



Ludic sports activities for the initial development of Elementary Education Students

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ABSTRACT

Introduction: Ludic activities are necessary throughout life, particularly for children and adolescents.

Aim: To check the influence of a system of ludic activities on the development of motor skills in children and adolescents. This experimental study relied on quasi experiment that tackles the causal relation between the variables set for this research.

Materials and methods: The sample consisted of 30 students in two groups: control and experimental.

Results: The practical application showed the contrasts between the post-test and the initial results, thus refusing the null hypothesis, since in every variable, the probability associated with the test statistics underwent significant differences.

Conclusions: The ludic activity system suggested for the initial student development is viable, and should be applied in other physical education classes.





Keywords: ludic activities, game, ludic sport activities system.

INTRODUCTION

The term ludic activity brings the notion of game, and how it can generate a positive social, and mental psychological in teenagers. According to Moreno, J. A., (2019), the ludic factor constitutes a significant contribution, since its implementation in physical education lessons, or in extracurricular actions, favor the teaching-learning process, and the health of participants. It has been considered to encourage students to acquire new knowledge, with the determinant role of the teacher, using methods that contribute to stimulate students' joy and pleasure in learning, together with the feeling of being healthy.

"Ludic refers to every action, which one way or another, permits humans to know, express, feel, and establish relationships with their environments, a free activity that produces satisfaction and happiness that produces joy through everyday action." (Omeñaca and Ruiz, 2017, p. 7).

The study of the definition of game by Huizinga (2007) is necessary before assuming the term game:

"It is a free activity or occupation developed within certain time and space limits, based on absolutely, though freely accepted, mandatory rules; an action whose end is itself, and comes along with a feeling of tension and happiness, and the consciousness of belonging to a way other than everyday life." (p. 45). Hence, to classify a particular ludic activity, it is necessary to focus on its attributes.

In an analysis of the distinctive traits of game, according to scholars from different areas (psychology, education, anthropology, etc.), Omeñaca and Ruiz (2019) identified eight relevant elements, so the more attributes can be determined in any activity, the clearer it could be acknowledged as ludic.

"To Piaget, games become more significant as children grow; by free handling varied elements they begin to build objects, and reinvent things." (Nunes de Almeida 2019, p. 18).

Charchabal. D. (2018) noted that

"Recreation must focus directly on the knowledge of being complementary to everything that surrounds daily activities, such as study, work, family, nutrition, leisure, etc. It must be coordinated and performed in that sense, as a systemic part of a whole person who can perform their activities and overcome difficulties on a daily basis (p.33)".

Recreational and ludic education is inherent to children, adolescents, and adults; it appears as a transactional form directed to acquiring knowledge that will support individual thinking as part of its continuous relationship with collective thinking.





This paper shows the importance of ludic activities and their relation to sports activity. A bibliographic review of the ludic and sports factors in elementary students was conducted. This study relied on the important theoretical contributions of several authors who analyzed this topic, and the results showed how ludic sports activities are attractive and motivating during adolescence.

Various studies reveal the benefits of moderate physical-sports activity in the physical, physiological, psychological, and social areas (American College of Sports Medicine, 2000; Fox, 2020). The physical-sports practice has demonstrated to increase self-esteem, by creating a positive effect on the wellbeing of the practicing subjects. On the contrary, sedentary practices have been associated with depressive states and health problems (Sonstroem & Potts, 1996; Morales, E. 2013; Morrison, 2016; Varo, Martínez & Martínez-González, 2017). In spite of the above benefits, sedentary practices are being configured as an important problem observed in children and adolescents, with a higher predominance of sedentary subjects (García-Ferrando, 2016b).

Upon an objective assessment, children perform ludic and sports activities through physical education lessons, which help them grow up strong and healthy, as this subject contributes to intellectual development. Many world personalities have said that physical education helps develop multi-sided development in children, making them active adolescents in life.

However, the scientific results show problems in terms of ludic activities and physical education caused by the lack of teacher knowledge about didactic topics to produce more results in relation to a more integrated student education. The centralization of physical exercise and traditional teaching showed that a 30-minute physical education lesson only used two minutes for vigorous physical activity (Castillo, Balaguer & Tomás, 1997). Therefore, Physical Education lessons are necessary, though not sufficient, to maintain children/adolescents healthy (physically, psychologically, and socially), so school activities must be complemented with more physical exercise outside the school premises. This has led some researchers to contrast physical activity inside and outside schools. The theoretical rationale analyzed contributed to the identification of didactic shortcomings within the teaching-learning process, observed in elementary students. Accordingly, this study aims to check the influence of a system of ludic sports activities to develop children's motor skills.





