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Education, Reflection, Development**THE DIDACTIC GAME. APPROACHING PSYCHOMOTRICITY
IN STUDENTS WITH INTELLECTUAL DISABILITIES.**

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Abstract

The benefits of play on children can be seen in their overall development. Children learn through play from very young ages because play gives children the opportunity to explore, to manifest freely, to be creative, to develop their motricity and psychomotricity. Unstructured play has a central role in cognitive, socio-emotional, psychomotor and language development. The game structure and the orientation towards a well-defined goal, the direction of the game in accordance with the formulated rules, gives rigor and concrete expectations regarding the development of the targeted competences. Didactic games as a way of organizing learning allows exploring the individual by capitalizing on motor and psychomotor skills of the child with intellectual disability. Our study aims to establish the level of efficiency of the program of psycho-pedagogical intervention based on games in order to develop psychomotricity in young schoolchildren with intellectual disabilities. In this study we have monitored the introduction of the didactic game in the teaching process in order to recover the delays detected in the child's psychomotor field. The games were adapted to the needs of the students with intellectual disabilities, organized on levels, organized on levels of competences thus giving the opportunity to learn, enjoy and develop psychomotor skills.

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1. Introduction

Games represent the natural manifestation of the child to explore the environment, to understand the reality that surrounds him, thus contributing to the acquisition of new knowledge and skills. In the school environment the play can become a way of organizing learning and allows to explore individual capacity, develop psychomotor skills of the child with intellectual disability.

The development of psychomotricity in children with intellectual disability through the use of didactic play prepares the child for learning, exploration, adaptation through the awareness of his body and his movement in the space that surrounds him. Games carried out with a well-defined purpose and involving psychomotricity, globally develop the children as a whole.

In our study we have pursued the efficiency of applying the psycho-pedagogical intervention program based on didactic play in small schoolchildren with intellectual disabilities enrolled in second, third and fourth grades, Special Secondary School C.R.D.E.I.I.

2. Problem Statement

Starting from the concept of "psychomotricity" we see that it is formed by joining two notions: psychic and motor. The development of motricity is coordinated by mental activity (Berdilă et al., 2019; Gabriel et al., 2019; Houwen et al., 2016; Jay & Owen, 2016; Mota et al., 2020). From an early age we see how connections and interdependencies are made between the psyche and the motor with an effect on the overall development of the child in the long term. Motricity influences the development of intelligence and psychic processes through sensory-motor exploration of the environment and psychic processes influence the development of motricity by perceiving the stimuli in the environment, their representation, the realization of the processes of analysis and synthesis of the information coming through the sense organs.

Intellectual disability is part of neurodevelopmental disorders, it affects the overall development of the child and his adaptation to the environment in which he lives (APA, 2016; Roşan, 2015; Schalock et al., 2010) due to action of prenatal, perinatal, postnatal factors at different stages of the child's mental and morpho functional development (Simpson et al., 2020). In the case of intellectual disability, delays occur in the development of psychomotricity because intellectual disability is a condition of deficiency in brain functions, which affects the cognition as well as motor skills (Ashori et al., 2018; Pise et al., 2018). They are due to deficits of discrimination of stimuli in the environment, narrowness of the perceptual field, difficulties in analysing and synthesizing information. The perception mediated by action and the mental representation are poorly developed in the child with intellectual disability, which generates deficits in the spatial-temporal orientation." The degree of impairment of the sensory-perceptive development, the representation of motor acts is reflected in the psychomotor development of children with ID" (Jucan et al., 2021, p. 49).

In this study we follow certain components of psychomotricity presented in Table 1.

