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Stimulating strategies of self-regulated learning for high-school students with learning difficulties

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Abstract. In the actual contemporary society there are more and more children with disabilities, and the most frequently requested are the Special Educational Needs (SEN), associated with other disabilities that are unnoticed until advanced ages and this because some parents refuse to realise the situation in which their child is. The prevalence of learning disabilities has increased significantly. This is one of the reasons for choosing this topic which is still relevant, the applicability is increasing both in the social system and in the education subsystem. The main objective of this paper is to highlight the learning difficulties that students face in high school. On the other hand, another objective is to illustrate the stimulating strategies for self-regulated learning and assessment. In some cases, age-specific difficulties arise during this period due to the dynamic nature of the school climate. From a pedagogical point of view, the emphasis should be on cognitive development, on the skills needed for the social integration of all students, regardless of origin, nationality and development level. Learning involves overcoming barriers, removing obstacles during individual or collective learning (Popa, D., 2013). Almost forgotten for a long time, the pedagogy of children with learning difficulties has seen a significant increase, especially during the recent years. While looking for ways to a successful learning, it should be considered the use of some methods and planning to reduce learning difficulties for students. Considering that school education (school learning) is a dominant exercise through play, especially during childhood, we must also consider the possibility of frequent learning difficulties, especially regarding children.

Key words: strategy, stimulation, learning, students, difficulties.

1 Mental deficiency

”Etiology is a discipline that studies the causes of a phenomenon (in this case, diseases), revealing its origins and evolution” (Neveanu, P., P., 1978, p. 247). This definition draws attention to the fact that deepening the causes of the studied phenomenon – in our case the mental deficiency – must not be limited to the detection and highlighting of causal factors, but starting from these factors it must predict the possible evolution of the pursued phenomenon, influenced by those factors.

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All the specialists who approached this problem from different points of view emphasize the complex and varied character of the etiology of mental deficiency. The fundamental causal factors are located in those basic sectors that determine, in general, the socio-human evolution of any individual:

- ❖ The genetic dowry of the individual (heredity), which he inherited from his predecessors;
- ❖ The educational environment and influences, which he acquires in the multiple interaction between his own organism (possessor of the genetic dowry) and his conditions of biological and social existence (Nicolescu, F., Radu, Gh., et alt, 1999).

A classification of the causes of mental deficiency made by C. Păunescu and I. Mușu is the one in which the authors identify three main categories of causal factors of mental disability:

A. biological factors (inherited, genetic)
B. ecological factors
C. psychosocial factors (Păunescu, C., Mușu, I., 1997).

A. Heredity is the fundamental property of the living matter to transmit, from one generation to another, using the genetic code, the messages of specificity (of the species, of the group, of the individual). Heredity is ne of the most general properties of living organisms and consists in transmitting from parents to offspring some features and development peculiarities, being the property of living organisms to reproduce, over generations, a certain type of metabolism. Like any other property of the organism, heredity is structurally determined and has a material basis. The elementary material unit of heredity is the gene.

In the context of the issue regarding the etiology of mental disabilities, the special psychopedagogy is interested in the problem of genetic mutations and chromosomal aberrations, which are the basis of the specific syndromes of mental deficiency. The specific genetic factors cause numerous but rare syndromes, such as:

- chromosomal aberrations (underlying Tumer, Klinefelter, Down, etc. syndromes);
- congenital ectodermoses (leading to Sturge Weber syndrome, etc.);
- dysmetabolism (which causes syndromes such as amaurotic idiocy, Hunter syndrome, etc.);
- familial cranial abnormalities (microcephaly, Apertt syndrome) ;
- dysendocrines (which cause edemic cretinism, hypothyroidism, etc.).

B. *Ecological factors* – the main criterion remains the moment when the causal factor acts and the change occurs mainly at the level of the CNS (dysfunctions, malformations). They are divided into:

a) Factors that acted prenatally:

1. Genetic abnormalities: 4-28 %
- chromosomal aberrations: Down syndrome;
- monogenic mutations: Tuberous sclerosis, Phenylketonuria, Fragile X syndrome;
- multifactorial impairment: Family mental retardation;
- microdeletions: Prader Syndromes – Willi, Williams, Angelman.
2. Congenital malformations: 7-17%
- malformations of the central nervous system: defects of the neural tube;
- syndromes with multiple malformations: Cornelia de Lange syndrome ;
3. Maternal exposure : 15-13%

- congenital infections : HIV, AIDS, syphilis, rubella, toxoplasmosis, herpes, cytomegalovirus, influenza virus ;
- gestational abnormalities : placenta previa, placental circulation, diseases and maternal malnutrition ;
- other teratogenic agents : inapparent radiation, mental trauma, drugs, medications, alcohol, nutritional deficiencies, hormonal deficiency: hypothyroidism.

b) Factors that acted perinatal 2-10% :

- problems during birth due to pregnancy quality, labour or otherwise;
- hypoxia / asphyxia due to: past pregnancy, hasty birth, dystocic birth, circular cord, obstetric manoeuvres;
- prematurity;
- nuclear jaundice: incompatibility of untreated Rh and ABO;
- cerebral haemorrhage;
- infections at birth.

c) Factors that acted postnatal 3-12%:

- infections (meningitis, encephalitis);
- brain tumours;
- severe head trauma;
- nitrite and lead poisoning;
- other somatic diseases that cause brain damage: severe respiratory failure, dehydration syndrome, severe hydro electrolytic imbalances, prolonged and severe nutritional deficiencies;
- psychosocial problems that cause changes in the good care of the new-born.

C. The environment is a factor of human development and consists of all the elements with which the individual interacts, directly or indirectly, during its development. The environment strongly influences the process of mental development of any child, for children with various diseases (including those with mental development) the spontaneous interaction between the environment and the particularities of the affected body determines those personality structuring process disorders, which different authors call developmental deviations or dysontogens. When the situations are under control, through the specific organization of the environment (especially the socio-familial and socio-scholar), the installation of these forms can sometimes be prevented or most often (when their installation has occurred) the manifestation of these disorders it can be blurred, the negative consequences can be diminished in terms of adaptation.

The education cannot be isolated from the environmental conditions, considering that it represents the active element, which dynamizes, organizes and orients the action of the environment on the individual in question. Education must be defined as a “specialized activity, specifically human, which mediates and diversifies the relationship between man and his environment, promoting human development through society and society through man” (Iacob, L., 1998, p. 149). Education mediates between heredity, which is “what might be, in terms of content, timing, level, intensity, duration, form, etc.” and the environment, which means what is offered. An efficient education “harmonizes supply and demand, which is not easy because, considering the uniqueness of heredity and the uniqueness of environmental constellations, there are no recipes”

Technium Social Sciences Journal
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(Radu, Gh., 2000, p.34). During the education process must act at the level of the next development of the educated one.

Starting from the category of psychosocial causes of mental deficiency we list:

- an unfavourable family environment (hostile, aggressive or indifferent – passive);
- accentuated educational and affective deficiencies (the child is banned especially from affection, which affects his further mental development;
- type of environment (there are studies that show that the incidence of mental deficiency is higher in rural areas than in urban areas);
- family size (there is a high probability of mental deficiency cases in families with many children);
- unfavourable socio-economic conditions.

