

The impact of a proposed educational program with motor games on the development of motor intelligence for kindergarten children 3-5 years old (field study kindergarten of Theniet El Abed-Batna)

أثر برنامج تعليمي مقترح بالألعاب الحركية في تنمية الذكاء الحركي لأطفال الروضة (3-5 سنوات)
(دراسة ميدانية بروضة ثنية العابد باتنة)

Bouzenag kelthoum¹, Zemmouri balkesem²

University of Biskra / Laboratory of Educational issues in Algeria in light of current challenges

¹kelthoum.bouzenag@univ-biskra.dz ²b.zemmouri@univ-biskra.dz

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Abstract: The study aims to identify the impact of a motor gaming education programme on the development of motor intelligence for a kindergarten child 3-5 years. The pilot method was used with the design of two equal sets, which included the study sample of 38 children from the kindergarten of Theniet El Abed and were chosen in a deliberate manner. As a data-gathering tool, the researcher used the kinetic intelligence measurement battery for children. The results are that the education programme in motor games has a statistically significant positive impact on the experimental group in children's motor intelligence

Keywords: Motor Games- Motor Intelligence - Kindergarten Child 3-5 years.

الملخص :

تهدف الدراسة إلى التعرف على أثر برنامج تعليمي بالألعاب الحركية في تنمية الذكاء الحركي لأطفال الروضة (3 - 5 سنوات)، اعتمد على المنهج التجريبي، اشتملت عينة الدراسة (38) طفل من روضة ثنية العابد وتم اختيارهم بطريقة

Corresponding author Bouzenag kelthoum-mail. kelthoum.bouzenag@univ-biskra.dz

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قصيدة، استخدمت الباحثة بطارية قياس الذكاء الحركي للأطفال، وقد أشارت أهم النتائج أن البرنامج التعليمي بالألعاب الحركية له أثر إيجابي ذو دلالة إحصائية على المجموعة التجريبية في الذكاء الحركي للأطفال.
- الكلمات المفتاحية : الألعاب الحركية، الذكاء الحركي، طفل الروضة (3-5) سنوات

* Introduction and problematic of the study:

been interested in knowing the factors affecting the educational and educational process in the field of sports, and motor intelligence is one of the basic variables that determine the activity and ability of the child in the correct motor behavior and good performance, so it is assumed that any child when practicing any sports activity should have a level of motor intelligence and the goal is for the child to know how to use the different parts of the body when exercising to reach the highest levels and since kindergarten children aged 3-5 years vary in their degree of motor intelligence, this leads to a disparity in achieving what is required of them, which is the ability to perceive and learn the motor skills of various sports games.

Through the above, we came up with the following question: Does the proposed program with motor games have a positive impact on the development of motor intelligence in kindergarten children?

- General Hypothesis:

- The proposed program with motor games has an impact on the development of motor intelligence in kindergarten children aged 3-5 years.

- **Partial hypotheses:**

- There are statistically significant differences between the averages of the pre and post measurements in the level of motor intelligence in the children of the experimental research group.

- There are statistically significant differences between the averages of the pre- and post-measurements in the level of motor intelligence in the children of the control research group.

- **Objectives of the study:**

- To identify the principles of building educational programs based on motor games to develop motor intelligence in children aged 3-5 years.

- Recognize the importance of motor activities and games in improving the motor intelligence of kindergarten children at an early age (preschool stage). The importance of motor intelligence in developing children's motor skills and interacting with their surroundings.

2- Operational Definition of Concepts in the Research:

- **Kinetic Games**

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- **idiom:** A directed activity carried out by children to develop their behavior and their mental, physical and emotional abilities, achieving at the same time fun and entertainment. (Majid Risan Khreibat, 2000, 11)

- **Procedural:** These are those games that contain basic motor skills and are characterized by their simple tools for conducting them.

- **Kinesthetic Intelligence**

- **Term:** It is an expertise in using one's body to express thoughts and feelings and excel in using the hands to make shapes (Mustafa Nouri Al-Qamish, 2011, 47).

