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THE IMPORTANCE OF MEDIATED LEARNING IN PRIMARY SCHOOL EDUCATION[1]

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Abstract: *The present paper represents a research on the importance of using mediated learning (concept introduced by Reuven Feuerstein in his research concerning the Mediated Learning Experience) in the primary school environment. The purpose of this research carried out on a group of 60 primary school pupils from Brasov, Romania, is to highlight the correlations between mediated learning and attention, language acquisition, reading, and problem solving of primary school pupils. The results show that attention, language acquisition, problem solving and reading skills are strongly boosted by the mediated learning experience that implies focus, verbal and motoric mediation and different levels of mediation needed in the learning process.*

Key words: *mediated learning, mediation, primary school education, Feuerstein Method.*

1. Introduction

Feuerstein's Instrumental Enrichment method is part of cognitive education and focuses on that part of education that is most capable of change: the child and his or her educator. The specificity of Feuerstein conception and method is precisely the emphasis placed on the role of the adult in making progress in the thinking and learning ability of children. Therefore, the parent, the educator, the teacher or any other interventionist becomes the organizer of life experiences, leading to cognitive development and to structural changes. The experiences of mediated learning explain the diversity of human nature and its capacity for modifiability.

The variety of researches and situations presented in this article represent a small sample, but significant for the relevance of the experience within the mediated learning aria. Their purpose is to incite and emphasize interpersonal relationships in a society marked by speed and complexity in which habits, beliefs and lifestyles seem to be neglected as a link between generations and as a basis for cognitive and affective development.

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Everyday millions of children and adults wake up to face discouraging educational challenges, social and cultural disadvantages, turmoil and many more. The customized Feuerstein methods, approached in two stages, allow people get to their optimal potential and help them overcome their own difficulties, regardless of age, previous experiences or level of achievements in the present.

The first step is to measure the learning potential of the pupil/student, using the Learning Potential Assessment Device (LPAD) - a series of cognitive tests applied over many days. After this evaluation, an individualized intervention by a team of professionals is quantified. The intervention takes the form of an Instrumental Enrichment (IE), tasks in analytical perception, comparisons, classification, orientation in space and time and is applied by means of Mediated Learning.

Mediated learning involves a strong interaction between the learner and a mediator, who interprets both external stimuli and the response to those stimuli. IE focuses on process rather than content, so the pupil/student learns how to learn, the strategies that help him/her in the process of learning. Many of the students who benefit from Feuerstein method can later integrate into the classical education system. The method can be customized for the specific needs and abilities of the pupil/student, including those who have severe learning disorders; cognitive, behavioral or developmental disorders; social and cultural disadvantage.

2. Theoretical background

The Feuerstein method aims at two fundamental objectives:

- increasing the skills of the educator, which can provide children with meaningful life experiences for cognitive growth;
- developing fundamental cognitive skills, by: promoting the development of the conceptual framework of children and adolescents with learning difficulties; offering and acquiring by the children conceptual instrumental systems, with the help of which they can understand the world and adapt to it better, they can acquire new knowledge, with which to operate and become creative.

The theoretical framework on which Feuerstein method was built and its entire practical development is made up of the following key concepts (Mara, 2004): priority of the cognitive sphere; modifiability of intelligence; acceptance of disability; educational optimism.

These concepts derive from the theoretical systems of learning developed by J. Piaget and L. S. Vîgotsky, not without involving a personal touch. Reuven Feuerstein built a personal theory, which differs from its original sources.

To conclude: both at Feuerstein on one hand, Piaget and Vîgotski on the other, ideas regarding the internal organization of the child's thinking, operability and the relationship between thinking and action are fundamental. Feuerstein followed the theory of the Russian psychologist in those aspects that differentiated it from Piaget's theory. He shares with Vîgotski the importance of cultural transmission (cultural heredity), the role of society and language, and with Abraham Maslow and Carl Rogers he shares respect for the person as an individual who acts to achieve the goals.

On these foundations were developed the theory of mediation, structural cognitive modifiability, modifying environment. Feuerstein addresses this problem in a pragmatic way, not only confining itself to theory or offering operational suggestions, but also creating a series of tools that allow the application of its theory in practice.

Feuerstein considers that there are two ways of learning - a direct and a mediated approach (Skuy, 2002):

The direct approach is based on Piaget's formula:

S - O - R

Which means that the organism (O) or the learner interacts directly with the stimuli (S) of the surrounding world and issues responses (R). In such an interaction with the environment, learning appears incidental, being considered by Feuerstein - though fundamental and necessary - insufficient to ensure effective learning.

Mediated learning, the second approach, is essential, guaranteeing learning efficiency. Thus, Feuerstein enriches the S-O-R formula, proposed by Piaget, by interposing a human mediator between the universe of stimuli, organism and its responses. The new formula obtained for mediated learning is:

Mediated approach
S - H - O - H - R

where H represents the human mediator. The mediator intervenes in the relationship between the learning organism and the universe of stimuli, in order to interpret, guide and confer meaning on them. In such an interaction, learning becomes intentional.

Both types of relationships - direct and mediated - are necessary for optimal development.

