sorted according to the achievement of the students with ID, i.e. according to SD of the results, starting from the smallest SD.

Table 1. Obtained results in the subtests in both groups of students

Subtest	Students with ID			Control group		
	SD	Average scores	Mo of average scores	SD	Average scores	Mo of average scores
Visual association	0.52	13.38	20	0.02	18.16	20
Sequence and encryption	1.05	10.06	12	0.14	15.52	16
Language development	1.25	13.17	15	0.1	18.49	19
Visual discrimination	1.27	10.48	0	0.1	18.66	20
Shapes drawing	1.4	7.76	9	0.24	14.67	18
Auditory discrimination	1.41	9.7	0	0.14	17.7	19
Drawing	1.65	10.83	12	0.32	15.33	16
Visual motor coordination	1.67	9.27	9	0.43	15.21	13
Audio-visual discrimination	1.78	12.32	12	0.13	19	20
Automatic language	1.94	4.71	0	0.06	15.3	12
Ability in forming concepts	1.98	7.21	7	0.12	15.12	14
Visual memory	2.93	9.08	10	0.41	15.95	17
Auditory memory	2.98	3.23	0	0.66	10.26	13

As we expected, children with ID achieved low scores with very high SD on every assessed ability. As we go down the table, we have higher SD and the student's achievements are smaller.

Both groups of students achieved best results on the subtest for visual association and lowest results on the subtest for auditory memory.

Among students with ID, in the last columns for Mo values we can see that 0 as the most frequent result occurred in 4 subtests

including subtest for auditory memory. In the subtest for visual association Mo is 20. It is the most commonly achieved result, and at the same time maximum possible points that can be achieved.

In the further section of the text we are presenting obtained results sorted in three groups according to the abilities they are assessing.

Table 2. Integrative abilities in students with ID and the control group

	Subtests	Students with ID		Control group	
		SD	Average scores	SD	Average scores
Integrative Abilities	Visual discrimination	1.27	10.48	0.1	18.66
	Audio-visual discrimination	1.78	12.32	0.13	19
	Sequence and encryption	1.05	10.06	0.14	15.52
	Ability in forming concepts	1.98	7.21	0.12	15.12
	Language development	1.25	13.17	0.1	18.49
	Visual association	0.52	13.38	0.02	18.16
	Total	1.42	9.69	0.1	17.49

Students with ID achieve results with 1.42 SD and average achieved points of 9.69. Students from the control group achieved results with 0.1 SD and 14.49 average points.

Table 3. Visual motor abilities in students with ID and the control group

	Subtest	Students with ID		Control group	
		SD	Average scores	SD	Average scores
Visual-motor abilities	Visual motor coordination	1.67	9.27	0.43	15.21
	Shapes drawing	1.4	7.76	0.24	14.67
	Total	1.53	8.51	0.33	14.94

Students with ID have high SD value of 1.53, and lower average points of 8.51. In the control group, students achieved 0.33 for SD and 14.94 average overall points.

Table 4. Ability for attention in students with ID and the control group

	Subtest	Students with ID		Control group	
		SD	Average scores	SD	Average scores
Subtest for assessing of attention	Auditory discrimination	1.41	9.7	0.14	17.7
	Visual memory	2.93	9.08	0.41	15.95
	Auditory memory	2.98	3.23	0.66	10.26
	Automatic language	1.94	4.71	0.06	15.3
	Total	2.31	6.68	0.32	14.8

Students with ID have SD value of 2.31, and lower average points of 6.68. In the control group, students achieved results with 0.32 SD and 14.80 average overall points.

Further we make analysis to detect the percentage of students with SLD among students in the control group and we try to detect in which grade these problems are most common.

Table 5 presents the results in terms of the frequency of SLD. Student with SLD is each one that showed a deviation of 2 or more SD in two or more abilities.

Table 5. SLD among students in the control group

Grade	Students with SLD		Other students		Total
	N	%	N	%	
III	7	30.43	16	69.57	23
IV	3	10	27	90	30
V	1	3.7	26	96.3	27
Total	11	13.75	69	86.25	80
$\chi^2 = 8.05$ $df=2$ $p= 0.018$					

We find high percentage of students with SLD, with generally average value in all grades of 13.75%.

By using χ^2 , we have made a comparison between the achievements of students in all grades, and we found that there is a statistically significant difference between those two variables, at a level of 0.05 of statistical significance.

Within the control group, we also analyzed the duration of the development process of the assessed abilities. Obtained data are presented at table 6, sorted by two criterions: detected difference in SD and achieved points between the students from third and fifth grade.

Table 6. Development skills of students in the control group sorted by the intensity of development during the school period

Subtests	Differences between SD	Differences between achieved scores
Auditory memory	0.82	4.18
Drawing	0.7	8.46
Shapes drawing	0.62	4.98
Visual discrimination	0.35	1.98
Audio-visual discrimination	0.3	0.99
Auditory discrimination	0.27	3.04
Visual memory	0.25	2.41
Ability in creating concepts	0.22	2.5
Automatic language	0.13	3.78
Sequence and encryption	0.1	1.35
Visual association	0.09	1.55
Language development	0.07	0.65

The abilities that showed greater dependence on the calendar age, i.e. they have more intensive development in that period, are given in the beginning of the table. As we descend down the table, the intensity of the developmental ability decreases.