Table 1. The components of psychomotricity (after Albu et al., 2006)

Basic motor conducts	Oculo-motor coordination Coordination of movements (coordination of fine movement of the hand and fingers, accuracy)
Perceptual-motor structures and conducts	Laterality Spatial orientation and organization

The game has a large share in the daily activities of children, which contributes to the development of psychomotricity. Unlike spontaneous play, the didactic game has a defining element, namely a learning task that is a well-defined goal (Chiş, 2018). The didactic game generates learning situations (Catalano & Răileanu, 2019) by organizing learning in playful actions (Cerghit, 1997). The didactic game establishes connections between what the child must learn and what he/she knows, through purpose-oriented play, with rules to follow. The child is pleasantly involved in the activity so he will more easily cope with difficult tasks.

3. Research Question

What are the influences of the psycho-pedagogical intervention program based on didactic games in the development of psychomotricity of children with mild and moderate intellectual disability?

4. Purpose of the Study

The purpose of this research paper is to present, to put into practice and to verify the formative and informative valences of the psycho-pedagogical intervention program based on the game aimed at the psychomotor development of small schoolchildren with moderate intellectual disabilities in the C.R.D.E.I.I. Special Secondary School in Cluj-Napoca.

The objectives are:

- i. to highlight the use of didactic play in the psycho-pedagogical intervention program in order to develop psychomotricity in young schoolchildren with intellectual disabilities
- ii. to establish the effectiveness of the psycho-pedagogical intervention program based on didactic game for the development of psychomotricity in young schoolchildren with intellectual disabilities

5. Research Methods

The research was conducted between September 2021 and June 2022. In October, half of May and June we carried out the evaluations (initial and final). The month of November was reserved for the interpretation of the tests applied in the initial evaluation and the preparation of the intervention program. In the last 6 months, the psycho-pedagogical intervention program based on didactic play was applied for the development of psychomotricity in young schoolchildren with intellectual disabilities.

In this research we used the following methods and tools for the initial and final evaluation, the development of the psycho-pedagogical intervention program based on didactic game for the

psychometric development in children with intellectual disabilities and the observation table for each game.

- i. pedagogical experiment, observation, case study, analysis of the curriculum documents

Assessment tools:

- i. Nepsy battery test. It is a complex tool for evaluating the neuropsychological development of children aged 3-12 years. We used the samples from the Field of Sensory Functions and the Field of Visual- spatial Processing.
- ii. Harris laterality sample. Aimed at lateral dominance on the coordinates: eye, hand, foot. Thus, we establish the dominance of the hand through 10 items applied to the child, the dominance of the eye through 3 applied items and the dominance of the foot through 3 applied items. The data obtained from the application of the test contribute to establishing the type of laterality and help us to establish if there are confusions of laterality, its insufficient fixation.
- iii. Piaget Head test. We evaluate the spatial orientation of the students, the left-right orientation, the perception of space. The sample consists of 27 items grouped as follows: test 1 recognizes on one's own person who is left and who is right, 3 items; test 2 Performs movements on verbal command, 4 items; Recognizes the position of two objects (two balls of different colors), 2 items; Recognize which is the left and which is right over another person, who is standing in front, 3 items; Imitates the movements made by the person with whom he stands face to face, 8 items; Reproduces the movements according to certain schematic figures, 8 items; Recognizes the positions of three objects, 3 items.

Intervention instruments used:

- i. the psycho-pedagogical intervention program based on didactic game for the psychometric development in children with intellectual disabilities
- ii. Game observation table – behavior monitoring tool in relation to the competencies pursued for each game. Behaviors have been evaluated on a Likert scale from 1 -5 in which 1-never, 2-rarely, 3 -sometimes 4- frequently, 5-always.

We followed the introduction in the pedagogical activity of the didactic game in order to develop psychomotricity in young schoolchildren with intellectual disabilities. The games were adapted to the needs of students with intellectual disabilities. Some games are organized on levels from beginner to advanced giving students the opportunity to learn, enjoy and develop new skills. In order to monitor the evolution of students during the game, we have introduced the game observation tables centered on observing / monitoring the behaviors pursued in the intervention program. The frequency of application of the intervention program was three times a week for 18 weeks. It was applied by the teachers who teach in the second, third and fourth grades under our guidance.