2. The specificity of mental deficiency

The rigidity represents in J. S. Kounin's opinion a defining feature of the mentally retarded one which refers to his psychological structure. It consists in the absence of intellectual suppleness and also the ability to establish relationships between "neighboring psychological regions" (rigidity). The mentally retarded has the same number of "close regions" as a normal child with the same age, but the transition from one to another is more difficult. For the mentally deficient the compensation and the interactions of the functions are slower, the rigid regions limit the influence of the functions from the neighboring territories which means that considering the level of the whole psychic activity determines a psychic inertia. The Russian psychologist A. R. Luria (1955) used to talk about an "oligophrenic inertia" (pathological). Later, the rigidity was used also in the description of some psychic processes: language, memory, thinking, behaviour. Stiffness is often accompanied by perseverance. Perseverance represents the long time that the mentally retarded person needs to leave a certain answer (either stereotypical and unnecessary movements, or repeating the same words and the return to the same idea). Perseverance is, in fact, a consequence of oligophrenic inertia, of an excitement arousal, which explains the excessive and abnormal persistence of a reaction, tendency, action or idea (Radu, Gh., 2000, p.91).

Genetic viscosity is the term used in literature by Barbel Inhelder. She started from Jean Piaget's conception of the intelligence genesis – the theory of the psychogenesis of intellectual operations. According to this theory, the intellectual development is viewed in a staged succession of the thought, each stage having a structure in which the higher level encompasses the lower one. A normal individual goes through four thinking stages:

- 1. sensory-motor stage (0-2 years);
- 2. preoperative stage (2-7 years);
- 3. stage of concrete operations (7-12 years);
- 4. stage of formal operations (12-17/18 years);

B. Inhelder considers that mental weakness can be defined as an incomplete operational construction that stops at the third stage, unlike imbecility and idiocy that do not even reach this stage or the ordinary child who reach the stage of formal operations. Unlike the ordinary child, whose development is dynamic and fluent, for the mentally deficient this development is fluctuating, difficult and indeterminate.

Technium Social Sciences Journal
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As a solution for the manifestations of genetic viscosity, B. Inhelder proposes to organize learning according to the principle of commutativity, consisting in using appropriate methods for the earlier stage of their mental development (for example the game-based learning, the use of real intuition instead of schematic-symbolic methods). Although genetic viscosity resembles the pathological inertia described by A. R. Luria, it should be noticed that if the first is referring to the diachronic lack of dynamism, the second refers to the lack of dynamic synchronism.

L. S. Vygotsky uses B. Inhelder's theory on educational planning and introduces the principle of the "zone of the next development" which shows that mental disability is characterized by a limited, restricted area of the following development, which is as smaller as the severity of his intellectual is higher. The area of the next development is, in Vygotsky's conception, the difference between the level of solving task accessible for the child in terms of adult support and the level of solving the same task through an independent activity. Thus, for the children with mental deficiency, ZPD is limited, lacking operational dynamism, toot inefficient in terms of cognitive acquisition. It is all more restricted the greater the severity of the intellectual deficiency.

The concept of heterochrony of development was introduced by R. Zazzo, showing that "the mentally retarded, compared to the normal child, develops at a different pace in terms of different sectors of his psychological development" (Zazzo, 1979, p.15). The fundamental heterochrony, according to the French psychologist, is that between physical development and mental development (somatic development – brain development). All the other heterochronies (for example, the difference between the growth rates of spatial organization capacity and psychomotor efficiency capacity) are explained through fundamental heterochrony. The principle of heterochrony essentially means the different development of psychic functions. The same situation can be found in normal individuals (some have good auditory memory, others visual memory, etc.). The difference is that if for the normal development one function does not harm another one, for the mantally weak the advance for one function can be achieved in detriment of the other.

The fragility of the personality construction is detected when internal and external demands exceed the response capabilities of the individual. It most often occurs in the field of social relationships of the mentally deficient. His social relationships are burdened by inertia, the hard adaptation and inadequacy, considering the low level of logical operations, infantilism and behaviour fragility. The fragility can be:

- masked, disguised – for the mentally deficient who live in secure environment;
- dissociated, with impulsivity manifestations and even lack of control (Gherguț, A., 2007)

The lability and fragility of verbal behaviour, described by E. Verza, consists in affecting all the fundamental aspects of language: the phono-articulatory aspect, the lexical semantic aspect and the grammatical aspect. The mentally deficient cannot express logically and grammatically the content of significant situations, to maintain a level of continuous progress and to adapt his verbal behaviour to the changes that occur in various circumstances. He can speak relatively well at some point, so that later, event at short intervals, he cand show accentuated disorders. Semantically, there is a poverty of ideas, a disagreement between what they express and reality, a simplified or truncated understanding of the conveyed ideas.

R. Ziegler found on the basis of a research on a group of mental deficient children and one another made of normal children, all having the same age that between the motivation of mental deficient children and the normal ones with the same there are essential differences. The mentally

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retarded adopt an outward-looking cognitive style, focusing this way on stimuli provided by other people, due to the fact that their own strategies result in failures.

Closely related to genetic viscosity, the limited nature of the next development and the heterochrony of development, A. R. Luria and her collaborators (M. S. Pevzner and V. I. Lubovski) launch the theory of oligophrenic or pathological inertia, a phenomenon of distortion of the cortical dynamic in the mentally deficient, materialised in the rigidity of adaptive and behavioural reactions, in the insufficiency of these reactions to permanent changes that occur in environment. "Thus, mental deficiencies often show slowness in thinking and activity, apathy in emotional states and behaviour, delayed reactions and insufficiently adapted (differentiated) to stimuli received from the "environment" (Radu, 2000, p. 127). But it can also be manifested by hasty reactions, insufficiently subject to conscious control, which find their explanation in the stagnation, beyond the necessary limits, of an excitement arousal in the cerebral cortex. For example, motor perseverance, common in the mentally deficient, especially for hand-made activities, makes it difficult to train them in for a work based on conscious and varied movements, which are related and continuous, thus making it difficult for such children to participate in games based on coordinated movements or to self-service or practical activities, etc. (idem, 2000).

R. Feuerstein is the author of the Learning Potential Assessment Device (LPAD), one of the most elaborate and important methods of formative diagnosis that allows the detection of impaired cognitive functions that can be recovered through the Instrumental Enrichment Program (a recovery and development program). At the base of LPAD is the concept of cognitive modifiability and mediated learning. Cognitive modifiability represents, in Feuerstein's opinion, the individual's ability to reshape the acquired knowledge according to the problem-situation appeared in various contexts. According to Feuerstein's theory, the large differences between performance and real intellectual potential in children are determined by the inadequacies of the mediated learning process.
https://xa.yimg.com/kq/groups/78946939/967744301/name/Caracteristici

3. Learning difficulties

In the literature, learning has been and is still approached from several points of view, especially by relating to different specific behaviours. Neurofunctionally, learning requires the formulation of new temporary connections in the cerebral cortex and the strengthening of the formed connections. In the broadest sense, learning is a phenomenon whose result is made up of a behavioural change produced by gaining new experience, through practice, observation, lasting changes that have occurred in visible behaviour. (Neacșu, I., 2015).