- **Procedural:** It is the child's physiological and cognitive ability to control the parts of his body.

- **Kindergarten child 3-5 years old:**

- **terminology:** The kindergarten stage refers to the first years of a child's life and is considered one of the most fertile educational of 3-5 years has a great ability to modify, change, shape and absorb new experiences .(Hassan Al-Sayed Abu Abdullah, 2011, p. 20).

- **Procedural:** It represents an age stage of the life cycle of the human being, this stage is characterized by general features, including continued growth.

3- Previous studies:

1- Ibrahim Allaba's study (2020) entitled: Proposing a motor program for the development of motor intelligence in 4-5 year old kindergarten children.

The study aimed the extent of its contribution to the development of motor intelligence in kindergarten children, the researcher relied in his study on the experimental method on a sample selected by a simple random method with a size of 20 children, the results of the study revealed that the proposed motor program based on basic motor skills.

2- The study of Fouad Ben Fadel (2016) entitled: General mental ability (intelligence) and its relationship with some of the outputs of the sensory-motor field in motor education in preparatory children (5-6 years).

The study aimed to identify gender differences in both the general mental ability (intelligence) and some outputs of the sensory-motor field represented in the transitional basic motor skills in preparatory children, and the researcher selected the study sample estimated at (62 male and female children) (27 boys) and (35 girls) by the survey method (multi-stage) from the original community estimated at: (12166 male), and the researcher used the descriptive method to suit the nature of this study. The results of the study showed that there is a strong positive correlation between the level of general mental ability (intelligence) and the transitional basal motor skills under investigation.

1- Followed Methodologies :

- Methodology used in the study:

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The researcher employed an experimental approach, utilizing a design that involved two groups: an experimental group and a control group. This design included both pre-test and post-test measurements, chosen for its alignment with the research objectives and its ability to validate the hypotheses and achieve the study's goals aims to establish the relationship that links cause and effect between phenomena or variables, and to establish the relationship between cause and effect, we conduct the experiment through which one or more variables are treated by changing their content several times and this variable is called the independent variable This process allows studying the effects of the independent variable on the variable that receives its effect, called the dependent variable (Morris-Angers, 2004, p. 102).

- Population study and sample:

The original **research** community of our study is represented by the children of Ibn Badis kindergarten ,and the research sample is a model that includes a part of the units of the original community concerned with the **research** and is representative of it so that it bears sample was limited to the 38 children (3-5 years old) in the kindergarten in Thania Al Abed, Batna, in the state of Batna. After excluding the 8 children participating in the exploratory experiment, the number of children in the research sample became (30) children, and they were divided by simple random method into two experimental and control groups with (15) children per group.

- **Homogeneity of the study sample:** in the variables of height, weight, age, and the level of motor intelligence in the research sample by using the coefficient of skewness as shown in Table 1

2- Exposure , analyses and result exam :

Table 1.The homogeneity of the research sample in the variables (age, height, weight) and the level of motor intelligence.

Axes variabels	unit	Arithmetic mean (x)	Standard deviation (+y)	Median	Torsion coefficient
Age	year	5.31	0.10	5.30	0.3
height	cm	88.21	0.51	88.00	1.235
weight	kg	25.62	0.32	25.5	1.125
Drop ball	cm	13.56	0.14	13.5	1.285
Wrap around the circle	second	12.47	0.63	12.40	0.3
Colored ruler and hands	number	2.65	0.17	2.50	2.647
Sound and movement	second	5.22	0.39	5.20	0.153
Walking to the circle	number	2.10	0.61	2.10	0.009

Source :author,2024

Table 1 clearly shows that the skewness coefficients for the variables age, height, weight, and motor intelligence levels in the research sample fall within the range of 3. This indicates a balanced distribution of the sample across these variables. To ensure that any observed differences could be attributed to the experimental

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work, the researcher verified the equivalence of the two research groups—experimental and control—in terms of growth rates and motor intelligence levels under research, as shown in Table 2

Table 2. The significance of differences between the control and experimental groups with respect to key variables such as age, height, and weight.level of motor intelligence in the sample under research.

