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## *The evaluation of the achievements of learning Physical Education, in times of pandemic*

*La evaluación de los logros del aprendizaje de la Educación Física, en época de pandemia*

*La evaluación de los logros del aprendizaje de la Educación Física, en época de pandemia*

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### **ABSTRACT**

Physical Education, currently, pays more and more attention to the development of pedagogical strategies, with the aim of perfecting learning achievements and making it sustainable and faces many challenges of how to access and maintain, at any age of life, engaging in stimulating learning experiences. The objective of this work was to carry out a



comparative study between two groups of students to evaluate the quality of the teaching-learning process of Physical Education, based on the difference between the face-to-face class and the distance class, demonstrated in the academic results. The research was developed with a quantitative approach and quasi-experimental design with pretest and posttest, regular basic education students from the fourth grade in the year 2020 and from the fifth grade during the year 2021 participated. The hypothesis test determined that the difference in the averages was significant, during the year 2020 it was 14.5 and in 2021, from 13.5 to 0.05. The null hypothesis was rejected ( $\text{Sig} < 0.05$ ) and the alternative hypothesis was approved; which showed that in the period of confinement due to the COVID-19 pandemic, the averages in the area of Physical Education decreased.

**Keywords:** distance classes, Physical Education, pandemic.

## **RESUMEN**

La Educación Física, en la actualidad, presta cada vez más atención al desarrollo de estrategias pedagógicas, con la finalidad de perfeccionar los logros del aprendizaje y que este sea sostenible y enfrenta muchos retos de cómo acceder y mantener, en cualquier edad de la vida, la participación de experiencias de aprendizaje estimulantes. El objetivo de este trabajo fue desarrollar un estudio comparativo entre dos grupos de estudiantes para evaluar la calidad del proceso de enseñanza-aprendizaje, de la Educación Física, basado en la diferencia entre la clase presencial y la clase a distancia, demostrado en los resultados académicos. La investigación fue desarrollada con enfoque cuantitativo y diseño cuasiexperimental con pretest y posttest, participaron estudiantes de educación básica regular del cuarto grado, en el año 2020 y de quinto grado durante el año 2021. La prueba de hipótesis determinó que la diferencia de los promedios fue significativa, durante el año 2020 fue de 14,5 y en el año 2021, de 13,5 para 0,05. Se obtuvo el rechazo de la hipótesis nula ( $\text{Sig} < 0,05$ ) y se aprobó la hipótesis alterna; lo que evidenció que en el periodo de confinamiento por la pandemia del COVID-19, los promedios en el área de Educación Física disminuyeron.



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**Palabras clave:** clases a distancia, Educación Física, pandemia.

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## RESUMO

A Educação Física, atualmente, dá cada vez mais atenção ao desenvolvimento de estratégias pedagógicas, com o objetivo de aperfeiçoar as conquistas da aprendizagem e torná-la sustentável e enfrenta muitos desafios de como acessar e manter, em qualquer idade da vida, o envolvimento em experiências de aprendizagem estimulantes. . O objetivo deste trabalho foi desenvolver um estudo comparativo entre dois grupos de alunos para avaliar a qualidade do processo de ensino-aprendizagem da Educação Física, a partir da diferença entre a aula presencial e a aula a distância, demonstrada no resultados acadêmicos. . A pesquisa foi desenvolvida com abordagem quantitativa e delineamento quase-experimental com pré-teste e pós-teste, participaram alunos do ensino fundamental regular da quarta série no ano de 2020 e da quinta série durante o ano de 2021. O teste de hipótese determinou que a diferença na médias foi significativa, durante o ano de 2020 foi de 14,5 e em 2021, de 13,5 para 0,05. A hipótese nula foi rejeitada ( $\text{Sig} < 0,05$ ) e a hipótese alternativa foi aprovada; que mostrou que no período de confinamento devido à pandemia de COVID-19, as médias na área da Educação Física diminuíram.