The program proposed by Feuerstein, Instrumental Enrichment (**IE**), is based on the theory of the modification of the cognitive structure, according to which much of the person's modifiability is directly related to the quantity and quality of the mediated learning experiences (**MLE**) to which he was exposed (Feuerstein et al., 1986). Thus, above the constitutional, organic and genetic factors of human development, this type of interaction affects the cognitive functionality of the individual, rather than direct exposure to stimuli. The ability to benefit from direct exposure to stimuli, no matter how many or few they may be, is contingent on the nature of the mediated learning to which the person was exposed. The more a person is exposed to MLE, the more he / she will be able to benefit from direct exposure to stimuli and become more efficient.

MLE are neither accidental in terms of content nor language. Very subtle messages, which are no less powerful because of their subtlety, can be communicated non-verbally, through gestures or through body language. Despite a totally pre-verbal communication, the mother of a newborn child performs an efficient mediation with it. She will do everything she can to get the child's attention to her. She will open her eyes wide, vocalize, change her facial expressions; she will do many things that are clearly guided by her intention to make the child relate to her, to focus on her, to refocus when

the contact is lost. Only by organizing and structuring a set of events, so as to make the child aware of sequencing and programming, will he be able to influence how he will interact with the stimuli.

Starting from Piaget's and Vîgotski's theories, Feuerstein was not only interested in analyzing the functioning of the intelligence itself, but also in intelligence as a human resource that can be enriched and improved. He particularly looked at how cognitive deficit might be overcome, emphasizing that the presence of a good mediator able to maximize the subject's capabilities can significantly reduce (sometimes even cancel) disability.

The concepts of *learning potential, cognitive modifiability* and *mediation* are the foundations of Reuven Feuerstein's psychological theory (Mara, 2009).

The *learning potential* is a sum of latent virtual behaviors that require some involvement in order to be transformed into manifestations. However, the human mind is not limited to having a latent potential, however preconstituted, which can become manifest, its possibilities being far superior. Through the action of the educator (the *mediator*, as defined by Feuerstein), those capacities that otherwise could not exist can be formed.

Cognitive modifiability refers to the ability of human beings to change their own cognitive functioning structure in order to adapt to life-long situations. Modifiability is not a mere reflex act to external stimuli, but a response to internal changes that, such as growth, are the result of a series of voluntary and conscious acts that can - and in some cases must - be guided by someone from outside.

By *mediation* is meant that intentional and active intervention that the educator/mediator offers to the children/people with whom he/she interacts, aiming at the best development of their capacities and achieving by them, gradually, a level of full autonomy.

In the past, a number of factors were considered responsible for the low intellectual development of children. These included cultural differences, low socio-economic status, poverty and other endogenous or exogenous factors. The question, however, is whether cognitive functions, necessary for learning are deficient only when these determinants are combined with the lack of interactions of mediated learning experiences (MLEs). Reuven Feuerstein (Feuerstein et al., 1986) called the phenomenon *cultural deprivation*, because, in essence, the child who was not exposed to mediation is deprived of his own culture. The too-limited investments made by the adult generation in expanding the child's needs system and in cultural transmission are felt in the child's limited ability to adapt.

In a mediated learning experience, the adult interposes between the child and the environment. The adult mediator intentionally filters and focuses the stimuli, arranging and organizing them, adjusting their intensity, frequency and sequentiality. Spatial, temporal and causal relationships are created to link them to other stimuli that preceded them or will follow. Thus, the mediator creates for and along with the child relations between stimuli, which will invoke the past and anticipate the future. Stimuli that were previously perceived by the child in an incidental manner, due to their occasional occurrences, will be perceived in a very different way as soon as the mediator

will organize, select and emphasize their meaning. Since the child has experienced the interactions of mediated learning and has learned to concentrate, observe and differentiate, he will spontaneously continue to interact with the objects, in an active rather than passive way.

In the experience of mediated learning, it is important for the child caregivers to be aware of their role and to act according to mediation criteria that positively condition the child's abilities to change the structure of his or her cognitive potential. Here are the main criteria for mediation (Skuy, 2002):

Mediation of intentionality and reciprocity

• intentionality and reciprocity are the main conditions for the realization of the mediated learning experience;

• the mediator puts into practice the intentionality when guiding the interaction towards an objective, selecting, organizing and interpreting certain stimuli;

• reciprocity is verified when there is a good response from the subject and it is shown that he is receptive and involved in the learning process; reciprocity is an essential aspect in the development of the child, because he realizes that his actions can be decisive in the action with the world;

• the three elements that influence and are involved in intentionality and reciprocity are:

- the mediator - whose language, rhythm, voice intonation and gesture can be used to increase intentionality,
- the mediate - whose attention field, level of interest and availability influence reciprocity,
- the stimulus - (presentation of ideas and material) that may exhibit variations in amplitude, repeated presentation and mode of exposure, to facilitate both intentionality and reciprocity.

Mediation of meaning

• meaning is the emotional and energetic principle that requires mediators to ensure that the stimuli presented to children reach them;

• mediation pf meaning occurs when the mediator communicates to the other the meaning and purpose of an activity;

• the meaning is mediated by granting meaning, both at the cognitive / intellectual and emotional level: the values and beliefs are communicated at the cognitive level, energy and enthusiasm are communicated at the affective level.

Mediation of transcendence

• appears when the mediator acts in such a way that the experience of the mediated learning is detached from the context in which it occurred and goes beyond its limits, expanding and diversifying the mediated person's needs system;

• its purpose is to promote the acquisition of principles, concepts and strategies that can be generalized and used in new or similar situations;

• it involves: the association of some present events with past or future ones; engaging in reflective thinking in order to reach a deep understanding of the situation; collateral thinking on experience and problems.