Axes Variabels	Unit	Arithmetic mean (x)	Standard deviation (+y)	Control group	Control group	T calculated	Degree of freedom	T tabular
Age	Year	5.28	0.36	5.31	0.17	0.98	28	1.70
Height	Cm	88.15	0.41	88.16	0.61	0.47		
Weight	Kg	25.21	0.21	25.20	0.22	0.63		
Drop ball	Cm	13.48	0.47	13.44	0.17	0.21		
Wrap around the circle	second	12.41	0.66	12.42	0.32	0.58		
Colored ruler and hands	number	2.61	0.25	2.61	0.22	0.75		
Sound and movement	second	5.21	0.18	5.21	0.18	0.62		
Walking to the circle	number	2.10	0.31	2.09	0.31	0.18		

Source :Author,2024

Table 2 This clearly shows that there are no statistically significant differences at the 0.05 significance level between the mean values of the two tribal measurements for both the control and experimental groups across the examined variables analyzed. This confirms that the two groups are equivalent.

- Study Instrument:

Children's Motor Intelligence Measurement Battery prepared by Essamuddin Shaaban and Mustafa Ahmed Abdelwahab (Essamuddin Shaaban; Mustafa Ahmed Abdelwahab, 2008).

1- Ball Dropping Test: - Purpose of the test: Measuring sensory receptors (motor perception) /- Tools used: Duct tape and a plastic ball with a circumference of 49 cm and a weight of 210 g/- Performance specifications: A line is drawn for the tester 5 m away from a drawn line called the target line with a width of 5 cm. The tester stands with the ball and throws the ball from bottom to top to drop it over the target line / - Recording: The tester is given (5) attempts and the faintest attempt is counted and the distance between the ball and the target line is measured

2- Lap around the circle test: - Purpose of the test: To measure auditory perception. / - Instruments: Stopwatch, white tape, 3 m radius circle / - Performance specifications: The tester runs around the circle one full turn, then backward one quarter turn, then forward one full turn, then backward one half turn around the circle, then forward one full turn around the circle, then

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backward one quarter turn around the circle, then backward one quarter turn around the circle / - Recording: Time is calculated to the nearest decimal.

3- Colored ruler test: - Purpose of the test: Measuring visual perception. / - Tools: A ruler with a length (1 cm) and a width (5 cm) with four colors (red, blue, white, black) with a length of each color (25 cm). / - Performance specifications: The tester sits on a chair so that his forearms are upright for the humerus and the distance between the hands (20 cm) and they are facing each other, the evaluator determines the color that the tester must catch: The tester is given (5) attempts and the number of correct attempts is counted.

4- Sound and movement test: - Purpose of the test: Measuring the target sensory receptors (hearing): Stopwatch, three different musical sounds, draw a circle with a diameter of 2 m, an equilateral triangle with each side (2 m) and width (1 m) and the distance between each shape (2 m). / - Performance specifications: A lab line is drawn and the child stands on the lab line 5 m away from the shapes, and the evaluator plays several sounds for the child to hear and explain that each sound is related to a specific geometric shape and run around that shape and return to the starting line. / - Recording: The best and from three attempts to the nearest decimal.

5- Circle walking test: - **Purpose :** to measure motor perception. / - Instruments: White tape, blindfold, draw A circle with a diameter of 2 meters is positioned 4 meters away from the starting line, measured to its center. Performance requirements involve the tester starting at the designated line, walking to the

circle, and stepping inside its boundary. During the process, the tester is allowed five attempts, and the number of successful attempts is recorded for evaluation enter the circle is counted.