**Palavras-chave:** aulas a distância, Educação Física, pandemia.

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## INTRODUCTION

Physical Education, currently, pays more attention to the development of pedagogical strategies, with the aim of perfecting learning achievements and making it sustainable. There are many challenges of how to access and maintain, at any age of life, participation in stimulating learning experiences; added to this is the expectation that being present in a place is increasingly difficult in our interconnected society (Lakhal *et al.*, 2017).



There is a growing understanding of the need to go beyond the boundaries of educational institutions and apply the expertise of partner organizations to address expanding enrollments and shrinking institutional budgets Stupnisky and Butz (cited by Raes, *et al.*, 2020). They consider that learning achievements can improve based on equipment, first aid resources for possible injuries and other costs involved in the development of Physical Education.

With the pandemic and its impacts in all spheres, education becomes a priority, the increase in school dropouts in secondary and tertiary students and the increase in learning gaps is a reality in the Peruvian context, with greater emphasis in the little ones who have difficulties in continuing with distance learning. ECLAC and UNESCO considered it relevant to safeguard the educational budget to protect national systems from the gap of inequalities in access to education and the learning crisis (World Education Monitoring Report Team, 2020).

Osuna and Díaz (2020) carried out a study in Mexico, on the results of the achievements of learning competency in Physical Education, through a retrospective analysis of the level achieved by students aged 15 years old who are in secondary school, of the tests applied in PISA, ENLACE and PLANEA. Among the results found are that out of every 100 students, five manage to obtain the expected learning and these have remained at the lowest levels for more than ten years, according to the international PISA tests and the national ENLACE and PLANEA tests, the latter are articulated to the curriculum. The above is a clear sign that the desired learning is not achieved and this leaves many challenges in educational policy.

In general, the educational systems of the region, faced with the different adversities of the pandemic context, must prioritize curricular elements, with the modality of distance education; in this endeavor, it is about guaranteeing the continuity of learning, although its monitoring becomes more complex every day and the regional panorama shows that more than half of the students do not reach minimum learning levels in basic subjects.



The above leads the teacher to venture into innovative methodologies in the teaching-learning process and look for feasible alternatives that promote feedback and focused learning, in order to improve the process for students and ensure that no one is left behind (UNESCO Office Santiago and Regional Bureau for Education in Latin America and the Caribbean, 2021).

It is true that "(...) even before the pandemic, a large part of the students in the region did not achieve the basic skills expected for their age" (Ídem, 2021, p. 5) so, faced with the new challenges and, it is timely to address the issue of evaluating student learning achievements in times of pandemic; in this line, the present study is framed, which undertakes a relevant, educational and social theme.

According to Bellanca (cited by Tijmsa, *et al.*, 2020), during the 21st century there is an expectation where citizens are able to adapt and evolve, in response to rapid social change; to achieve this, critical thinking and problem solving are required, skills that can only be acquired through commitment to society.

The key word is learning, understood as a set of guidelines, behaviors and actions that students must show in the development of knowledge, habits, abilities, skills, values, capabilities and attitudes, which is put into practice in the family, work and social aspects and aims to always seek the outstanding satisfactory level. Models, methodologies, theories and approaches intervene in this entire process that seek to answer what is the difference in average evaluation achievements in Physical Education, during the COVID-19 pandemic.

In the study presented, a systematic exploration of the existing literature is carried out to serve as a basis for approaching the evaluation of student learning achievements in times of pandemic. Therefore, in this review stage, results are presented based on bibliometrics and semantic analysis.

The research is framed in a mixed approach with methodological complementarity. Through the quantitative route, bibliometrics will be used to analyze the development of publications related to the evaluation of student learning achievements and through the



qualitative route, rigorous analyzes of the theoretical and methodological contributions around the phenomenon will be used.

In the first part, a summary of the research process is presented, as well as the results obtained, then an introduction is made where some conceptual issues closely linked to the topic are specified and the method used is explained, the results of the systematization are presented through publications ordered by countries, authors, type and areas of interest in the topic and finally, the results that allow the conclusions are discussed.