Mediation of competence

• occurs when the mediator helps the mediated person to develop the self-confidence necessary to successfully engage in the activity;

• contributes to the awareness of the child of what he already knows, of the route he is able to take, helping him to use his skills optimally;

• the ways in which competence can be mediated include: selection of stimuli at the level of expertise of the mediator, rewarding the mediator's responses to the stimulus, explaining those strategies used by the media that result in the success of the action, focus attention on the successful parts of the activity, even if the activity itself is not successful.

Mediation of self-control and behavioral control

• occurs when the mediator intervenes to make the mediatee aware of the need for self-monitoring and adjustment of their own conduct;

• adapting the behavior in response to certain particular aspects of the task involves: impulse control, the division of complex problems into smaller parts, systematic approach to the problem, rather than trying to guess the solution.

Mediation of participation behavior

• it occurs when the mediator and the mediatee or a group of people engaged in learning take part in an activity and work together: the mediator shares his ideas and feelings and encourages the mediate. to do the same;

• participation represents the mutual need for collaboration, both intellectually and emotionally; this involves listening to the point of view of others and paying attention to their feelings;

• mediation of participation emphasizes cooperation; the consequence consists in promoting competence in social interactions, through the following: a trustworthy environment is created through mutual self-disclosure, self-image improves when successes are shared, and failures are overcome with the help of an empathic listener, sharing ideas, both verbally and in writing, helps to develop cognitive processes and clarify confused thinking.

Mediation of the individualization process

• it involves cultivating the autonomy of the individual and the uniqueness of his personality;

• the mediator emphasizes the interpersonal differences due to life experience, individual abilities, different behavioral styles, motivation, affectivity and other characteristics and encourages the mediator to use his or her own potential.

Mediation of goal planning

• it involves encouraging and guiding the mediator in his attempt to set goals and revealing explicit means for achieving them;

• the aspects involved in planning and achieving the objectives are:

- setting realistic and appropriate objectives for the situation
- planning the means used to achieve these objectives,
- taking the necessary steps to reach the objectives,
- evaluation and review of the achievement process,
- modification and adjustment of objectives as needed.

Mediation of the challenge of interest

• it involves stimulating the person's desire to explore something new and the determination to persevere in a difficult task;

• it can be done in several ways:

- modelling an open attitude, positive when confronted with new and difficult situations;
- facilitating the confrontation of the media with new and complex tasks;
- encouraging the manifestation of creativity, curiosity and originality, when confronted with new tasks,
- rewarding the success of the mediate and reflecting on his feelings of satisfaction;
- encouraging the taking of appropriate and realistic risks in relation to various tasks and situations.

Mediation of the self-change process

• it occurs when the mediator encourages the mediated person to become aware of the existence of the dynamic potential for change and to recognize its importance and value;

• involves: the recognition of the process of self-change - the change comes from yourself, the expectation of evolution - the competence level of an individual is constantly changing and improving, monitoring the change - tracking the changes that occur, accepting and welcoming change - accepting the fact that people normally have to change (*Change is the most stable characteristic of human beings*, Feurestein, cit. in Skuy, 2002, p. 64).

Feuerstein uses the term *academic incompetence* to refer to insufficient knowledge, absence or low level of necessary cognitive functions (Feuerstein et al., 1986). He aims to tackle the problem of academic incompetence through an intervention program that addresses, in principle, the preacqusitions of thinking and learning. This program, *Instrumental Enrichment* (IE), is not a substitute for direct learning of specific academic content, but complements it. IE intends to produce motivational, cognitive and social changes for individuals with low levels of academic functions. The main hypothesis of IE is that individuals can be modified, regardless of the level of their functions, the ethology of their functionality, the severity of their conditions or the age at which the specific intervention is offered.

The mental functions were divided by Feuerstein as follows:

Input – it refers to the gathering of data that comes from the environment into the mind.

Elaboration – it refers to the work followed by thinking, which is based on one's own information, to use in solving problems.

Output – it refers to the ways of communication to the world the solutions obtained in the elaboration phase.

The human mind possesses these qualities to a lesser or greater extent, depending on certain factors, including the fact that they have been requested in a certain way. A poorly used cognitive function may be deficient or even absent. For example, working with young people, it is much easier to realize the shortcomings, because incomplete or inaccurate thinking is determined precisely by what did not work, by the elements that

were not suitable for the request. For this reason, Feuerstein classified the cognitive functions in the three phases, highlighting the deficiencies as deficient cognitive functions.

Generally, the deficiencies are located at the periphery of the cognitive functions, so in input and output, even if, at first impression, one would think that in the elaboration phase. This is also due to the difficulties existing in one phase and which can greatly influence the efficiency of others.

The deficient cognitive functions divided into the 3 stages are:

Input. Deficient cognitive functions in the input determine quantitative and qualitative alterations in the data collection. The reasoning will be based on insufficient and / or incorrect data, therefore, as a result, the person will not be able to provide adequate answers.

Typical deficiencies in the input stage include: unclear, swept perceptions; impulsive and non-systematic exploratory behavior; erroneous verbal tools and receptive concepts; poor temporal and spatial orientation, including the lack of a system of spatial and temporal references; lack or deficit of constant before the transformation of one or more attributes; lack of need for accuracy or precision;

Elaboration. The deficient functions in the elaboration phase compromise the use of the information collected in the input phase, even if the collection was efficient.