MATERIALS AND METHODS

This experimental study tackled the causal relation between the variables set for this research, which makes it a quasi-experimental research. The sample consisted of 30 students within two groups: a control made of 15 students, and an experimental group comprising 15 students. The control group continued working on the traditional methodology, whereas the experimental group was part of an intervention with the ludic and recreational activities suggested. The study looked to validate a system of ludic and recreational activities to optimize the basic motor movements of the students in the research.

The contents included a change in the design of a ludic activity system to enhance basic motor skills, classifying the games according to the activities performed, such as skills using the ball, dynamic balance, short runs, jumps, and turns. The study also applied a modified skills test and a survey to students, associated with the practice of physical activities, by WHO (World Health Organization).

A theoretical validation was required to develop the system of ludic activities of students, by consulting 12 national and international specialists (over 10-year experience). The indicators analyzed by the specialists included the following aspects.

1. Theoretical-methodological coherence.
2. Conception of the elements and components of the system of ludic activities.
3. Social usefulness of the ludic activities.
4. Scientific usefulness.
5. Importance of the system of ludic activities.
6. Pertinence.

RESULTS AND DISCUSSION

Survey for general elementary education students Modified Global Physical Activity Questionnaire (GPAQ)

Do you require intense ludic physical activity in your daily work that entails significant breathing or heartbeat acceleration, such as playing, running, jumping, exercising, or playing a sport for at least 10 consecutive minutes?

The results showed that 10 students in the control group (80% pre-test) said Yes, whereas three students (20 %) said No. In the experimental group, 11 students (73 %) said Yes, whereas only four (27 %) said No, demonstrating their low physical level.

How many days do you perform intense physical activity in a typical week at school?





In the control group, 14 (93 %), said 1-2 times a week, and 1 (7 %) referred to 3-4 times a week, whereas in the experimental group, 13 students (93 %) said 1-2 times a week, and 1 student said 3-4 (7 %) times a week.

How long do you perform this intense activity on a day?

In the control group, 14 students (93 %) said 1 hour, and one student (7 %) referred to two hours, whereas in the experimental group, 13 students (93 %) said one hour, and one student (7 %) referred to two hours a week.

Does your daily routine as a student require a moderate activity that entails a slight acceleration of breathing or heartbeat, such as walking fast (or carry light things or play intense games), for at least ten consecutive minutes?

The results showed that 13 students in the control group (87% pretest) said Yes, and two students (13 %) said No. In the experimental group, 13 students (87 %) said Yes, and only two (13 %) said No, demonstrating their low physical level.

The results of the pre-test conducted to the general elementary students demonstrated that the physical state to perform ludic sports activities are insufficient, since they do not use the necessary minimum time required (30 minutes) for sports practice. Besides, they feel physical exhaustion and tiredness when they perform moderate activities, so a group of ludic and sports activities must be performed to enhance their physical strength and speed (Tables 1 and 2).

Table 1. Test of technical sports skills to students in the general elementary education

Test	Pre-test: Control group.....								Post-test: Control group								Tot al	
	V	G	%	A	%	B	%	Tot	V	%	G	%	A	%	B	%		
Test No. 1 Passing the ball around and between the legs	0	0	0	0	2	1	1	8	15	4	2	8	5	3	2	0	0	15
Test No. 2 Walking fast with a bouncing ball on the side line of a basketball court	0	0	0	0	3	2	1	8	15	5	3	9	6	2	1	0	0	15
Test No. 3 Sidestepping with a soccer ball through obstacles	0	0	0	0	3	2	1	8	15	3	2	8	5	4	2	0	0	15
Test No. 4 Handling the ball, throwing the ball as high as possible, and catch it before it	0	0	1	7	3	2	1	7	15	3	2	8	5	4	2	0	0	15





hits the ground											hits the ground									
Test No. 5.- Rolling a handball along the side line of a basketball court	0	0	1	7	2	1	1	8	15		Test No. 5.- Rolling a handball along the side line of a basketball court	3	2	1	7	2	1	0	0	15
						3	2	0					0	0				3		