- Proposed program:

The researcher reviewed many previous studies related to the field of this research and surveyed the opinions of many professors and specialists so that the components of the program could be determined in accordance with the age of the children, as the proposed motor program aims to develop the motor intelligence of children from 3-5 years old through relying on motor games. The scientific bases for building the proposed motor program were based on the following:

- The program should include multiple types of motor activities and games that suit the children's interests, desires and abilities and provide them with opportunities for positive participation.
- Playing with motor games is an essential and valuable activity in the current program. Through movement and play, the child learns indirectly, and the spirit of fun penetrates the soul and activates the psychological and physical immune systems.
- **Psychometric properties of the study instrument:**

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- **Stability:** To maintain the reliability of the scale, the researcher implemented the test-retest method, which involved assessing the scale at two different points in time was applied and reapplied to a sample of (8) children from the research community and other than the main sample, and Table 3 shows this.

Table No. (3) Highlights the importance of the variations observed between the initial and subsequent applications in assessing motor intelligence levels battery.

Axes variabels	unit	First applicati on (x)	First applicati on (y)	Second applicatio n (x)	Secon d applic ation (y)	Correlatio n coefficient	Degre e of freedo m	T tabul ar
Drop ball	cm	12.63	0.14	10.11	0.11	0.92	6	0.70
Wrap around the circle	secon d	11.98	0.21	10.80	0.18	0.98		
Colored ruler and hands	numb er	2.51	0.41	2.81	0.33	0.96		
Sound and movement	secon d	5.20	0.32	4.98	0.18	0.97		
Walking to the circle	numb er	2.10	0.32	2.22	0.26	0.91		

Source :Author,2024

It is clear from Table 3 that the correlation coefficient between the first and second applications ranged from (0.910 to 0.988), which is a statistically

significant correlation coefficient at the level of significance (0.05), indicating that the battery has an appropriate degree of stability.

- **Honesty:** To verify the reliability of the battery for measuring children's motor intelligence in the current study, the researcher calculated the reliability of the peripheral comparison by applying it to a sample of (8) children from the research community and from other than the main sample and Table 4 shows the result.

Table (4) shows the reliability of the peripheral comparison of the children's motor intelligence measurement battery

Axes Variabels	unit	Upper spring (x)	Upper spring (y)	Lower spring(x)	Lower spring (y)	T calculated	Degre e of freedo m	T tabul ar
Drop ball	cm	10.54	0.24	14.22	0.21	3.21	8	2.30
Wrap around the circle	seco nd	10.32	0.11	13.10	0.16	3.18		
Colored ruler and hands	num ber	2.69	0.32	2.41	0.52	3.54		
Sound and movement	Seco nd	4.210	0.14	6.201	0.47	3.64		
Walking to the circle	num ber	2.15	0.18	2.05	0.51	3.58		

Table 4 The number 4 distinctly demonstrates that there are statistically significant differences at a 0.05 level of significance between the scores of the upper spring the lower spring in the motor intelligence test, with the upper

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spring Demonstrating exceptional effectiveness, the test proves its ability to differentiate among children, reinforcing the reliability of its outcomes.

- Field application procedures:

- **Pre-tests:** The researcher conducted the pre-test for the variables under investigation on Sunday (12/03/2023) at 9:00 am for the control and experimental groups.

- **The proposed program:** The implementation of the proposed program started on (13/03/2023) and continued for (8) weeks with (24) educational units, i.e. (3) units per week, where motor games were introduced in the main section of the educational unit only, and the time of the educational unit was (45) minutes, while the time of the main section only was (35) minutes.

- **Post-tests:** The researcher conducted the dimensional measurement of the variables under investigation after completing the implementation of the program and for the experimental and control groups on Sunday (14/05/2023) at 9:00 am.

- Control variables of the study:

- **Independent variable:** It is the variable that has an effect on other variables and the researcher studies its effect on them and can be controlled (Zakaria El-

Sherbini et al., 2012, p. 134), and in this study, the proposed program with motor games is considered an independent variable.

- The **dependent variable**: It is the variable that changes as a result of the change made by the researcher in the independent variable, it represents the phenomenon that is of interest to the researcher and is called dependent because the change that occurred in it is a result or dependent on the change made by the researcher in the independent variable (Muawiya Mahmoud Abu Ghazal, 2013, p. 48), and in our study, motor intelligence is considered a dependent variable.

