

# USE OF INFORMATION TECHNOLOGY IN PHYSICAL EDUCATION LESSONS FOR PRIMARY STUDENTS

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**Abstract:** *The use of new technologies in physical education requires teachers to have a set of knowledge and skills that would favor the use and capitalization of new technologies in the didactic activity. These modern technologies, used in the physical education lesson, represent one of the most complex forms of integration of informal education into formal education. Contributing to the efficiency of the researched study, the use of these information technologies in the teaching-learning-evaluation process achieves the diversification of didactic strategies, allowing the student access to various structured information, presented in different ways of visualization. Technology has enough potential to simplify effective physical education instruction and provide teachers with key information. In this study, I aimed to use information technology in physical education classes to increase the performance of learning sports skills in physical activities among primary school students, respectively the 4th grade.*

**Key words:** *information technology, physical education, students, primary school.*

## 1. Introduction

In the digital age where technology is evolving rapidly, its integration into various fields of learning is becoming increasingly relevant and, without a doubt, physical education is no exception. Primary school students face specific challenges in developing physical, motor and social skills.

Thus, the adoption of information technology in physical education lessons represents an innovative paradigm that

opens new horizons in their learning and development process.

The application of information technologies in the education system is imposed by the exigencies of today's society.

Internet-based training environments bring with them both a new educational environment and new teaching-learning-evaluation methods that add new values to the educational process and to the physical education class.

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Their added value aims at organizing the educational process and increasing its quality, developing the ability to work in a team and to regard the teacher as a guide in the learning process, testing and developing new educational tools. [2]

In order to reach an optimal level in the design and implementation of an educational activity, emphasis is placed on how it is carried out and it involves organizational, procedural and material issues [9].

This is how the term "teaching technology" appears, which accepts two points of view: the first refers to the set of audio-visual means used in educational practice, and the second refers to the structural set of methods, means of education, strategies of organization of teaching-learning, put into practice, in close correlation with the pedagogical objectives, the contents transmitted, the forms of training and the assessment methods [3], [6].

For example, the use of the Video Tagger, the Easy Dart Indicator and the development of the Video Catch application provided an initial insight into how digital video technology can influence physical education and sport in the educational context when using GBAs to teach mini-games and sports games [4], [9].

In the researched experiment, we also made video recordings so that the students could document their own mistakes in the execution of acts and motor actions.

With this technology, especially mobile, we physical education teachers now have a wide range of tools we can use to examine and improve students' physical abilities. Here I might include video analytics, wearable technology, physical

education apps, gaming systems, virtual classrooms, monitors and trackers.

This article proposes to analyze the benefits, challenges and impact that information technology can have in the context of physical education for primary school. We will explore creative ways of implementing technology, highlighting how it can support not only the development of physical skills, but also foster motivation, active participation and collaboration among students.

Through this foray into the technological universe applied to physical education, we will discover how this evolution can contribute to the formation of a generation of students prepared to face the demands of an ever-changing digital world.

## 2. Objectives

The objectives of this study were: to identify new information technologies specific to the instructional-educational process in physical education as well as the use of information technology on the conduct of physical education classes in the fourth grade.

## 3. Material and Methods

The sample for the pedagogical experiment was made up of 25 students from 4th grade A, respectively 4th grade B from the Technological High School "Iorgu Varnav Liteanu", Liteni.

The 4th grade B students also benefited during the lessons from video support materials, technique and tactics, video recordings during the activities, video support sent on WhatsApp groups, the Classroom platform, all presented for a correct fixation of the notions.

To carry out this study we used the following scientific research methods applied in physical education and sport: bibliographical study method, observation method, document analysis, pedagogical experiment method, test method, interpretation and information processing method.

#### 4. Results and Discussions

In the last twenty years, information technologies have offered a school education enriched with extended contents, tools, methodologies, gradually changing the relationship between the discipline of physical education, teachers and students. [10]

Very quickly, developments in information technology have had important effects on the education system around the world. The use of technology is an important effect of the mediation between this discipline and the student, helping to change the way of learning and the development of intrinsic motivation [1].

As a physical education teacher I encouraged my students to improve skills by checking online videos and demonstrations, being accessible anytime and anywhere with just an internet connection.

The information available online helped me find videos to suit each student's needs, always making sure they were age and grade appropriate.

In addition, to encourage better learning we asked students to create their own videos of any workout they are passionate about. This is more engaging than making students sit and watch videos that are already on the internet.

In the researched experiment, physical education did not only mean being

physically active, thus the virtual classes were a learning process, the students engaged in discussions with me about learning, challenges and other information necessary for deepening and understanding.

Video games changed the way students thought and felt about being active and competitive. Because video games are a pleasure for them at this age, it sparked their interest in this application in physical education, being active even in bad weather.