6. Findings

The participants included in the research were 22 children with mild and moderate intellectual disabilities in the second, third and fourth grades of the Special Secondary School Resource and Documentation Center on Integrated Inclusive Education Cluj-Napoca.

6.1. The criteria for their selection were:

They attended the courses of the C.R.D.E.I.I. Special Secondary School in physical format (at the beginning of the school year, the legislation in force allowed students at high risk of illness to carry out online activities based on the recommendation of the specialist doctor)

They have mild or moderate intellectual disability. (this is evident from the study of school documents)

They have learned the writing of the first letters according to the read-write-communication curriculum and present difficulties in acquiring writing skills. (study of school documents – notebooks for writing and mathematics/ mathematics and exploring the environment).

It shows disorders in the development of perceptual-motor structures and behaviors (laterality, spatial orientation), oculo-motor coordination, poorly developed fine muscles, spatial orientation.

6.2. Case Study Presentation:

We have selected a case study representative of the scientific research process to highlight how to work with the students in the target group.

The S3.2 research participant was 9 years 8 months and 10 days old at the time of the first evaluation. He attends the third-grade courses at the Special Secondary School. The diagnosis is: intellectual disability, delay in the acquisition of expressive language.

After the interpretation of the initial assessment with standardized tests, carried out in October 2021, we identified delays in the development of basic motor conducts and perceptual-motor structures. The standardized scores obtained from testing with the Nepsy battery for the sensorial-motor and visual-space range are below the expected level and well below the expected level. When testing with Harris we found cross laterality with the formula for hand-eye-foot RLR (right-left-right). For a fixed laterality the formula is RRR for the dominant right side or LLL for the dominant wing side. When testing with Piaget Head spatial orientation, the left right does not exceed the level of age 8 years. The student recognizes them himself and another person who is left or right, performs movements after verbal command and recognizes the position of two objects.

The psycho-pedagogical intervention program based on didactic game was applied for 18 weeks, December 2021 - May 2022, by the teachers who teach in the classroom (psycho-pedagogue teacher, educator) using the games offered by us and benefiting from the support and preparation necessary to conduct the didactic games with the students in their class. They were organized in 9 modules of 2 games each module. Each game had a psycho-behavioral monitoring table that was completed by teachers from the class who conducted the games.

The didactic games for the development of psychomotricity have aimed at the formation of several competences in the psychomotor field. These competences were grouped taking into account the components of psychomotricity to be developed can be traced in Table 2.

Table 2. Components of psychomotricity and caterpillars pursued through the intervention program

Components of psychomotricity		Competences pursued by the intervention programme
Basic motor conducts	Oculo-motor coordination	The development of fine muscles of the hands and fingers.
	Coordination of movements (coordination of fine movement of the hand and fingers, accuracy)	Development of oculomotor coordination. Development of fine motor skills of hand and fingers Accuracy of motion Execution of finger movement in different positions Development of fine motor skills and skill in children with intellectual disabilities
	Laterality	Fixing laterality.
	Spatial orientation and organization	Strengthening/fixing laterality and identifying body parts. Workspace organization Visual-spatial organization Visual-spatial perception Spatial orientation on the coordinates upside down, right, left, forward

Throughout the intervention, a behavior monitoring tool was used in relation to the competencies pursued. We evaluated behaviors, on a likert scale from 1 -5 in which 1-never, 2-rarely, 3 -sometimes 4-frequently, 5-always, initially (when the child first makes contact with the game) and the final. In Figure 1 we can see an increase in the frequency of psych0-behaviors after applying the psycho-pedagogical intervention program on all the components of psychomotricity. He developed fine muscles by manipulating objects and performing hand and finger movement. He acquired better oculomotor coordination through construction and manipulation of cubes. We have also identified an increase in the coordination and organization of the burrowing.