In Larousse's dictionary, learning is defined as "the modification of an individual's ability to perform an activity under the effect of interactions with the environment" (Larousse, 2006, p. 638). From the point of view of pedagogy, learning is an activity planned by the teacher to determine the change of behaviour at the level of personality by capitalizing on knowledge, attitudes and skills (Cristea, S., 2000).

By the term learning, we consider an activity with a psychological and pedagogical importance guided and evaluated personally or impersonally by the teacher, which consists in the acquisition, accommodation, reconstruction, fixation and conscious, voluntary and independent reproduction of knowledge, skills and abilities (Neacșu, I., 2015).

Technium Social Sciences Journal
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Self-regulated learning is the student's ability to manifest an active, motivational, metacognitive and behavioural verification of their own learning. Self-regulation combines this way strategies, general knowledge, metacognitive skills and motivational sources of an individual. https://biblioteca.regielive.ro/cursuri/psihologie/autoreglarea-invatarii-99806.html

The term self-regulated learning highlights the independence and the obbligations of the students in learning, which refers to the autonomy of the learning process (Popa, D., 2013).

The role of self-regulation is to support cognitive and social development, it is important to understand the development in childhood, So far, it has been shown that there is a connection between an individual's ability to control his or her emotions and behaviours. The research direction starts from the idea that self-regulation is a skill. Self-regulation expresses a certain number of abilities such as: the ability to controlimpulses, the ability to inhibit automatic responses in favor of less specific behavior, and the ability to postpone reward (ibid., 2013).

Defining learning difficulties is useful in order to create a match between the real needs of educational practice and their conceptualisation. It is recognised that there is a large number of children which has learning difficulties during their schooling time. There is no child who does not encounter obstacles during school learning (Vrăsmaș, E., 2007).

Most of the drafted definitions are mainly focused on assessing the learning performance of the one with learning difficulties, compared to the natural results, justified in relation to that subject. It should be noted that in all definitions we find the expression that refers to children and their difficulties in school learning (Sima, I., 2009).

The notions of learning difficulties includes a wide range of manifestations, which are the result of a combination of factors, the process of identifying the triggering causes becoming a difficult one. "Even in situations where students have certain cognitive limitations or medical problems that hinder their learning, the difficulties they face and their consequent educational requirement vary depending on the attitudes and expectations of the others (in all cases, support, knowledge and understanding which students with learning difficulties receive both at home and at school play a significant role in their educational progress)" (Gherguț, A., apud Popa, D., 2013, p.30).

Parents are often worried when their child has problems at school. There are many reasons for school failure, but the most common are inability to learn and learning disabilities. Children who experience these problems usually have a normal IQ. They try to focus and keep up with others, both at school and at home. Despite all these efforts, they lag behind in accumulation new knowledge. Social learning is much higher than school learning. A group of students whose easy learning difficulties, not identified in time, without involvement, can easily lead to school failure.

A group of students may have false, transient learning difficulties that label them as influencing their school adaptation, due to social understanding, how they are perceived by those around them, which influences their personality and self-confidence. These learning difficulties and learning disorders are little known, which creates their neglect in mainstream schools (Sima, I., 2009).

As for strategies to stimulate self-regulated learning, they depend on certain factors, such as family, school and individual factors. Any strategy is the result of several phenomena, a multitude of operations, pursuing certain didactic objectives. Teaching strategies are formed with the support of teaching-learning procedures. The didactic strategy is not a working method, but it

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is an original activity of the teaching staff designing the working method. Strategy is the whole training process, not a training sequence.

https://www.slideserve.com/dillian/metode-alternative-de-predare-invatare-evaluare.

Family has the most of the influence on student's level of motivation. The characteristics of the family have an important role in the development and formation of the student within school, the socio-economic situation of the family, the emotional support given to him, but also the value of the school learning of the student in difficulty. The interest of the school can have a negative effect on the child, due to his demotivation. Teachers have a low interest in individualizing and differentiating learning tasks, and the perception about himself of the student with learning difficulties is distorted, thing that can negatively affect the motivational level (Popa, D., 2013).

4. Research methodology

a. Research objectives

First objective: identification of learning difficulties in students with mental disabilities in high school.

Second objective: identify teaching-learning strategies in students with learning difficulties and mental deficiency in the middle school cycle.

b. Hypotheses

First hypothesis: it is assumed that students with mental disabilities in high school have learning difficulties.

Second hypothesis: it is assumed that following the application of strategies in order to stimulate learning, the students with learning difficulties have superior results in school work.

c. Study participants

The research group consists of 30 students aged between 12 and 18, 8 girls and 22 boys from middle school, belonging to the 5th grade, the 6th grade and the 7th grade, within the School Center for Inclusive Education "Delfinul" Constanta. The students come from both families and placement center. We obtained the consent of the tutor of each student to carry out the research. The evaluation of the group took place in two stages: at the beginning of the research and at the end of it.

Nr. Crt.	Name and surname	Age	The environment of origin	The severity of the mental deficiency	Disease codes
1	E. A.	12 years	Family	Serious	F84: Deep developmental disorders, F90: Hyperkinetic disorders, F72: Severe mental retardation.
2	P. O.	12 years	Family	Serious	F84: Deep developmental disorders, F90: Hyperkinetic disorders, F70: Mild mental retardation.

TECHNIUM SOCIAL SCIENCES JOURNAL

Technium Social Sciences Journal
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www.techniumscience.com

3	S. M. A.	13 years	Family	Serious	F84: Deep developmental disorders F70: Mild mental retardation, F41.8: Specified anxiety disorders.
4	V. M.	13 years	Family	Serious	F84: Deep developmental disorders, F72: Severe mental retardation.
5	V. E. D.	13 years	Family	Serious	F84: Deep developmental disorders, F71.1: Moderate mental retardation, F90: Hyperkinetic disorders, R45.1: Anxiety and agitation.
6	A.O.	14 years	orphanage home	Serious	F84: Deep developmental disorders, F71: Moderate mental retardation, F80: Speech and language development disorders, F90: Hyperkinetic disorders.
7	D. A. Ş.	13 years	Family	Serious	F71: Moderate mental retardation, F90: Hyperkinetic disorders, R45.1: Anxiety and agitation, E66: Obesity, F84: Deep developmental disorders.
8	A. D.	15 years	Family	stressed	F71: Moderate mental retardation, F90: Hyperkinetic disorders.
9	B. I. F.	13 years	Family	Neîncadrat	F70: Mild mental retardation, F90: Hyperkinetic disorders.
10	D.G. C.	15 years	Family	Serious	F72: Severe mental retardation, F80: Speech and language development disorders, F91.3: Opposition challenge disorder, F90: Hyperkinetic disorders.
11	I.E.	13 years	Family	environment	F70: Mild mental retardation, F90: Hyperkinetic disorders, F91: Behavioral disorders, F80: Speech and language development disorders.
12	V. C.	15 years	orphanage home	Serious	Q90: Down syndrome, F72: Severe mental retardation, F90: Hyperkinetic disorders.
13	M. R.	15 years	Family	Serious	F71: Moderate mental retardation, F91.9: Behavioral disorder, unspecified, Z60: Social problems.
14	A.A.	15 years	Family	Serious	Q90: Down syndrome, F71: Moderate mental retardation, F41: Anxiety disorders.
15	M. A.	15 years	Family	Serious	F84: Deep developmental disorders, F90: Hyperkinetic disorders, F42: Obsessive-compulsive disorder F70: Mild mental retardation.