4. DISCUSSIONS

According to the results presented in Table 1 and according to the high values of SD and low achieved results, we can highlight that the intellectual deficit has a significant influence on the persons' development abilities.

According to the individual subtests analysis we have found that the ability for visual association is best developed among students with ID (where SD is 0.52, average achieved results are 13.38 points, and Mo is 20), i.e. intellectual deficit has low influence on this ability. ID has more influence on the abilities of creating concepts, visual memory and especially on the ability for auditory

memory where the students achieved lowest results (where SD is 2.98, average achieved results are 3.23 points, and Mo is 0).

The individual subtest analysis shows similar results in the control group, where we have found that the best developed ability is the ability for visual association (with SD of 0.02, highest average points of 18.16, and Mo is 20 points), and the lowest development was noticed on the ability for auditory memory (where SD is 0.66, with the lowest achieved points of 10.26, Mo is 13). At the same time, the students from the control group showed well-developed ability for automatic language, visual discrimination, but faced higher difficulties in the ability of visual memory and visual-motor coordination.

Regarding the factual analysis of the subtests, where we sorted the subtests by the function they evaluate (integrative, visual-motor and ability of attention), we obtained similar results in both groups of the respondents.

The students, regardless of the group they belong to, achieved best results on the subtests for evaluating the integrative abilities, especially on the subtest for visual discrimination. Furthermore, in terms of the other abilities we have different results between the groups. Among the students with ID, the visual motor abilities proved to be better developed compared to the attention abilities.

The students in the control group show similar results in those two types of subtests, without a significant difference between them.

Analysis of the control group allowed us to determine the percentage of students with SLD in the school population. In our control group that percentage is 13.75%. We have the largest number of students with SLD among younger students, from third grade, and then, following the increase of their age, through the process of maturing, gaining experience and education, the number of students with SLD is reduced and the same percentage in fifth grade is 3.7%. With this we can conclude that some problems can disappear during the growing process, but still there are problems that require additional and professional treatment.

Detailed analysis of each subtest shows us that there is an improvement on almost every ability among the students in higher grades, i.e. those abilities are still developing during the young school period. Except the visual-motor ability, in which the students from III grade achieved better results than the other students.

A similar study was conducted in 2005

by using the same ACADIA test on the school age children. According to the results, most of the children (86.4%) had a standard development. The other students showed results with deviation, 9.3% of them have (have had) elementary learning disabilities, and their achievement was within 1SD, while 4.3% of the children had specific learning problems and achievement with 2 or more SD (Golubović, S, 2005).

In 2010, ACADIA test was used to assess the developmental abilities among students with learning disabilities. They showed best results on the subtest for visual motor abilities as well as for sequence and encryption, where 24% of the responders had results with 2 SD. The lowest results that students achieved were on the subtests for language abilities, i.e. subtest for language development (where 52% of the students have results with 2 or more SD) and subtest for automatic language (where 46% of the students have results with 2 or more SD) As a general conclusion, the authors Glicorović and Radić Šestić (2010) state that the basic difficulties that may occur in one or more development abilities are simultaneously reflected in other areas which causes school failure.

5. CONCLUSIONS

According to the research aims we can emphasize the following conclusions:

- All students with ID have special learning problems, with very good ability for visual association, and a lot of problems with the ability of auditory memory.
- From all assessed abilities, integrative abilities are best developed among students with ID, which are very important for synthesizing and transferring learning to new situations. Biggest problems occurred in motor abilities and the abilities for attention.
- In the control group we have found that 3.7% of the students faced SLD and need additional treatment during their educational process.
- All of the assessed abilities (except visual-motor ability) are still developing during the young school period, which means that in this development period we should use simulative programs for improving the abilities.
- Finally, we can conclude that students with mild ID and students with SLD have partly similar characteristics in development abilities. According to the results of our research and with comparison with other relevant re-

searches, we have shown that both groups had problems in development abilities. But among the students with ID we have a wide range of limited development abilities, whilst among the students with SLD, the limitation is usually on one ability. The difference exists also in terms of the limitation of functions. In students with ID the deviations are much more likely to move up to 5 SD, and among the students with the SLD the worst achievements note a deviation of no more than 3 SD. It is important to note that the quantitative similarity of the percentage does not implicate qualitative similarity. The frequency of experiencing problems is very similar in both groups, but qualitatively these problems differ among themselves, they have different structure, different intensity and require a different approach.

In order to improve the educational opportunities of persons with ID and SLD, we consider it important to take the following activities:

- Using of a functional diagnosis for the persons with ID, which will include an assessment of all personal abilities. This assessment should be repeated every 6 months and even earlier if necessary.
- Preparation of a protocol for assessing the students' development abilities that would be applied by all institutions that treat children with mild ID, i.e. students with SLD.
- From all developmental abilities that we assessed the abilities for auditory memory are least developed, therefore we consider that in the future the professional treatment should be directed towards stimulating it, regardless of whether it is a student with ID or a student with SLD.
- All students have well developed ability for visual association, therefore our recommendation is much more frequent use of this well-developed ability during the educational process.
- Employing a special educator in all regular schools. He would have dominant role in the educational process of children with ID, but also in educational process of students with SLD. According to this, the role of the Special Education would be increased, the educator itself should make a distinction between these two groups of students and at the same time be the carrier of organizing appropriate treatment of students by finding adequate methods and techniques for work.

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Conflict of interests

The authors declare no conflict of interest.

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