So to demonstrate from a theoretical and empirical point of view the impact of educational influences in the time of pandemic specifically, from Physical Education, the authors of this research aim to carry out a comparative study between two groups of students to evaluate the quality of the teaching-learning process of Physical Education, based on the difference between face-to-face classes and distance classes, demonstrated in the academic results.

### ***MATERIALS AND METHODS***

The research was developed with a quantitative approach and quasi-experimental design with pretest and posttest in the same group; regular basic education students from the fourth grade in the year 2020 and fifth grade during the year 2021 (the same students who had attended fourth grade the previous year) participated.

A non-probabilistic, census sample of 42 secondary education students from an educational institution in Peru was considered; that is, to all the students of said grades who had developed the area of Physical Education, and as an inclusion criterion, to the students who participated in the area of Physical Education in times of pandemic

The measurement of the qualifiers was made in consideration of the averages of each fourth-grade student of secondary education, during the year 2020; then the same student was placed in the following year. In parallel, their average grade was obtained and the averages of both evaluations were checked to determine learning achievement.



The information obtained was processed in an Excel program database, the results were presented in tables. The hypothesis test was used with the IBM-SPSS 20.0 statistical program; using the T test of mean difference, after determining that they met normality.

The null (Ho) and alternative (H1) hypotheses were:

- Ho. There are no significant differences in the averages in the area of Physical Education, in secondary education students.
- H1. There are significant differences in the averages in the area of Physical Education, in secondary education students.

Informed consent was the procedure applied, aligned with the principle of autonomy, based on the voluntary participation of students of Physical Education, secondary education, from an educational institution in Peru, and they are archived.

## ***RESULTS AND DISCUSSION***

As seen in table 1, the average in Physical Education of fourth grade (2020) and fifth grade (2021) secondary education students was 14.5 in 2020 and 13.5 in 2021. Regarding the lowest grade, it can be seen that in both years the lowest is 12 and the highest is 16. Regarding the variation of averages between one year and another, it was observed that only 13 students maintained their average, while 28 decreased it and only in one of them did it increase; which indicated that during the years of confinement due to the COVID-19 pandemic, the averages in the area of Physical Education decreased (Table 1 and Table 2).







Table 1. - Averages in Physical Education of fourth and fifth grade students of secondary education during the year 2020 and 2021

Student	E 1	E 2	E 3	E 4	E 5	E 6	E 7	E 8	E 9	E 10	E 11	E 12	E 13	E 14	E 15	E 16	E 17	E 18	E 19	E 20	E 21	E 22	
Year 2020	fifteen	fourteen	thirteen	fifteen	fourteen	fifteen	fifteen	fourteen	fourteen	fifteen	fourteen	fifteen	fifteen	fourteen	fourteen	fifteen	fourteen	fifteen	fourteen	fifteen	fourteen	fifteen	fourteen
Year 2021	fifteen	fourteen	fourteen	thirteen	fourteen	thirteen	thirteen	fourteen	fourteen	thirteen	fourteen	fifteen	fourteen	fourteen	thirteen	fourteen	fourteen	thirteen	fourteen	fourteen	thirteen	fourteen	fourteen

Table 2. - Averages in Physical Education of fourth and fifth grade students of secondary education during the year 2020 and 2021

Student before	E 22	E 23	E 24	E 25	E 26	E 27	E 28	E 29	E 30	E 31	E 32	E 33	E 34	E 35	E 36	E 37	E 38	E 39	E 40	E 41	E 42	
Year 2020	fifteen	fifteen	fifteen	fifteen	fourteen	fourteen	fourteen	fourteen	fourteen	fourteen	fourteen	fourteen	fifteen	fourteen	fifteen	fourteen	fourteen	fourteen	fourteen	fourteen	fifteen	fourteen
Year 2021	fifteen	fourteen	thirteen	fourteen	fourteen	fourteen	fourteen	fourteen	fourteen	fourteen	fourteen	fourteen	fourteen	fourteen	fourteen	fourteen	fourteen	fourteen	fourteen	fourteen	fourteen	fourteen

The hypothesis test was carried out to determine if the difference in the averages was significant, with respect to a significance of 0.05; the null hypothesis was rejected due to significance (Sig <0.05) and the alternative hypothesis was approved. So, the difference was significant, considering that the average grade of the students during the year 2020 was 14.5 and in the year 2021 it was 13.5.