TECHNIUM SOCIAL SCIENCES JOURNAL

Technium Social Sciences Journal
Vol. 19, 684-707, May, 2021
ISSN: 2668-7798
www.techniumscience.com

16	A. M.	13 years	Family	stressed	F71: Moderate mental retardation, F90: Hyperkinetic disorders, Q77: Osteochondrodysplasia with growth defects of tubular bones and spine, H90.8: Mixed transmission and neurosensory deafness, unspecified.
17	I. G.	15 years	orphanage home	environment	F70: Mild mental retardation, F81: Specific developmental disorders related to school skills, F83: Mixed specific developmental disorders.
18	A.A.	13 years	orphanage home	stressed	F71: Moderate mental retardation.
19	G. A.	14 years	orphanage home	environment	F70: Mild mental retardation, F91: Conduct disorders.
20	I. R. G.	14 years	Family	stressed	F7: Moderate mental retardation.
21	S. M. D.	15 years	Family	Serious	F72: Severe mental retardation, F84.1: Atypical autism.
22	Z. A.	13 years	orphanage home	stressed	F80: Speech and language development disorders, F83: Mixed specific developmental disorders, F70: Mild mental retardation .
23	M. S.	16 years	orphanage home	stressed	F71: Moderate mental retardation, F81: Specific developmental disorders related to school skills.
24	M. T.	15 years	Family	Serious	F71: Moderate mental retardation F98: Other emotional and behavioral disorders with onset usually occurring in childhood and adolescence G80: Cerebral palsy.
25	N. A.	18 years	orphanage home	environment	F70: Mild mental retardation, F90: Hyperkinetic disorders, G40: Epilepsy, F91: Behavioral disorders.
26	Z. F.	15 ani	orphanage home	Serious	F71: Moderate mental retardation, F91: Behavioral disorders, F80: Speech and language development disorders.
27	D. M. N.	14 years	orphanage home	Serious	F84: Deep developmental disorders, F72: Severe mental retardation, F80: Speech and language development disorders.
28	E .A. T.	14 years	Family	Serious	F84: Deep developmental disorders, F70: Mild mental retardation, F90: Hyperkinetic disorders, E66: Obesity.

Technium Social Sciences Journal
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29	P. P. L.	15 years	Family	Serious	F71: Moderate mental retardation, G81: Hemiplagia, M41: Scoliosis.
30	P. N.	15 years	orphanage home	environment	F71: Moderate mental retardation.

Most of them are boys and have a percentage of 73%, and girl are 27%. The chronological age of students: 12-year-old students are 7%, 13-year-olds are 30%, 14-year-olds are 17%, 15-years-olds are 40%, 16-year-olds are 3% and 18-year-olds are 3%.

Most students come from a familiar background which are 63% and the others come from a placement center environment which are 37%. This difference in percentages shows that many parents accept the child's situation and cope with it supporting him.

The predominant degree of severity is the severe one, which indicates a percentage of 63%, followed by the accentuated and medium degree which indicates a percentage of 17%, and the non-classification has a percentage of 3%.

The most common disease codes encountered in the research: F71 on 24%, F90 on 20%, F70 in 18%, F84 on 16%, F80 and F72 on 11% each. These are the most common codes in mental retardation, among many others that are less common.

3.4. Instruments for use

The methods used are: method of observation, method of communication, case study method, Raven test and observation grid.

3.5. Stages conducted

The present research was conducted between November 2018 and March 2019, for 15 weeks, while the activities program involving students has been conducted for 12 weeks. The 30 students were divided in two groups of 15 students. The working time with each group lasted one hour every week. The research is divided in five stages:

Stage 1: the experiments to be applied (method of observation, method of communication, progressive Colour Raven Matrixes) were selected depending of the research hypothesis and an observation grid has been accomplished, given the fact that the Raven test doesn't cover all the perceptual-motor structures.

Stage 2: the accomplishment of the initial evaluation which was conducted individually by following the testing conditions.

Stage 3: the accomplishment of perceptual-motor educational program, the planning and accomplishment of the didactic materials used.

Stage 4: the application of the perceptual motor educational program.

Stage 5: the final evaluation and the record of the observations given the results obtained.

During the program have been conducted exercises concerning the perceptual motor structure, by pursuing the following elements: colour, form, body scheme, laterality, spatial orientation and temporal orientation.

During the research weeks we have conducted, together with pupils, exercises comprising the stimulation of their motivation to learn, as in the next table:

Technium Social Sciences Journal
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www.techniumscience.com

Table 1. Identification of the activities accomplished

Number of weeks	Exercises conducted
Week 1	Exercises for creating colour perceptual motor structures.
Week 2	Exercises for creating form perceptual motor structures.
Week 3	Exercises for creating form perceptual motor structures of some objects.
Week 4	Exercises for strengthening the laterality.
Week 5	Exercises for creating the capacity of spatial orientation – matching spatial locations.
Week 6	Exercises for creating the capacity of spatial orientation – exercises regarding organisation in the written space.
Week 7	Exercises for creating the capacity of temporal orientation - exercises concerning the identification of seasons, months, days of the week.
Week 8	Exercises for creating the capacity of temporal orientation – exercises of associating seasons – characteristics.
Week 9	Exercises for creating the capacity of temporal orientation – exercises for identifying the continuity of an action.
Week 10	Exercises for creating the capacity of organizing some actions – imitation, handling some objects.
Week 11	Exercises for creating quantities and counting their elements.
Week 12	Exercising of identifying some categories.

The next table shows the initial evaluation in order to note the levels of students 'abilities, Abilities can be non-acquired, marked with 1 point, in the process of acquisition marked with 2 points and acquired, marked with 3 points.

Table 2. – Initial evaluation

No. crt.	Name and surname	Non-acquired abilities	Abilities in the process of acquisition	Acquired abilities	Total points
1	E. A.	5	3	4	23 p
2	P. O.	5	3	4	23 p
3	S. M. A.	6	4	2	20 p
4	V. M.	5	3	4	23 p
5	V. E. D.	3	7	2	23 p
6	A.O.	7	2	3	20 p
7	D. A. Ş.	6	2	4	22p
8	B.A.D.	5	4	3	21 p
9	B. I. F.	4	5	3	23 p
10	D.G. C.	5	4	3	22 p

Technium Social Sciences Journal
Vol. 19, 684-707, May, 2021
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www.techniumscience.com

11	I.E.	4	4	4	24 p
12	V. C.	5	3	4	23 p
13	M.R.	3	6	3	22p
14	C.A.	4	4	4	24 p
15	D.M.A.	5	4	3	22 p.
16	A.A.M.	4	4	4	22P
17	A.I.G.	3	5	4	25 p.
18	A.A.	5	4	3	22 p
19	G. A.	4	4	4	24 p
20	I. R. G.	5	4	3	22 p
21	S. M. D.	5	3	4	23 p
22	Z. A.	1	6	5	22 p
23	M. S.	4	6	2	22 p
24	M. T.	6	4	2	20 p
25	N. A.	5	3	4	23 p
26	Z. F.	7	3	2	19 p
27	D. M. N.	8	2	2	18 p
28	E .A. T.	5	5	2	21 p
29	P. P. L.	8	1	3	19 p
30	P. N.	3	5	4	25 p

Fig 1. Points acquired by the pupils at the initial evaluation

Out of the 30 students, 9 have acquired 22 points (13 %), 8 students have acquired 23 points (13 %), 2 students have acquired 21 points (12 %), 3 of them have acquired 20 points (12 %), another 3 have acquired 24 points (14 %), 2 of them have acquired 19 points (11 %), one of the students has acquired 18 points (10 %) and two of the students have acquired 25 points (15 %).