Source: The author.
Made by: Johanna Luna Hernández

Table 2. Test of technical sports skills to students in the general elementary education

Pre-test: Experimental group.....										Post-test: Experimental group									
Test	V	%	G	%	A	%	B	%	Tot	Test	V	%	G	%	A	%	B	%	Tot
	G								.		G								al
Test No. 1 Passing the ball around and between the legs	0	0	0	0	3	2	1	8	15	Test No. 1 Passing the ball around and between the legs	1	87	2	0	0	0	0	0	15
						0	2	9			3								
Test No. 2 Walking fast with a bouncing ball on the side line of a basketball court	0	0	0	0	4	2	1	7	15	Test No. 2 Walking fast with a bouncing ball on the side line of a basketball court	1	80	4	0	0	0	0	0	15
						7	1	3			2								
Test No. 3 Sidestepping with a soccer ball through obstacles	0	0	0	0	1	7	1	9	15	Test No. 3 Sidestepping with a soccer ball through obstacles	1	93	1	0	0	0	0	0	15
							4	3			4								
Test No. 4 Handling the ball, throwing the ball as high as possible, and catch it before it hits the ground	0	0	0	0	3	2	1	8	15	Test No. 4 Handling the ball, throwing the ball as high as possible, and catch it before it hits the ground	1	10	0	0	0	0	0	0	15
						9	2	0			5	0							
Test No. 5.- Rolling a handball along the side line of a basketball court	0	0	0	0	4	2	1	7	15	Test No. 5.- Rolling a handball along the side line of a basketball court	1	93	1	0	0	0	0	0	15
						7	1	3			4								

The Kendall's correlation test was used to perform a theoretical validation of the ludic activities; the specialists assessed the parameters established and were given the choice of selecting new parameters they deemed necessary. The evaluation of the proposal focused on the theoretical-methodological coherence of the system of ludic activities, its social and scientific usefulness and its suitability. The responses were processed statistically by descriptive analysis, using absolute and relative





frequencies, and the calculation of the concordance coefficient. The results of the evaluation of the system of activities conducted by specialists are shown in Table 3.

Table 3. - Evaluation of the system of ludic activities

Parameters	Evaluation categories							
	Very satisfactory		Satisfactory		Unsatisfactory			
	No.	%	No.	%	No.	%	No.	%
Theoretical-methodological coherence.	10	83.3	2	16.7	0	0.0	12	100.0
Conception of the elements and components of the system of ludic activities.	11	91.7	1	8.3	0	0.0	12	100.0
Social usefulness of ludic activities	12	100	0	0.0	0	0.0	12	100.0
Scientific usefulness	11	91.7	1	8.3	0	0.0	12	100.0
Significance of the system of ludic activities	12	100.0	0	0.0	0	0.0	12	100.0
Pertinence	12	100.0	0	0.0	0	0.0	12	100.0

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The theoretical-methodological coherence of the proposal was considered very satisfactory by ten of twelve specialists (83.3 %), whereas, 16.75 considered it satisfactory.

The conception of the elements and components of the system of ludic activities was considered very satisfactory (91.7 %), and satisfactory (8.3 %). The social usefulness of the proposal was considered very satisfactory (100.0 %), as the system of ludic activities focuses on enhancing the motor skills of the subjects in the study.

The scientific usefulness was regarded as very satisfactory (91.7 %), and satisfactory (8.3 %). The response consensus was then determined through the Kendall's concordance coefficient, using the response percentages.

These statistical tests facilitated the evaluation of specialist association based on the hypothesis below:

- H0: No concordance among the evaluations issued by the specialists.
- H1: Concordance among the evaluations issued by the specialists.

As a result, a coefficient between 0 and 1 was obtained, where 1 means complete coincidence among specialists (perfect agreement), and 0 when there is no coincidence at all. The interpretation of the W coefficient was done according to Ruiz (2007):

- $W < 0.20$: poor concordance.
- $0.21 < W < 0.40$: weak concordance.





- $0.41 < W < 0.60$: moderate concordance.
- $0.61 < W < 0.80$: Proper concordance.
- $0.81 < W < 1.00$: Very good concordance.

The Kendall's coefficient was calculated with SPSS v24, which determined a 0.86 coefficient, as shown in the figure below (Figure 1).