To evaluate and improve the learning achievements of the students, according to the reviewed publications, it was recommended to use some media such as radio, television and current digital technology, optimal not only to transmit information, but to build knowledge on the basis of inclusion of Edu communication in academics (Pozo, *et al.*, 2020).



In recent years, as Suartama mentions *et al.* (2021), information and communication technologies have been integrated into educational practices, this has produced a series of online learning trends. Hence, electronic learning (e- Learning) begins, moves towards mobile learning (m- Learning) and finally arrives at ubiquitous learning (u- Learning).

Online learning can be very favorable because it promotes active participation and creativity in students and at the same time, they can learn and interact anytime, anywhere. This is complemented in such a way that through mobile devices, learners can stay busy downloading videos, movies and music of educational content, and not only spend time playing or chatting on social networks, which delays performance and learning.

There is evidence that proves the superiority of the use of digital platforms to develop works that have traditionally been done manually, according to Sitanggang. *et al.* (2020) in a study conducted, the Google SketchUp application was more effective than PowerPoint in learning building interior design.

A great diversity of competencies developed in students has been demonstrated, through the use of learning applications in PE, Ruggiero (cited by Yaniawati, *et al.*, 2020) relates the process of executing physical exercises with a variety of options and capabilities to create various creative ways to do gymnastics online. It is intended that this skill allows the development of Physical Education, so that the student can be in balanced coexistence with the environment (Rodriguez, *et al.*, 2021); In addition, influence the training and evaluation of the learning achievements of preventive skills in students, as mentioned by Shyr *et al.* (2021).

Theories were found such as self-determination, mentioned by Raes *et al.* (2020) that supports the relationship of learning with the environment; this makes it easier for Physical Education teachers and students to experience intrinsic motivation as a form of feedback and influences learning performance.

Meanwhile, cognitive-affective theory conceptualizes new types of learning in a framework that combines cognitive and affective aspects. The control value theory of achievement attitude refers to the learning attitude related to the effectiveness of learning (attitude) and



the overall course feedback (potential variables). The interactive teaching experience approach and technological action puzzles (Shyr, *et al.*, 2021) allow active methods to be explored, contextualized and applied to the teaching-learning process of Physical Education.

Some teaching models use technology and can be used in the teaching of Physical Education, such as the study carried out by Wen Yu *et al.* (2021) that relate the advantages of participatory simulation and compare student participation models and scientific learning outcomes, in a multi-team participatory simulation game, where instructions are given online and the continuity of the exercise takes place. Classroom.

Similarly, flipped learning, according to Parra *et al.* (2020) and Shim and Jong (2021) is a mixed methodology where face-to-face and virtual teaching is combined and has been recently used at different educational levels. In their research, Shim & Jong (2021) specify that in flipped learning, interaction is key and the teacher is a guide. This study turned out to be statistically significant in improving the students' self-directed learning, motivation, effectiveness, and performance.

The method is based on enhancing the time that the student is in the classroom, to solve problems, interact with classmates, provide feedback and deepen the content. In this context, the teacher guides content, uses an audiovisual medium hosted on a digital platform, to which students have access before attending classes; which changes traditional schemes and generates motivation in the group. It is considered vital in Physical Education, since attitudes are formed for learning, commitment to solving tasks, interaction, participation, socialization, autonomy and regulation of individual learning rhythms; the teacher guides, aims at the effectiveness and performance of learning among high school students.