The next table shows the final evaluation, where one could notice the amplification of the abilities in the process of acquisition and of the ones acquired.

No. crt.	Name and surname	Non-acquired abilities	Abilities in the process of acquisition	Acquired abilities	Total points
1	E. A.	4	3	5	25 p
2	P. O.	2	5	5	27 p

Technium Social Sciences Journal
Vol. 19, 684-707, May, 2021
ISSN: 2668-7798
www.techniumscience.com

3	S. M. A.	3	5	4	25 p
4	V. M.	3	5	4	25 p
5	V. E. D.	2	5	5	27 p
6	A.O.	3	5	4	25 p
7	D. A. Ş.	3	4	5	26p
8	B.A. D.	3	3	6	27 p
9	B. I. F.	3	5	4	25 p
10	D.G. C.	3	4	5	26 p
11	I .E.	2	4	6	28 p
12	V. C.	3	5	4	25 p
13	M. R.	2	4	6	28 p
14	A.A.	3	3	6	27 p
15	C.M. A.	3	4	5	26 p.
16	A.A. M.	2	4	6	26p.
17	A.I. G.	1	2	9	32 p
18	A.A.	3	4	5	26 p
19	G. A.	2	5	5	27 p
20	I. R. G.	2	4	6	28 p
21	S. M. D.	3	4	5	26 p
22	Z. A.	3	3	6	27 p
23	M. S.	2	5	5	27 p
24	M. T.	4	4	4	24 p
25	N. A.	4	2	6	28 p
26	Z. F.	5	2	5	28 p
27	D. M. N.	6	2	4	24 p
28	E .A. T.	2	4	6	28 p
29	P. P. L.	3	4	5	26 p
30	P. N.	1	3	8	31 p

Technium Social Sciences Journal
Vol. 19, 684-707, May, 2021
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www.techniumscience.com

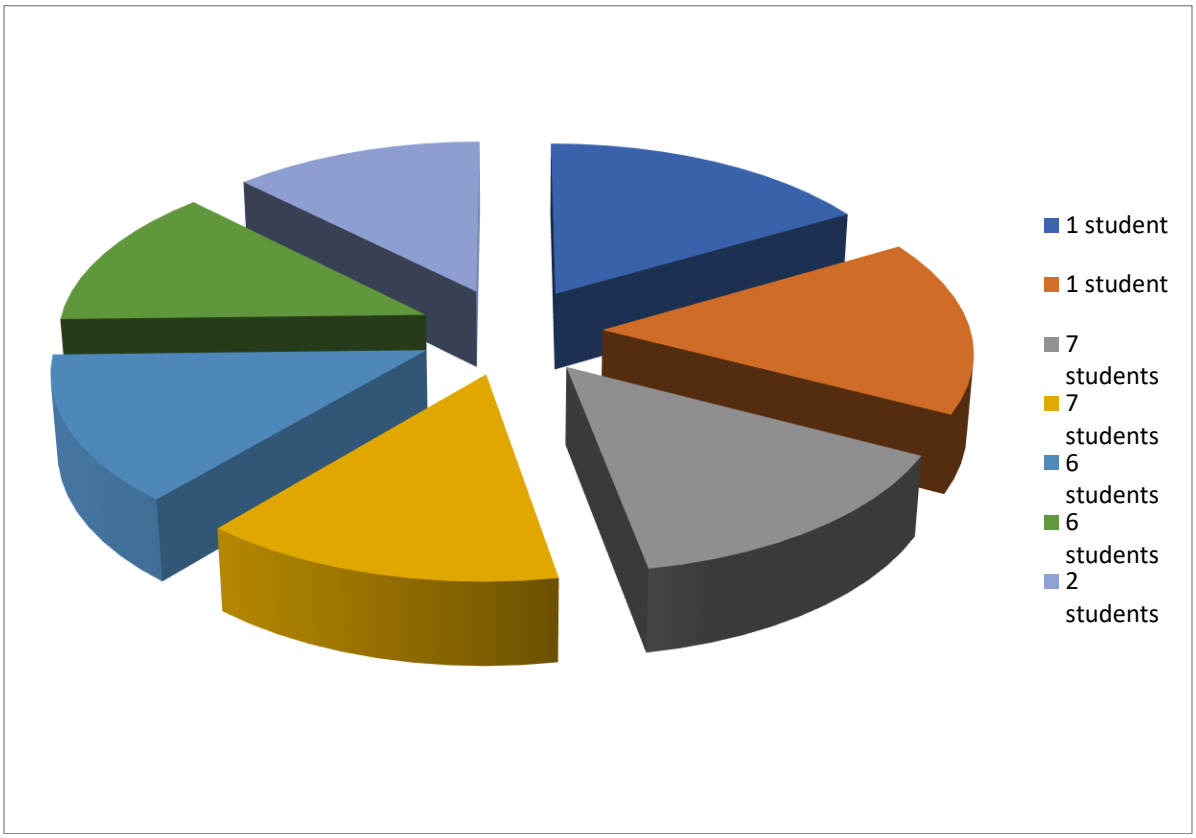

Figure 2. Score acquired by the students in the final evaluation

Out of the 30 students, one of them acquired 32 points (17 %), another one acquired 31 points (16 %), 7 of them acquired 28 points (15 %), another 7 acquired 27 points (14 %), 6 students acquired 26 points (13 %), another 6, 25 points (13 %) and 2 of them acquired 24 points (12 %).

As a result of the initial evaluation and of the final one it appears that out of the 30 students, the one who acquired the best results is A. I. G, who acquired 25 points at the initial evaluation and the highest score, of 32 points at the final evaluation; the next student who acquired an average score is P.N., who acquired 25 points at the initial evaluation and 31 points in the final one: lastly, the weakest student is D. M. N. who acquired 18 points in the initial evaluation and 24 points in the final one.

Following the application of the Raven test, of the initial and the final evaluation, it was shown that mentally deficient students from the middle school suffer from learning difficulties concerning the perceptual-motor structures (object colour and shape, body scheme, laterality, spatial and temporal orientation) but also difficulties concerning mathematical calculation, vocabulary and writing.

Following the evaluation application, the first hypothesis was confirmed: *It is assumed that mentally deficient students from middle school suffer from learning difficulties.* The students acquired a score between 19 and 25 points in the initial evaluation and a score between 24 and 32 points in the final evaluation.