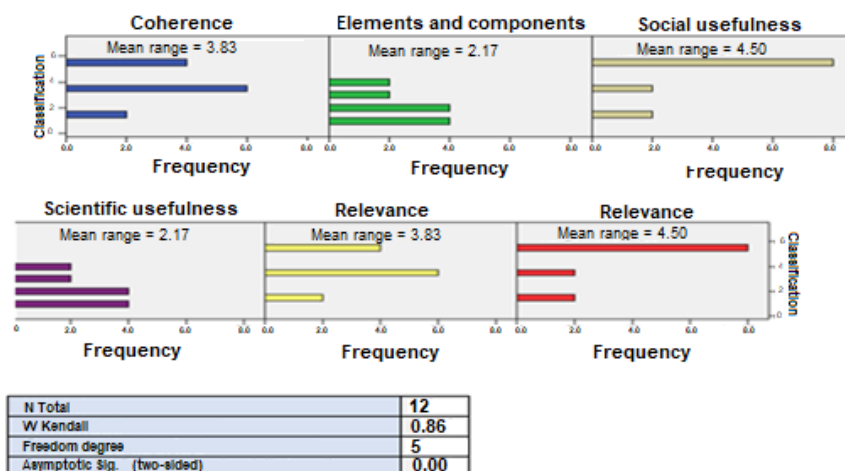


Fig. 1. - Calculation of the Kendall's coefficient using SPSS v24

According to the category set, the first level is Very Good, between 0.8 and 1.0. The asymptotic significance ($0.00 \leq 0.005$) was observed to refuse the null hypothesis (H_0) and accept the alternate hypothesis, which shows concordance among specialist evaluation (Table 4).

Table. 4. - Mann-Whitney U test results in the control and experimental group post-test

	Test ^a statistics				
	TEST 1	TEST 2	TEST 3	TEST 4	TEST 5
	CONTROL	CONTROL	CONTROL	CONTROL	CONTROL
	GROUP PRE-TEST	GROUP PRE-TEST	GROUP PRE-TEST	GROUP PRE-TEST	GROUP PRE-TEST
Mann-Whitney U	105.000	105.000	97.500	103.500	107.000
Wilcoxon W	225.000	225.000	217.500	223.500	227.000
Z	-.482	-.424	-1.056	-.507	-.310
Asymptotic significance (two-sided)	.630	.671	.291	.612	.757
Exact significance [2* (one-sided)]	.775 ^b	.775 ^b	.539 ^b	.713 ^b	.838 ^b

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a. Group variable: TYPE OF GROUP

b. Non-corrected for ties.





In the post-test, as shown in Table 5, all the the Ho variables were rejected, since the value of probability associated with the test statistics is lower than the significance level for all of them ($Sig \leq 0.05$); the Mann-Whitney U test was significant, and the post-test variable in the control group was not the same as the post-test variable in the experimental group, with highly significant differences in tests 3, 4 and 5 ($0.00 \leq 0.05$), and tests 1 and 2, though no highly significant differences were oobserved in test 1 ($Sig = 0.01 \leq 0.05$) and group 2 ($Sig = 0.22 \leq 0.05$) (Table 5).

Table. 5 –Mann-Whitney U post-test results in the control and experimental groups

	Test ^a statistics				
	TEST1 POST- TEST	TEST2 POST- TEST	TEST3 POST- TEST	TEST 4 POST- TEST	TEST 5 POST- TEST
Mann-Whitney U	42.000	63.500	28.000	22.500	29.000
Wilcoxon W	162.000	183.500	148.000	142.500	149.000
Z	-3.309	-2.294	-3.944	-4.272	-3.949
Asymptotic significance (two-sided)	.001	.022	.000	.000	.000
Exact significance [2* (one- sided)]	.003 ^b	.041 ^b	.000 ^b	.000 ^b	.000 ^b

Made by: Luna 2021

a. Group variable: TYPE OF GROUP

b. Non-corrected for ties.

Upon the analysis of results, at first, the effectiveness of ludic activities was demonstrated, though the sample was small. The values obtained were significant, and enabled the application of these activities, which indicates that the method of ludic games favor knowledge and control of children’s body schemes associated with the activities.

This analysis relies on *ludic* as an independent word complementary to games. Garzas, (2015), and then Sailema, *et al.*, (2019) stressed on the need to stimulate the cognitive, motor, and social potential of children since early ages.