Deficiencies in the development phase include: inadequacies in defining a problem; inability to select useful information; lack of spontaneous comparative behavior; narrowness of the mental field; lack or low need for summative behavior; difficulties in designing potential relationships; lack of need for logical evidence; lack or limited internalization; lack or limitation of deductive reasoning; lack or deficient hypothesis testing strategies; lack of planned behavior; episodic grasp of reality; non-elaboration of certain cognitive categories, because the necessary labels are not part of the verbal inventory of the individual at the receptive level or are not mobilized at the expressive level.

Output. It may happen that the data collected in the appropriate manner in the input phase, correctly elaborated, will be translated by wrong answers when the functions are deficient at output level. This is because the communication of the solutions reached in the elaboration phase is compromised.

Deficiencies in the output stage include: self-centeredness; lack of verbal tools to communicate adequate elaborate answers; deficiency in visual transport; lack or need for precision and accuracy in answers; wrong behavior; impulsive behavior;

The deficiencies are not irreversible, and their reversibility has been demonstrated either during the clinical experimental activities or during the activities pursued with the dynamic evaluation program.

The essential components of any task can be schematically divided by means of parameters, on the basis of which the working methods of the subject can be analyzed and interpreted. All these components form the so-called cognitive map: a kind of *map*, which takes into account the relationships between the characteristics of a task and the benefits obtained (Kopciowski Camerini, 2002 cit. in Mara, 2004).

Language. Each task (any activity of life) is presented in a certain linguistic way: verbal, graphic, gestural, symbolic, numerical, and / or a combination of several different languages. The modalities in which a sample is presented determine, in a decisive manner, the solving of that task: for example, a person with dyslexia may have great difficulties in presenting a verbal test, but not in presenting a numerical test.

Content. The mental act is concentrated around the content. The competences of a person in facing a particular problem are directly related to the cultural context in which it was integrated and to the previously acquired notions. If he is proposed to solve a problem that is not very demanding, but which requires certain skills, the person may fail not because of a mental deficiency, but because he has not acquired the necessary concepts beforehand.

Cognitive functions involved. Even if the distribution between the three phases (input, elaboration and output) is not categorical and there is no real interruption between the phases of the mental act, their individual analysis is very useful. Isolating a phase helps to highlight the weaknesses and strengths of cognitive functions and, consequently, helps to locate the causes that have generated inadequate responses. For example, they are capable of perfect elaboration, but not of collecting the data in a correct manner and constantly make mistakes. If solving requires more data collection, it will be a failure, if it requires elaboration, the problem can be solved correctly.

Cognitive operation, The cognitive operation is required by the mental act, namely by the fundamental mental act necessary for the resolution of the task, which has as a predication a series of cognitive functions strictly related to each other. A mental act can be analyzed after the operations through which an information is organized, understood, elaborated or used to provide, in turn, new information. The operations involved may be simple (identification, comparison, etc.) or more complex (analogical reasoning, syllogism, etc.).

Level of complexity. The level of complexity is defined by the quantity of information to be used to solve the problem, the order in which the information is presented, and the level of abstraction that must be reached to solve the problem.

The level of abstraction is the distance between the mental act and the object to which it refers. A mental act centered on a physically perceived object corresponds to a low level of abstraction. The act of abstraction is a voluntary act, which allows the individual to observe the general things and to abstract from the individual ones: the differences are avoided to highlight the similarities.

The level of efficiency is required in the case of the mental act. The level of efficiency is composed of elements that can be objectively measured: the speed of operation, the precision and an element that can be evaluated subjectively, which is the effort invested. The level of efficiency depends largely on the consolidation of the mechanisms required to solve a task. The more recent the acquisition, the more vulnerable and unstable, therefore the efficiency level cannot be high.

3. The Research Design

Oriented towards the concepts and methodological principles of the Instrumental Enrichment Program, we set out to investigate the possibilities of increasing the efficiency of cognitive functions for overcoming the school difficulties of avoiding failure and dropping out by initiating a training that will blur the gaps and ensure a safe intellectual development.

The interest in developing the knowledge and skills of primary school children with developmental risks is not limited to children with special needs, but also refers to socially and culturally disadvantaged children, irrespective of their level of endowment (low, medium or higher). In their efforts to meet the academic demands so high today, many students without developmental delays or special needs reach school failure. As a result, their chances of self-satisfaction and good social integration are jeopardized. Some children's deficiencies are not due to their innate cognitive characteristics, but to other, contextual causes such as: lack of experience in a specific learning context, lack of prior knowledge, lack of adequate language and transferable strategies, due to lack of adequate mediation. By appropriately approaching the task, by encouraging the transfer from similar situations, by learning strategies and notions, the child can exceed his/her usual level achieving a higher level of cognitive performance.

Research objectives:

1. Identification of the initial level of neuropsychological development and of the socio-emotional level of the primary school pupils from the experimental and control groups.
2. Experimentation in the Romanian school of the Enriched Instrumental Program through the control / instrumentation of some cognitive modules: attention and executive functions, language, sensory-motor functions, visuospatial processing, memory-learning and socio-emotional development of children.
3. Evaluation of psycho-pedagogical acquisitions in primary school pupils following the application of the Instrumental Enrichment Program.
4. Evaluation of the socio-emotional development of primary school pupils as an effect of applying the Instrumental Enrichment Program.
5. Defining the usefulness of the Instrumental Enrichment Program in educational activities.