Technium Social Sciences Journal
Vol. 19, 684-707, May, 2021
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www.techniumscience.com

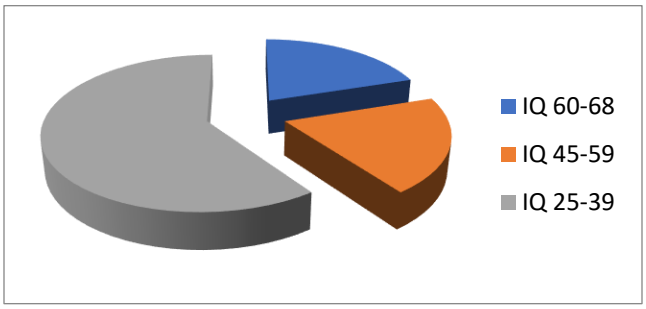

Figure 3. Scores acquired in the Raven test

In figure 3, one could notice that in the Raven test, 18 students have acquired an IQ between 25 and 39 points, meaning a 60 %, 6 of them have acquired an IQ between 45 and 59 points, meaning a 20 %, while the last 6 students have acquired an IQ between 60 and 68, meaning 20 %.

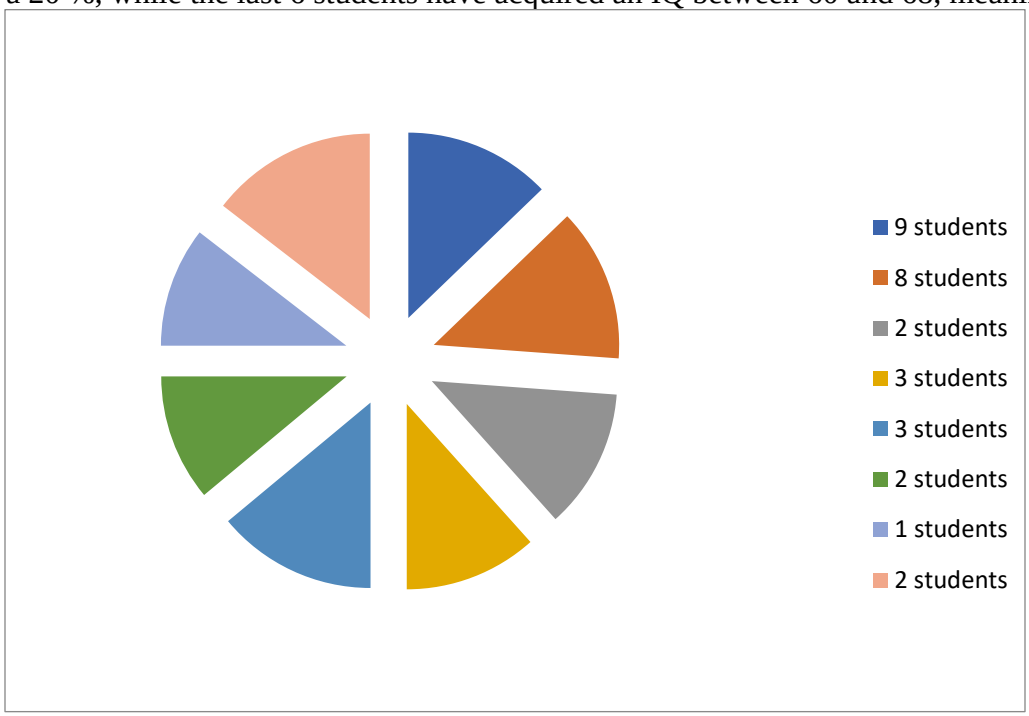

Figure 4. Score acquired by the students in the initial evaluation

Out of the 30 students, 9 of them acquired 22 points (13 %), 8 students have acquired 23 points (13 %), 2 students have acquired 21 points (12 %), 3 of them have acquired 20 points (12 %), another 3, 24 points (14 %), 2 of them have acquired 19 points (11), one of them has acquired 8 points (10 %) while another 2 of them have acquired 25 points (15 %).

In order to confirm the first research hypothesis, the correlation between the scores acquired by the subjects in the Raven test and the ones acquired in the abilities grid have to be verified.

Technium Social Sciences Journal
Vol. 19, 684-707, May, 2021
ISSN: 2668-7798
www.techniumscience.com

Table 3 Pearson – Raven Test correlation and abilities grid

Correlations

		Raven Test score	Abilities grid
Raven Test score	Pearson Correlation	1	,622
	Sig. (2-tailed)		,002
	N	30	30
Abilities grid	Pearson Correlation	,622	1
	Sig. (2-tailed)	,002	
	N	30	30

Data acquired show a directly proportionate correlation between the marks acquired on the raven Test and the abilities gained by the students. The correlation is significant (p< 0,001) and shows he fact that a mark indicating a mental disability is correlated with a low mark concerning the abilities gained. The power of the connection between variables is an average one (r=0.622).

Given the strategies that stimulate learning, which have been used during the research, the second hypothesis can be confirmed: *It is assumed that following the application of the strategies for learning stimulation, students confronting with learning difficulties have shown superior results in the school activity.* Stimulation strategies used during the activity are: didactic communication, a different type of conducting the activity each time, a different plan of interacting with students etc.

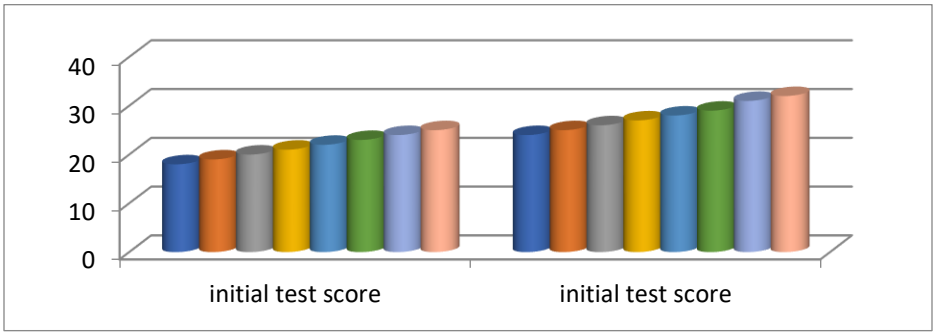

Figure 5. Comparison of the initial test with the final one

The figure above shows an important increase of the score from one test to another. In the initial test, students have acquired a score between 18 and 25 points, while in the final one, they have acquired a score between 24 and 32 points. This important increase of the score means that the strategies used by the teaching staff had a positive effect upon the students with learning difficulties.

In order to identify any changes in the marks acquired by the participants in the study, we have used the T test for the paired samples and frequency comparative analyses have been conducted in the two situations of application (initial and final).

Technium Social Sciences Journal
Vol. 19, 684-707, May, 2021
ISSN: 2668-7798
www.techniumscience.com

Table 4. T test on the independent samples of the initial and final grid variables

Test t for paired samples				
Abilities grid - initial Abilities grid - final	**Mean**	**t**	**Df**	**Sig**
	2,93333	-1,218	29	0,003

The T test shows an important difference between the results achieved in the initial and the final test (t (29) =-1,218; p<0,001), in that the marks acquired in the second application haven't been higher anymore. Thus, it can be concluded that the subjects' marks, indicating learning abilities, went higher after participating in the compensatory and recuperation therapy program.

Table 5. The statistic meaning of the difference between the initial and the final grid

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Initial abilities grid- Final abilities grid	-2,93333	13,19073	2,40829	-7,85883	1,99217	-1,218	29	,003

One could notice that the threshold of importance has the value 003, meaning that the differences between the initial and the final grid is statistically important.