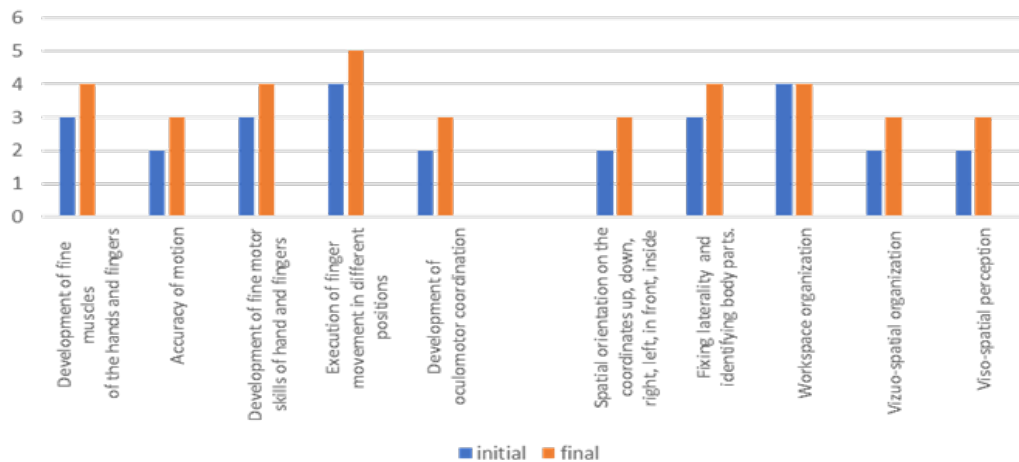


Figure 1. Psycho-behaviors after applying the psycho-pedagogical intervention program

I finally evaluated using the Nepsy Test and the Piaget Head test. Table 3 shows the standardized scores obtained in the two stages, initial and final. A slight increase can be observed, the student being below the expected level. The low level of the Design Copying subtest results from problems of fine motor coordination, improper visual-spatial abilities that lead to densities. Poor performance in the Arrows subtest shows difficulty understanding the positioning of objects in space and visualizing spatial

relationships between objects. Fingertip Tapping gives us information about the dexterity of the fingers. The low performance in this subtest was due to difficulties in organizing movement, difficulties in fine motor coordination and inefficient processing of tactile and kinesthetic information. In relation to the poor results in the Finger Tapping subtest are the poor results in the Imitating Hand Position subtest, thus indicating difficulties in fine motor coordination. The low score in the Visual-motor Precision subtest indicates poor fine visuomotor coordination. Comparing the results of the Visuomotor Precision subtest with the results of the Imitating Hand Position and Fingertip Tapping subtests, we identify poor fine motor coordination. Even though there is a small increase in scores the difficulties of fine motor coordination, spatial orientation and coordination persistence.

Table 3. Standardized scores for subtests in the sensorimotor and visuospatial domain

Subtests	Initial standardized score	Final standardized score
Design Copying	3	4
Arrows	4	4
Fingertip Tapping	3	4
Imitating Hand Position	6	6
Vizuomotor Precizion	3	4

In the Piaget Head test, the initial scores 11 and the final 15 is shown in Table 4. The child manages to imitate the movements of the person in front of him thus shows a reduction in the mirroring of movements by knowing his own laterality in comparison with that of another person. Even if he correctly performed 3 movements imitating the person who evaluated him, he does not exceed the threshold of 8 years.

Table 4. Inițial and final scores on Piaget Head test

Subprobe	Initial evaluation	Final evaluation
Recognition to oneself - left and right	3	3
Perform movements on verbal command	5	6
Recognizes the position of two objects		
Recognize left and right to another person	3	3
Imitates movements made by the person with whom he is sitting face to face	0	3

7. Conclusions

The application of the psycho-pedagogical intervention program based on the game has achieved the objectives pursued. There are differences between initial and final testing. Also, during the psycho-pedagogical program, it was possible to follow the students' evolution during one module and from one module to the other.

The game remains a strategy that incorporates methods, tools, techniques to stimulate the global development of children regardless of the presence or absence of disability.

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