- **Statistical method**:

To process the results of the current study, the statistical package program (spss) version 20 was used.

- **Presentation, analysis, and discussion of results**:

- **Presenting the results of the pre and post measurement in the level of motor intelligence of the children of the experimental research group.**

Table 5 shows the significance of the differences between the pre- and post-measurement in the level of motor intelligence for the experimental research group.

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axes variabels	unit	Pre- measur ement (x)	Pre- - measur ement (y)	Post- measure ment (x)	Post- meas urem ent(y)	T calculat ed	Degre e of freed om	T tabu lar
Drop ball	Cm	13.48	0.47	9.21	0.18	3.54	14	1.79
Wrap around the circle	Sec ond	12.41	0.66	9.54	0.32	3.58		
Colored ruler and hands	Nu mbe r	2.61	0.25	4.15	0.11	3.91		
Sound and movement	seco nd	5.21	0.18	4.61	0.52	4.10		
Walking to the circle	Nu mbe r	2.10	0.31	3.98	0.47	3.69		

Source :Author,2024

It is clear from Table 5 that there are statistically significant differences between the means of the pre- and post-measurements in the level of motor intelligence measurement in the children of the experimental group of the research sample,

as the calculated t-value was greater than its tabular value at the significance level of 0.05 in favor of the post-measurement of the experimental group.

- Presentation of the results of the pre and post measurement in the level of motor intelligence for the children of the control group.

Table No. (6) shows the significance of the differences between the pre- and post-measurement in the level of motor intelligence for the control group.

axes variabels	unit	Pre- measur ement (x)	Pre- - measur ement (y)	Post- measure ment (x)	Post- meas urem ent(y)	T calculate d	Degr ee of freed om	T tabu lar
Drop ball	cm	13.44	0.17	10.19	0.21	2.68	14	1.79
Wrap around the circle	second	12.42	0.32	10.21	0.20	2.62		
Colored ruler and hands	number	2.61	0.22	3.66	0.17	2.14		
Sound and movement	second	5.21	0.18	4.98	0.32	2.61		
Walking to the circle	number	2.09	0.31	3.10	0.11	2.36		

Source :Author,2024

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It is clear from Table 6 that there are statistically significant differences between the means of the pre- and post-measurements in the level of measuring motor intelligence among the children of the control group in the research sample, as the calculated t value was greater than its tabular value at the significance level of 0.05 in favor of the post-measurement of the control group.

- Presenting the results of the two dimensional measurements in the level of motor intelligence in the children of the experimental and control groups.

Discussion of results and hypotheses:

The results are discussed in light of the research hypotheses as follows:

The first partial hypothesis proposed by the researcher suggested that statistically significant differences exist between the average scores of pre-measurements and post-measurements in terms of motor intelligence among children in the experimental research group. Based on the results presented in Table 5, which outline the differences in motor intelligence levels between pre- and post-measurements, the analysis confirms that there are indeed statistically significant improvements in favor of the post-measurement results for the experimental group. The researcher attributes this positive development to the effectiveness of the proposed motor program, which appears to have played a significant role in enhancing motor skills. motor games applied to the experimental group, and this is what Fouad Ben Fadel (2016) found on the

importance of motor programs in the preparatory stage that have an impact on the development of the level of intelligence in children in a positive way, so we can say that the first partial hypothesis has been achieved.

The second partial hypothesis posits that there are statistically significant differences between the averages of pre- and post-measurements in the level of motor intelligence among children in the control research group. Based on the results presented in Table No. (6), which highlights the significance of these differences, it is evident that the pre- and post-measurement comparisons for motor intelligence within the control group align with the hypothesized expectations.

- Conclusion:

- The proposed motor program with motor games has a statistically significant positive effect on the experimental group in the motor intelligence of the children under investigation.
- The proposed motor program with motor games made a greater improvement than the traditional program on the motor intelligence of the children under investigation.
- Motor games contribute to increasing the ability to use sensory-motor skills and coordination between the body and mind through the coordination of various movements performed by the whole or part of the body.

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