Table 6. The mean of the subjects' results for the abilities grid

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Initial abilities grid	38,7333	30	14,49598	2,64659
	Final abilities grid	41,6667	30	13,11838	2,39508

The table above shows the results of the subjects with respect to the initial and the final grid, thus, one could notice a difference between the initial results (38.73) and the final ones (41.66).

Technium Social Sciences Journal
Vol. 19, 684-707, May, 2021
ISSN: 2668-7798
www.techniumscience.com

Case study 1:

The student with the best results is A. I. G, 15 years old, he is a student in the 6th grade from the School Center for Inclusive Education "Delfinul" Constanța, he comes from the foster home, has an average mental deficiency and the following disease code: F70, F81 and F83.

The student with mild mental deficiency communicates with all his colleagues, interacts with them easily, has difficulties regarding his learning skills, but manages the situation with a little help and acquired the best results in his class. The most important thing is that he attends all his classes and makes progresses every day. It is notable that in the initial evaluation, he acquired 25 points, while in the final one 32 points. His evolution has been remarkable, giving the fact that he acquired 7 points more in the final evaluation than in the initial one.

During the research, the student got involved in all the activities conducted, was interested in what would come next, surprising the ones around him regarding his evolution and progress. He doesn't have communication problems, helps his colleagues, pays attention, doesn't have difficulties in thinking and adapts to every situation.

In conclusion, student A. I. G. had a good evolution, his activities were conducted with the help of a custom intervention plan and it is recommended to be continued this way in order to continue his progress.

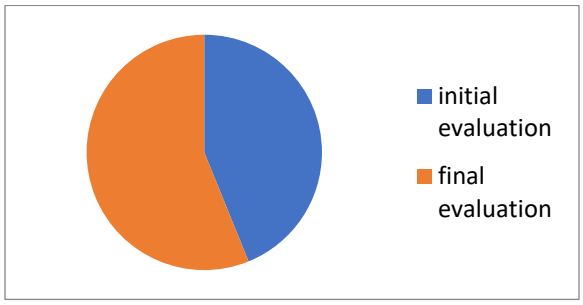

Figure 6. Difference between the initial and the final evaluation

In figure 6, one could notice that student A.I.G. had a score of 44 % in the initial evaluation, while in the final evaluation, his abilities have increased, acquiring a score of 56 %.

Technium Social Sciences Journal
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ISSN: 2668-7798
www.techniumscience.com

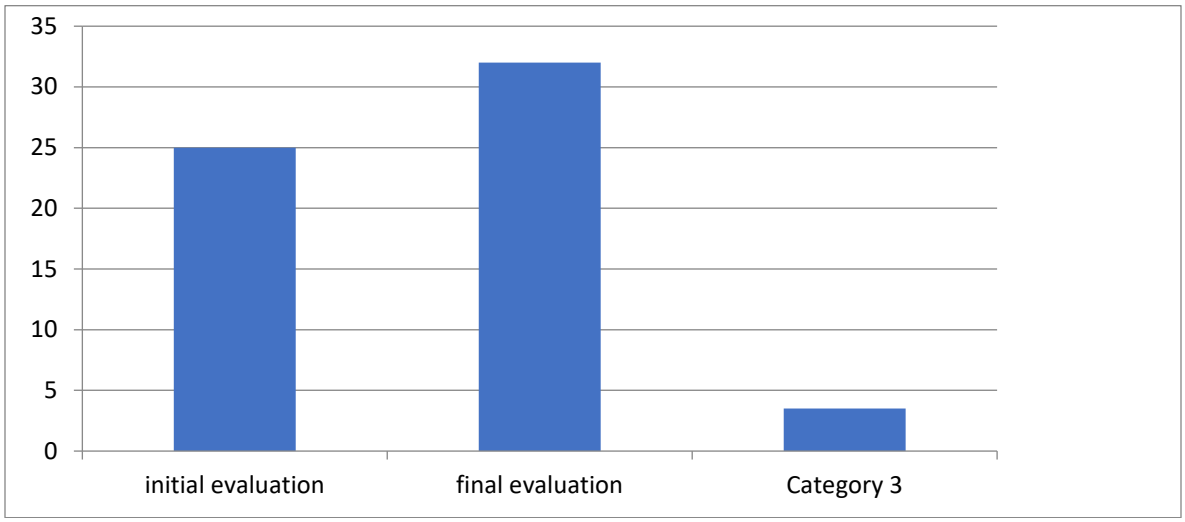

Figure 7. The comparison of the two evaluations

In the figure above, one could notice the student's abilities in the initial evaluation and the progress realised in the final evaluation. The difference between the two evaluations is of 7 points.

Case study 2:

The student that acquired average results is P. N., 15 years old, is a student in the 8th grade in the School Center for Inclusive Education "Delfinul" Constanța, he comes from the foster home, has an average mental deficiency and the following disease code, F71.

The student with moderate mental deficiency interacts and communicates with several colleagues, whether they are classmates or schoolmates, and asks questions if he doesn't understand something. He attends classes, strives to evolve, and this can be noticed in the difference between the initial evaluation where he acquired 25 points and the final one, where he acquired 31 points, a 6 points difference. For the achievement of better results we use a customed intervention plan for each student.

P. N. has a positive behaviour, is not aggressive, strives to achieve better results, memorizes information for a long period, adapts in every situation and does not respond in a negative manner to the tasks and activities he is subjected. He takes part in the therapies conducted in school in order to improve the information acquired.

In conclusion, student P/N. has made many progresses in comparison with the other students who took part in the research and, in order to continually evolve, he must be given attention from all points of view concerning education, as he is a good and sensitive child and wants to learn new things.

Technium Social Sciences Journal
Vol. 19, 684-707, May, 2021
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www.techniumscience.com

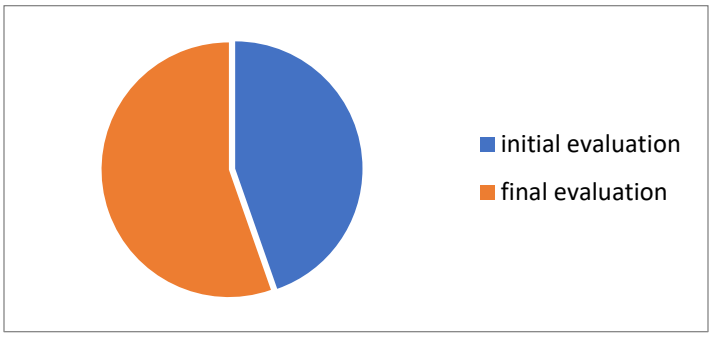

Figure 8. Difference between the initial and final evaluation

One can notice from the figure above that student P. N. acquired a score of 45 % in the initial evaluation and a score of 55 % in the final evaluation, thus, managing to make progress.