Research hypotheses:

General hypothesis: By applying the Instrumental Enrichment Program, significant changes are made in the neuropsychic development of primary school pupils with borderline intellectual functioning and typical pupils.

Specific hypotheses:

1. We assume that initially between the two groups of subjects there are no significant differences on the five basic cognitive fields: attention and executive functions, language, sensory-motor functions, visuospatial processing, memory-learning.
2. After measuring the degree of socio-emotional development of the children from the two groups, it is found that there are no significant differences.

3. It is assumed that following the application of the Instrumental Enrichment Program and the neuropsychological evaluation of the children from both groups, significant differences will be registered in the five cognitive domains.

4. The application of the Instrumental Enrichment Program to typical pupils leads to an increase in the level of psycho-educational acquisitions.

Research variables:

Independent variables: gender and cognitive performance of the two groups.

Dependent variables: language performance, attention and executive functions, memory, learning, sensory-motor functions, visuospatial processing, socio-emotional development, intelligence, school results.

4. Methodology and Research Groups

The research was carried out on a number of 60 primary school pupils, aged between 8 and 10, enrolled in mass education in Brasov. The research group consists of 60 typical children, each of this category being divided, in turn, into two groups, namely experimental group (30 subjects) and control group (30 subjects).

The typical school population designated to constitute the experimental group and the control group is selected from the pupils enrolled in two schools in Brasov, respectively School no.8 and the School no.3. Those included in the experimental group were divided into groups of 5 subjects, benefiting from intervention by two mediators (a psychologist and a teacher) who were able to apply the Instrumental Enrichment Program.

The performances of the experimental, typical group are compared with those of the typical control group that did not benefit from the Instrumental Enrichment Program.

The experiment was carried out for a period of 1 year, as follows: the initial evaluation period, carried out with the help of the LPAD Instrument, was of 2 months, followed by the intervention period with FIE, extended by 8 months and ended with the final evaluation period of 2 months. The intervention with the FIE instruments was performed in two weekly sessions of 1 hour and 30 minutes each.

Formative stage. Experimental study on the controllable cognitive valences of the Instrumental Enrichment Program

Specially conceived as a training program for typical children, in our investigation we aimed to control three cognitive aspects: attention and executive functions, language, memory-learning.

The operational objectives of the training phase consisted of: organizing an educational environment stimulated by instrumental activities and supported emotionally; systematic observation of children in activities of mediated learning; selecting the representative stimuli from the physical and social environment for sensory stimulation, training of working skills and problem solving; stimulating children's thinking on the dimensions of verbal expression, productivity, flexibility and independence; stimulating verbal and non-verbal communication; increasing self-esteem.

In monitoring the training experiment, we assumed a set of conditions and opportunities for mediation, which would ensure significant progress in all subjects:

understanding the task of learning through the message and the verbal instruction given in various contexts (of productive-practical activity and cognitive activity); distinguishing the content of the task from the conditions and requirements of achievement; planning the stages of carrying out a work and to control the execution; resorting to general operational procedures to carry out practical and cognitive tasks; differentiating the control operations from those of orientation and those of own execution; detecting the mistakes made and remedy them; applying in new situations and conditions the learning competences.

Content of the training phase: structural analysis of activities

The purpose of the Instrumental Enrichment Program is that, through special activities, it will correct or enhance the cognitive functions that ensure the efficient functioning of the thinking.

The duration of the program in our experimental version lasted for a period of 32 weeks, the frequency of meetings was twice a week in sessions of 90 minutes.

Organizing an activity of the Instrumental Enrichment Program. For this, it is not foreseen a rigid programming, although it is good to take into account the assurance of four indispensable moments in the structure of the lesson: introduction, individual work, discussions and conclusions.

Preparation of the lesson

Each activity within the Instrumental Enrichment Program corresponds to a page drawn up in terms of the cognitive map, specifying the strategy, methods and exercises that the mediator should focus on in order to prevent the difficulties that the students might have. Each page has its objectives set, its proposed principles for development have been determined, and academic examples and applications have been established, from the vocational sphere, from the daily experience or related to the human relations. The classroom was organized according to Feuerstein's conception, namely in the circle or the shape of the letter U, facilitating the movement of the mediator and the possibility of easily establishing the visual contact between the children, as well as between them and the mediator.

The lessons in the FIE program started with an introductory discussion that did not exceed 10-15 minutes. This stage was aimed at presenting the objectives, defining the exercises and capturing the attention by creating motivation.

Introduction - The purpose of the introduction is to awaken the interest of the group towards the activity that it will carry out and to define the problems that will have to be addressed in order to reach the specific objectives of the page. It starts with a summary of the data from the previous lesson; the mediator makes sure that the concepts, requirements and vocabulary needed to solve the task have been well understood: young people will gradually learn to follow the preliminary analyzes of the page independently, but at the beginning of the course it will be useful for the teacher to guide them in the observation, verbalization and in identifying the objectives.