Wordwall online interactive video games have stimulated interest in physical education classes in the 4th grade.

By using modern technology, the evolution of the motor parameters of the students involved in the pedagogical experiment (Table 1) has aroused significant interest in both groups. The tests used are well known in the literature and are frequently used in practical research in the field.

The analysis of the motor parameters was carried out using a series of three tests, each assessing a specific aspect: the speed test - 30 m run with a standing start, the strength test - long jump from a standing position, the mobility test - touching the plates to assess the hip joint.

This method of assessment provides a comprehensive overview of the students' motor skills and allows for a detailed analysis of progress over time.

The analysis of the motor results recorded after testing the subjects of the two groups involved in the pedagogical experiment, both girls and boys, allowed us to highlight some aspects regarding the distribution and homogeneity of these results. We made comparisons between the values obtained in the control group and the experimental group.

The values obtained from the initial and final tests for both girls and boys in both groups indicate a high degree of homogeneity of the results in all the measurements made during the research.

*Evolutionary indicators of motor training of 4th grade students* Table 1

| Test                               | Groups and statistical characteristics | Statistical characteristics        |                                  |      |        |
|------------------------------------|--|------------------------------------|----------------------------------|------|--------|
|                                    |  | Initial indicators $\bar{X} \pm m$ | Final indicators $\bar{X} \pm m$ | t    | P      |
| Speed running 30 m/s               | E                                      | 5,98±0,16                          | 5,44±0,11                        | 3,60 | <0,01  |
|                                    | C                                      | 6,00±0,15                          | 5,82±0,14                        | 1,12 | >0,05  |
|                                    | t                                      | 0,08                               | 2,10                             | -    | -      |
|                                    | P                                      | >0,05                              | <0,05                            | -    | -      |
| Long jump from a standing position | E                                      | 153,00±4,30                        | 171,06±4,20                      | 4,06 | <0,001 |
|                                    | C                                      | 153,60±4,29                        | 162,13±4,22                      | 1,19 | >0,05  |
|                                    | t                                      | 0,11                               | 2,15                             | -    | -      |
|                                    | P                                      | >0,05                              | <0,05                            | -    | -      |
| Touching the tiles, cm             | E                                      | 6,70±0,23                          | 8,10±0,27                        | 4,30 | <0,001 |
|                                    | C                                      | 6,60±0,26                          | 7,30±0,25                        | 1,54 | >0,05  |
|                                    | t                                      | 0,25                               | 2,50                             | -    | -      |
|                                    | P                                      | >0,05                              | <0,05                            | -    | -      |

The significance test did not reveal representative values for any of the indicators measured in the initial tests, confirming the absence of statistical differences between the groups involved in the pedagogical experiment.

In contrast, the final tests revealed significant changes in the indicators in the experimental classes, demonstrating the effectiveness of using information technology in physical education classes.

For example, the results obtained in the 30-meter running test, used to assess motor performance in the fourth grades (Table 1), in the control group indicate an increase in the means in the final test by 0.14 seconds compared to the initial test, where  $t = 0.09$ , being insignificant at the  $P > 0.05$  threshold.

For the experimental group, these increasing changes reach values above

0.11 sec, which argues a significant difference between the initial and final results, with  $t = 3.60$  and  $P < 0.01$ .

Thus, the results of the final tests between the 2 experimental and control classes differ significantly, compared to the initial tests, where a significance level of  $P < 0.05$  is found.

Thornburg and Hill, (2004) suggest that technology in physical education should be used as a tool to facilitate students' motor learning. A "wise" use of technology is to create learning where students can be more actively involved in their own learning process.

Technology-enhanced learning environments have the potential to increase student participation in complex cognitive tasks to improve opportunities to receive feedback, even individualized, and to build communities of interaction

among teachers, students, parents, and other interested groups.

## 5. Conclusions

In general, technology managed to positively restructure physical education classes as well. With video analysis, applications, videos, monitors and trackers in physical education classes I managed to create personalized and reasonable goals for students.

By using these technologies, the students were more involved and physically active, which led to better results in the final tests.

As a physical education teacher, thanks to my doctoral research on this topic, I also use information technology support in the primary cycle to improve the students' knowledge in the physical education class in the school unit where I work.

These results and interpretations demonstrate that the use of information technology in physical education lessons for primary school students can represent an effective and beneficial paradigm for their holistic development.

Integrating technology into the educational process has not only improved physical performance, but also boosted engagement, team spirit, and student preparation for the challenges of the digital society.

I believe that physical education needs much more implications regarding the use of information technology to enrich the instructive-educational process as well as the specific field.

In conclusion, the integration of information technology in physical education lessons for primary school students represents an innovative and

beneficial approach for their learning and development process. The results and interpretations highlight the multiple advantages of using technology in this context, bringing significant improvements in various aspects of student learning.

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