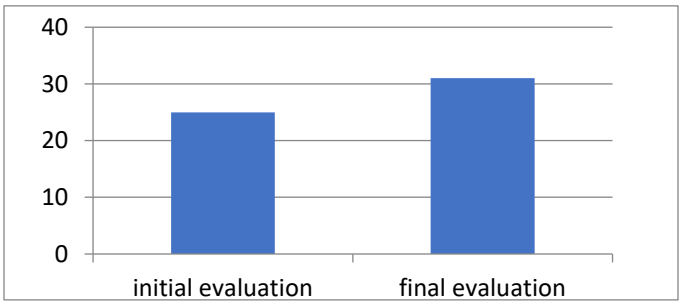

Figure 9. Comparison between the initial and final evaluation

In figure 9, one could notice that the student with average abilities has made a progress by getting a score of 25 points in the initial evaluation and of 31 points in the final one.

Case study 3:

The student with the weakest results acquired in the two assessments is D.M.N., 14 years old, comes from the foster home, is a student in the 7th grade comes from the School Center for Inclusive Education "Delfinul" Constanța; he has a severe mental deficiency and the following codes of disease: F84, F72 and F80.

The student with severe mental deficiency interacts only with his classmates, has difficulty in carrying out classroom difficulty and doesn't ask for help from the ones around him. He shows speech and communication disorders, but also profound development disorders. He takes part in the therapies conducted in school, especially in the speech therapy. In some situations, he refuses to take part in the activities conducted in class, he is hardly convinced to take part in them. As a result of this description, one can realise that the student has a low level in perceiving information.

Given his low level, in order to be helped, one must apply an intervention plan customised to his needs. This can be noticed at the end of the two assessments, in which he acquired the lowest marks out of the students who took part in the research, meaning, of 18 points in the initial evaluation and of 24 points in the final one.

In conclusion, student D. M. N. didn't have a great evolution, but any progress is important for his evolution and it is important that he should receive help in order to make progress and to evolve more and more.

Technium Social Sciences Journal
Vol. 19, 684-707, May, 2021
ISSN: 2668-7798
www.techniumscience.com

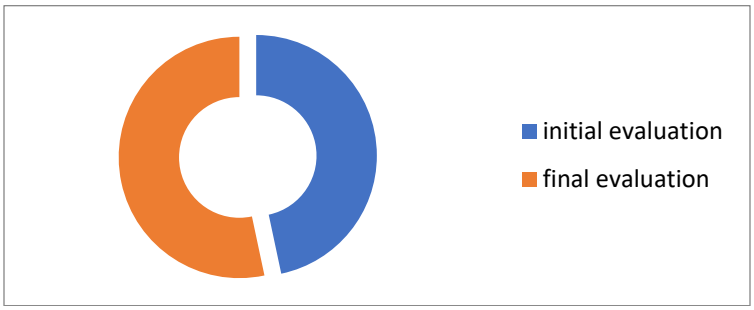

Figure 10. The difference between the initial and the final evaluation

The figure above represents the percent acquired to each of the applied evaluations, the initial evaluation having a score of 47 %, while the final evaluation had a score of 53 %.

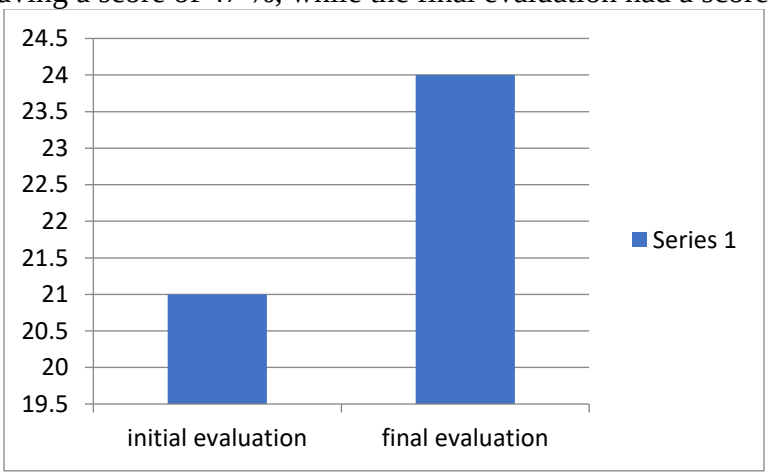

Figure 11. Comparison of the evaluation results

In the figure above, one could notice that even the weakest student can make progresses, this one acquiring a score of 21 points in the initial evaluation and of 24 points in the final one.

Conclusions

Difficulties of learning comprise a large variety of displays, these being the result of multiple factors, the process of identifying the triggering causes being a difficult one. The most important factors in the life of a student are: family and school. The more one intervenes, the better is for the child, as one could help in recovering the abilities lost once with the appearance of the mental deficiency.

Special schools gave an important role in the development of the children suffering from SEN. In the field of special education, the learning process is organized according to the nature, the degree and the consequences of the mental deficiency. The teaching materials have to be adapted to each student, according to his/her cognitive and motor skills, in order for him/her to be allowed to normally develop. With respect to the way the teaching process is organised, it is necessary to perform the specific evaluation of the children and the distinction of the teaching conditions. The distinct and individualised, customised activities are mostly used in order to

Technium Social Sciences Journal
Vol. 19, 684-707, May, 2021
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www.techniumscience.com

acquire the proper corrective-compensatory objectives and the rehabilitation/recovery of some children suffering from several deficiencies.

The distinction and the individualisation of teaching – learning is based on the principle of attainability of knowledges and skills. This can be achieved by selecting and scoring the scientific information and exercises that result in the achievement of skills.

The results of the evaluations using different instruments (Raven Test and the observation grid) have registered conclusions similar to the theoretical aspects presented in the first part of the study. The mental deficiency trains the general state of late response which, based on the degree of prejudice, could be mild, moderate or severe.

One could emphasize the fact that the chronological age does not correspond with the mental one. The students need more time to acquire information while some of them have a short memory and a mechanical way of learning. One could also show the fact that the results acquired by the students do not correspond to their chronological age, between 12 and 18 years. The age represented by these in the applied tests is between 7 and 11 ani.

We continue to work with these students in order to achieve the most common and important information. The teaching staff use strategies and certain methods to stimulate, motivate, know their interest and make them pay attention during a lesson/activity and positively evolve, at the same time.

The present research did not only investigate the level of cognitive development and determine the degree of impairment. By organising a proper therapeutic intervention which could respect the individual's traits, one could achieve the compensation of different deficiencies; a therapy program for developing/correcting cognitive and motor behaviour has also been applied during the study.

The main objectives of the program aimed:

- to create colour and form perceptual motor structures;
- to create the capacity of spatial orientation – matching spatial locations;
- to create the capacity of temporal and spatial orientation;
- to create the capacity of strengthening the laterality;
- to create the capacities of body scheme.

Specific activities have been created and implemented for each of the program's objectives and each student according to his/her needs.

The results achieved following the pre-/post-learning application showed the following aspects:

- There is a major difference between the mean of the age related to cognitive development with regard to the participant students, the difference between the chronological and cognitive age of development being diminished.
- Students have improved their abilities in all the assessed aspects which target learning difficulties: speech impairment, writing, cognition, arithmetic and memory.

The degree of evaluation was different for each student, as there are cases that showed a real progress and others in which the subjects showed a minimal evolution. These situations were presented in greater detail during the case studies. These differences are the result of the individual power and of the personal equation, unique for each student, as well as the result of the diagnosis severity and the presence of the associated disorders.

Technium Social Sciences Journal
Vol. 19, 684-707, May, 2021
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