Parra *et al.* (2020) in a case study analyzed "gamification" as a teaching model. Gamification, from its most integrative concept, is understood as an active methodology applied in education, through the use of structures, elements and designs of games and environments, in organized educational spaces and that generates a better learning process, encouraging



achievements. and more enthusiasm in schoolchildren; model that contextualized, enriches the process being investigated.

Educational institutions must prepare students to be productive citizens, therefore they must be committed to society; so Tijisma *et al.* (2020) is assumed, who mention that community service learning allows students to participate and reflect on public benefits and contributes to their own learning.

Ubiquitous learning is a learning strategy that integrates mobile technology and allows learning to take place without limits, anywhere, at any time and in any way (depending on the learning context) depending on conditions, priorities and desires of the apprentices (Suartama, *et al.*, 2021); whose information obtained from the application of this probabilistic model allows planning differentiated and specialized lessons to improve performance (Rodriguez, *et al.*, 2021).

According to (Froment *et al.*, 2020), a lot has to do with the teacher's credibility to have good learning achievements, the students' learning results after evaluating. They highlight that it is necessary for teachers to show integrity and professional ethics and in this way be perceived positively by students. In the study carried out by Murillo (2020), evidences were found about that school segregation by socioeconomic level affects the academic performance of students.

In recent years, the connectivist paradigm has been talked about, mentioned by Aguilar and Mosquera (cited by Sánchez, *et al.*, 2019) as an idea of changing, versatile and continuously growing knowledge, which indicates that it is outside of total control of man, can be hosted in external networks such as software or digital platforms or others that are constantly changing and becomes not only personal knowledge or learning, but rather a way of understanding community thinking, united in a network on the basis for the same purpose, that is, the generation of ecosystems of variable knowledge networks.

This perspective is very updating when teaching Physical Education, as it gives the student a leading role in learning, with the choice of topics and the way of organizing them; it is not limited, rather it makes it possible to access the network of knowledge organized by nodes



that structure learning for the construction of new learning (Sánchez *et al.*, 2019). For Connectivism, knowledge is distributed where the human being is continually connecting thanks to technology, far from his cognitive analysis and maximizes his knowledge in the form of a network, this paradigm is presented as the methodological basis of e- learning processes and as a theory developed for distance teaching.

For UNESCO Office Santiago and Regional Bureau for Education in Latin America and the Caribbean (2021) during the pandemic, formative assessment takes a lot of attention and becomes an important tool to collect data on children's learning process within the framework of online education; it consists of carrying out various formal and informal evaluation activities by teachers in the sessions of the teaching-learning process and thus reinforcing new optimal learning strategies.

Makri *et al.* (2021) develop research on current trends in relation to digital educational escape rooms (DEER) and investigate how they promote learning outcomes for online students, given the research gap, since there is only literature focused on the pedagogical aspects of Escape Rooms (ERs) in education, but it does not appear that studies have been carried out regarding the pedagogical implications of Digital Escape Rooms (DER) in educational environments; Additionally, it provides insights into the design process of these technology-enhanced DEERs.

In times of pandemic, flexibility and access to the education of students in its entirety is sought; for this purpose, synchronous hybrid virtual classrooms have been designed so that students can make a remote connection for their teaching and on their use and effectiveness for learning results. There are not many studies (Raes *et al.*, 2020).

## CONCLUSIONS

The average in Physical Education of the fourth and fifth grade students of secondary education was 14.5 and 13.5; 13 students maintained it, 28 decreased it and only one increased it; which indicated that during the years of confinement due to the COVID-19 pandemic, the averages in the area of Physical Education decreased.



To evaluate and improve students' learning achievements, the contextualization of theories, models and approaches in the teaching-learning process of Physical Education is considered vital for face-to-face and distance classes, as they facilitate the formation of attitudes, the commitment to solving tasks, interaction, participation, socialization, autonomy and regulation of individual learning rhythms, where the teacher guides, aims at the student's effectiveness and performance.

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***Conflict of interests:***

The authors declare not to have any interest conflicts.

***Authors' contribution:***

The authors have participated in the writing of the work and analysis of the documents



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