As a result of the experiment, and to corroborate the hypothesis of this research, the Mann-Whitney U test was performed to compare the control and the experimental groups. The Mann-Whitney U test for the comparison of pertinence between the control and experimental groups based on the hypothesis provided the following results: Pre-test variables

- Ho: The pre-test variable in the control group was the same as in the pre-test for the experimental group.





- H1: The pre-test variable in the control group was not the same as in the pre-test for the experimental group. Post-test variables.
- Ho: The post-test variable in the control group was the same as in the post-test for the experimental group.
- H1: The post-test variable in the control group was not the same as in the post-test for the experimental group.

A variable was defined for every test, which included the data from the 30 samples (15 in each group) in the pre-test and post-test; the grouping variable was belonging to the control or experimental groups. SPSS V25 was used with a 5% significance, as shown in Table 5.

In the pre-test, Ho was not rejected for any of the variables, as the probability value associated with the test statistics was not lower than the statistics in all of them (Sig. \geq 0.05). The Mann-Whitney U test was not significant, and the study variable in the pre-test to the control group was the same as the variable for the experimental group.

System of ludic sports activities proposal

An unprecedented situation of global confinement is taking place today, with closed schools and cancelled meetings and community activities, friends separated, and families isolated. During this time of uncertainty, many parents see the need of making a transition, and assume a new function as educators and game partners. To many families, it creates more stress to daily life, and perhaps even expectations to assume a higher responsibility in children's game, development, and learning. In this time of confinement, parents have an excellent opportunity to make use of their free time together, to practice critical skills through ludic activities. The activities recognized as invaluable both for parents and children, which do not require a formal learning setting. Accordingly, this study designed a group of ludic activities for students in early stages (Table 6).

Table 6. - System of ludic skills for early education

Physical games	Simulation games	Symbolical games	Rules games
Physical games This category includes physical activities (for instance, jumping, climbing, dancing, jumping rope, riding a bike, and playing with a ball); thin motor skills (sewing, coloring, cutting, handling action and construction toys); combat games (pretending a fight	The simulation game, as a classic imitation or role-play game, is the most commonly studied type of game. It develops reasoning, social development, and creativity. A simulation game is perhaps critical to develop	This type of game begins when the student communicates and makes progress to include spoken language, line drawing, numbers, and music, using the first signs of symbols and representations. There is solid evidence that symbolic games improve speech development in adolescents.	These include physical games, such as catching, hiding, tossing and catching. As children grow up, they use electronic games and computers, as well as a broad range of more organized sports activities. Board games (especially those involving numbers) consist, above all, of a systematic thinking, problem solving, and aid to enhance calculus skills.





against their friends). Physically active game makes teenagers exercise, and it is also linked to academic progress, self-control, and social competence. Visiting nature is one of the activities that produces clear positive benefits; however, it can be started with simple basic activities, like building a stone passage to cross a river, balancing toys or objects on the head and shoulders, or building complex towers.	speech, narrative skills and the regulation of emotions. There is solid evidence that fantasy-oriented games improve self-control and the skills of learning how to learn.	Speech itself is associated with other skills and important goals, including self-control and academic performance. Some research indicates that musical and sports games might help in the development of communication skills, and are related to higher cognitive performance. Placing some basic blocks or home objects on the table, and assigning a new word or rhythm to each. By touching objects, the objects can acquire new meaning, to create a new song or rhythm. Parents can also help choose a favorite book and encourage them to build a physical model or parts of a story, or maybe an alternative ending.	Physical games based on rules help children adapt to follow rules and instructions, including formal schooling. Rule games can act as a substitute for surveillance, improving children's freedom and performance. It is a great opportunity to find a favorite game and remind children that the best part of a game is to change and agree the (new) rules, whether they are stated to catch a ball or board game. Online gaming can also involve the family, particularly if they are active, and they are an excellent way for adults to understand and participate online.
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CONCLUSIONS

According to the classification established, the first concordance level is Very Good, between 0.8 and 1.0. The asymptotic significance ($0.00 \leq 0.005$) was observed to reject the null hypothesis (H_0), which means acceptance of the alternative hypothesis, which shows concordance among specialist evaluations. Therefore, the proposal of a system of ludic activities for early age education is pertinent.

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