Individual activity - The next stage is reserved for independent work. Students work independently for about 25 minutes in each activity, this period varying according to the nature of the tasks on the page. While students are working individually, monitoring is needed to help those in distress and to encourage those in need. At this stage, the

mediator observed the process in which the student was involved and noted any source of difficulty. The mediator initiates discussions between students focused on specific FIE issues. A major purpose of the mediator is to develop the independence and self-confidence of the children, by learning to verify and evaluate their own work.

Discussion and development of understanding. When most of the children have finished their work, the class, as a whole, is provoked for a discussion about the various solutions found. Being fundamentally interested in the mental processes that led to a solution, it is good to stop on both the right and wrong answers, in order to understand the processes that led to the solutions found. Following this, the mediator, together with the students, reveals the efficiency of divergent thinking in achieving the answers. Although different solutions proved to be correct, children were given time to reflect on a single appropriate answer. The mediator and the children analyzed the difficulties they faced and how they discovered them. Thus, the vocabulary, concepts and operations used were summarized. The principles presented in the introductory phase were developed, elaborated and applied in discussions on new or possible situations.

Bridging. Following the discussion, the mediator encourages children to consider how concepts, vocabulary, operations and strategies can be applied outside the lesson situations themselves, situations in the broad field of personal, family, vocational, and social life.

Summary of the lesson. At the end of each lesson the activity of review intervenes. Even if it is short, it must highlight the steps taken to reach the goal, the words acquired, the objectives previously set and the strategies established for their acquisition.

Mediation distance. As in any supervised activity, between the two actors of the learning act a bridge is created, different from one situation to another, depending on the level of intervention reached. The ultimate goal of a good mediator is to disappear over time, beyond suggestions, support and effort, leading the subject towards achieving autonomy in processing, action and evaluation. Thus, three levels of mediation distance are distinguished:

The basic level, between 0 and 3, applied to subjects with difficulties

- 0: the mediator produces the answer, the subject being passive (the mediator works in his place): the level of distance is very small, and the degree of mediation is very high.
- 1: the subject is in the imitation stage, risking fragile steps to achieve what the mediator does: he often comes out of the state of passivity, but is quite dependent.
- 2: the mediator guides the subject towards the identification of the elements. The subject becomes participatory and begins to respond spontaneously.
- 3: the mediator presents the general characteristics, and the subject acts according to the model, repeating, but introducing some variables.

Medium level of distance, moderate degree of mediation

- 4: the mediator refers to the concepts already acquired. The subject is in the state of reflection, he thinks about how he did it, he redo the route, searching in the database of mediation he has already received is a passage: crystallized thinking.
- 5: The mediator selects and encourages the strategy based on insight and observance of the rules. The subject applies the rules, knows different strategies, the mediation intention is not wide.

- 6: the subject is able to apply the rules, the mediator becomes very important, making transcendence at the linguistic and reflexive level, the subject operates and uses strategies.

High level of mediation, high degree of importance of metacognitive aspects

- 7: focus, the subject formulates the rules;
- 8: metacognition, the subject identifies the elements of efficient structural change;
- 9: validation of results and autonomous transfer of them in other life situations (cognitive transcendence);

5. Analysis of activities in terms of the mediation criteria, the mediator's actions and the cognitive functions involved

The mediation of intentionality and reciprocity is achieved through the initial dialogue between the mediator and the children, asking the latter to ask themselves questions, activating a self-process. This criterion was respected during the activities by establishing the clear goals and objectives of each meeting, the mediator being fully built on the intention he has with children. At the beginning of the meetings we analyzed the content planned in terms of the cognitive map, explained the goals, where we want to reach, what we will do and why we want it. The lesson material was presented and the children were asked to say what they think they should do during this activity. In order to obtain reciprocity, the mediator has ensured that the student wants to accept the situation-stimulus offered and participates in the interaction motivating him to involve his senses (to look, to listen). To this end, we started the activities with a motivating story or with surprising, paradoxical moments, which can catch the child's attention: humorous stories or contradictory demands on what the children are asked to accomplish. Our focus was on highlighting small differences, repeating in different ways to be sure that the subject will not always hear the same thing, to prevent boredom, to capture the relationships between elements and events, giving children the time needed to develop the answers.

Mediating transcendence means moving beyond the immediate goals of the task and the entire content to move toward general goals and principles that transcend *here and now*. The work of the mediator consists in structuring in time the satisfaction of the needs, the organization of the modalities and the establishment of the sequences that lead to the identification and postponement of solving the immediate stimuli. In this way, FIE stimulates the anticipation of the results of their own actions and the overcoming of the present. This characteristic is typical of human beings as unique beings capable of postponing an immediate benefit for a later purpose. The *here and now* character of the interaction is overcome by describing the present activity as an element related to the past or future, to other things and actions past or future. The mediator has stimulated children to find something similar elsewhere or in the past, arousing the interest of finding out where things come from, because everything has a history, and this makes us understand the present better. By expanding the needs system, looking for a superordinate concept and making frequent comparisons, I determined to find the possible usefulness of a rule or principle in the future. Students

were determined to make assumptions, to deduce a general rule or principle, to discuss a strategy and to generalize it beyond the obligation that it must fulfill, being stimulated to indicate what is important and why and how they can you know the importance of those discussed. Therefore, the mediation of the transcendence consisted in focusing the mediator on going beyond the scope of the topic under discussion, analyzing the things and procedures used as elements in relation to them, directing the children to learn the facts and strategies for solving tasks by focusing attention on temporal, spatial, causal connections. The interventions of the adult did not involve performing the tasks, extracting the rules and principles by him only because the work is progressing faster, but it was materialized in the observation and coordination of the actions through well-dosed and subordinated questions to the mediation.

Mediation of meaning, closely related to the first two, involves motivational aspects, that *why and for what purpose?* This third criterion of mediation has two activating factors: focusing the subject on the experience, relationships and concepts important for learning and creating the need to learn. to find broader and personal meanings for the learned. The mediator indicates what he has for him half-faction directing the concentration of students towards the self-motivation of the autonomous research of the meaning, causes, events and even of their own existence. Mediation of meaning involves indicating the meaning of an interaction, adding new affective, cultural, religious meanings to a word, event, object, other than those inherent in them, and indicating the value of the interaction. This approach is made possible by the action of the mediator in anticipation of future events, mentioning the importance of this interaction, clarifying what this means for him, indicating the meanings of the words depending on the context, indicating the special emotional meanings that things can have for them. people, (e.g. things they have received as a gift, past experiences, a symbol) adding extra significance to celebrating holidays, festive meals, cultural events, traditions, preparation (costume) for different occasions.

The mediation of competence can be instrumented by involving the subjects in creative activities; each protagonist develops his / her competence knowing his / her progress in the expression of the degrees of fluency, flexibility, originality, elaboration and utility. The competence can also be derived from training, the feeling of competence arises from the reflection on the social meanings projected in the future, of the actual acts; it is, therefore, after Feuerstein, the effect of a mediated construction. Focusing solely on results tends to highlight one's shortcomings, while focusing on self-improvement will develop a sense of competence and mastery. For this purpose, subjects with medium difficulty level, although complex and new, were chosen to give satisfaction. During solving the tasks of the program, the mediator emphasized the positive aspects of each answer with the emphasis on the route for obtaining the results, even when the answer was not perfect; the description of the course through positive appraisals from the mediator referred to both the starting situation and the achievements of others. In order to develop a realistic and positive self-image, the children were offered the criteria according to which they can evaluate their performance.

Mediation of behavior control. The approach to a problem appears different from one individual to another: needing stimulation to action, or reacting impulsively, - there are two major tendencies. The mediation action aims to generate knowledge that, under different tasks, requires different approaches, with different levels of precision and accuracy. In this way the student, instead of spontaneously acting on the primary characteristics of the stimuli, will focus on processing on the demands of the task. In order to control the inhibition, the mediator has prepared the topics regarding their cognitive aspects in order to achieve a degree of difficulty of the pregnancy and the possible risks in the resolute approach. Children were offered means of assessing the degree of difficulty and risks, and through this means, of checking availability for impulsivity.

To this end, some activities began with the organization of games to develop the ability to control impulsivity, such as those asking for singing in series of segments, reciting poems by omitting a verse, finger and hand games, songs at which the last word is removed from each sentence, songs that stop abruptly etc. Another strategy with beneficial effects for the same purpose was the deliberate postponement of immediate rewards and their representation in the future rewards plan.

Mediation of participation. Sharing emotional experiences with others is the foundation of ethical personal development. Central to the mediator is to work on developing social skills, creating an environment that generates mutual trust and respect. The mediation of the participation behavior was achieved by facilitating the experiences of cooperation and the relationship with other people.

In the activities of mediated learning, the situations in which the mediator speaks only, the non-acceptance of an unjustified answer, the strict directing of the interactions between the children and the control by the mediator only, the non-acceptance of the answers that are considered by the group and the disposition of the children, were avoided. the classroom one behind the other.

Mediation of individualization and psychological difference. The road to autonomy obviously requires the effort to experiment, not to directly approve one's own mistakes, eluding the thinking and support of another; Effective mediation prepares the individual for autonomy, for the awareness of a self, different from other individuals, defined by value and potential. In the mediated learning activities carried out in this program, the mediator appreciated the different points of view and their expression, irrespective of the difficulty, complexity, modality and degree of abstraction of the subject, of the specific needs of the students, including the respect of the individuality of each child; the original solutions were encouraged, even if they are surprising.

Mediation of goal planning (establishing, preliminary study and achievement of an objective). Developing the ability to set goals and initiatives to implement them requires analyzing the attributes of the objective and available resources; the flexibility regarding change needs to be accepted and monitored.

In the process of planning the goals, so of strategic management, we find all the cognitive functions involved, but more important: collecting meaningful information; awareness of connections, means and goals; planning; hypothetical thinking; designing virtual relationships; impulse control in action.

Mediation of generating interest for participation, study and approach to complexity. The mediator focused on promoting an attitude of openness towards the new, the unfamiliar, and complex situations, mediating acceptance of the challenge and trying to overcome resistance to the new, the tendency to remain in the familiar. Assuming new themes, there was a security and a climate of accepting mistakes, from which one learns. During the solving of the pages, the capacities of the children were evaluated together with them, highlighting the ability to achieve success; the satisfaction of completing the activities, but also the personal example in overcoming the difficulties and the resistance to the new ones were means of encouraging the initiatives.

Mediating the awareness that the human being is modifiable (mediation for self-change). In keeping with Feuerstein's conception of the program: *Change is the stable characteristic of the human being*, we were concerned that in the training program subjects would believe in the possibility of change and make the necessary effort to create the conditions for change.

In our interactions, we avoided maintaining a constant environment, without frustration; we have used different modification strategies to increase the adaptability of children. We also avoided predictions of performance and competencies based on the diagnosis of intelligence, ethnic overgeneralization or other predetermination.

Mediation of the search for an optimistic alternative. In the mediation sessions held in which I encountered situations whose end was not obvious, I suggested opting for the alternative of a positive end. When people believe in a positive evolution of the situation, they tend to invest more, this state activating the cognitive functions and the cognitive interest. Thus, we helped the children to orient themselves to new sources of information to reach their goal, predicting a positive development, even if the end could not be seen or even when it was impossible to anticipate. The strategy used was to evaluate the difficulties with anticipation and to highlight the child's ability to solve the problem, to avoid exaggerating the difficulty of the situation, to compare the current problem with previous results or with previous situations that seemed without solution, but which had a positive end. The mediator helped to formulate possible solutions, indicating other alternative strategies, when one of the variants did not succeed.

6. Conclusions

In order to instrument the learning and experimentation of FIE elaborated by Feuerstein, we applied five of the 14 instruments of the program, remarkable by the specific psychodidactics, focused on the affective dynamics of the student-educator relations and on the instrumentation of the synergetic type *learning-problem solving* activity. Key concepts of this approach: encouraging an autonomous learning style; unlocking the potential of the student; increasing the level of attention; developing a rich language and understanding the concepts; efficient use of thinking skills; encouraging metacognitive reflection. Following the formative experiment with data interpreted in the spirit of the cognitive modifiability of Reuven Feuerstein and the objectives set, we formulate the conclusions of the study.

The first objective formulated for the purpose of conducting the present research aimed to identify the initial level of neuro-psychic and socio-emotional development of children enrolled in mass education, both children with school difficulties or socio-economic disadvantages. In order to reach this objective, we carefully selected the tools necessary for the valid measurement of the cognitive domains subject to the research and objective evaluation of the level of socio-emotional development. The use of the LPAD test battery led us to the conclusion that there are a large number of children with school difficulties. This inequality of opportunities can be generated by the lack of juxtaposition of the educational paradigms with the reality of the education system, namely: the low degree of teacher education in the direction of achieving individualized education; inadequate infrastructure for active and personalized education; low degree of training and involvement of parents to meet the students.

Associated with the second objective by which we set out to experiment in the Romanian school of FIE through the control / instrumentation of five cognitive modules, we mention that:

- ❖ the activities of mediated learning have operationalized the ideal of any didactics: awareness of the learning task by understanding the adult instruction, involving the student in the planning of the working stages and training the algorithms;
- ❖ the adequate mediation of the activities formed in children the so-called topographical sense in order to increase the adaptability to the conditions of the physical and social environment;

The third objective was to evaluate the psycho-pedagogical acquisitions of the children following the application of FIE and led us to extract the following ideas:

- ❖ following the application of the tasks analysis techniques, the cognitive orientation in the didactic task has been optimized: distinguishing the product process and subordinating the first to the second.

The objective with number four of the present research was to evaluate the socio-emotional development of children following the application of FIE and led us to extract the following two ideas:

- ❖ by increasing cognitive capacities, socio-emotional self-control, namely voluntary inhibition, was strengthened;
- ❖ increasing self-esteem and involvement is expressed in epistemic curiosity of children and inferential - hypothetical thinking;

The Instrumental Enrichment Program aims at the systematic use of cognitive functions, as prerequisites of the actual problem solving or real coping. Each instrument serves a particular cognitive function, however, addressing many other deficiencies. The complexity of an exercise is designed to mobilize several cognitive functions: defining the problem, clear perception, appropriate categorization, spontaneous comparison, precision, planning goals, systematic work, spatial and temporal orientation, simultaneous use of two sources of information, widening the field of mental operability, the use of hypothetical thinking, the *sense* of the logical evidence, the impulsivity braking in all three phases of the resolutive approach. A certain task can

provide specific practices for applying several previously acquired schemes. Their mastery can support epistemic motivation and productive cognitive processing, generating insights.

The FIE sub-objectives have the role of correcting the deficient cognitive functions that are characteristic of the cognitive behavior of the low performance individuals caused by the cultural deprivations.

If a high frequency of cognitive functions is responsible for poor performance, some cognitive deficiencies may be encountered in individuals with high functionality. The presence of these deficiencies can be compensated by other well-stabilized cognitive functions, removed from the latent state and provoked to manifest in the individual's performance.

These deficiencies are sometimes self-aware, but the training process reveals and corrects them. For these reasons, FIE can also be efficient for people with high levels of cognitive functioning, favoring corrections and significant developments.

The wide variety and increased number of tasks included in the program provide attractive opportunities for exercising and developing each function individually at an appropriate level; it also offers possibilities for generalizing cognitive schemes, in various fields.

The Instrumental Enrichment Program ensures the development of the intrinsic, therefore epistemic, motivation of progress in the cognitive functioning involved in coping, in any activity management. In a given situation, the subject does not know what to do, but is mobilized to understand, act, evaluate and capitalize. The old teaching principle of repetition no longer appears today as an end in itself; efficient cognitive functions in different activities are mobilized to work flexibly productive, efficiently.

The program implements the transformation by crystallizing the resolute steps into cognitive skills.

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