SMARTPHONES AND SCHOOL PHYSICAL EDUCATION: THE IMPACT OF TACTICAL BOARD APPS ON STUDENT PARTICIPATION AND UNDERSTANDING IN INVASION SPORTS

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ABSTRACT

This article examines the potential and challenges of integrating *smartphones*, specifically tactical board apps, into PE classes. The study, conducted with 67 9th graders, found that the use of smartphones increased students' interest and made it easier for them to understand tactical systems, especially in invasion sports like handball and basketball. The tactical board app was found to be intuitive, allowing students to focus on the content instead of worrying about the technical aspects of the app. However, the study also found that some students had difficulty translating the knowledge gained through the app into practical situations on the court. This difficulty highlights the need for effective pedagogical strategies that help students bridge the gap between virtual learning and practical application, demonstrating that the integration of smartphones in Physical Education requires a thoughtful and reflective approach that explores the potential benefits, but also recognizes the challenges and responsibilities associated with *smartphone* use in schools. It is concluded that there is a need for further studies to ensure that the skills developed digitally are effectively transferred to practice, to optimize the teaching-learning process.

Keywords: Smartphone. School Physical Education. Tactical Board. Invasion Sport.

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INTRODUCTION

The growing presence of *smartphones* in schools in recent years, as evidenced by IBGE data (2021), demonstrates that most students aged 10 and over access the Internet predominantly through these devices. In Brazil, public policies, such as the Civil Rights Framework for the Internet (Law 12,965/14) and the recent National Policy on Digital Education (Law 14,533/23), have reinforced digital inclusion in schools, creating an educational environment in constant transformation.

In this context, *smartphones* emerge as pedagogical tools that offer varied functionalities, such as performance analysis and production of educational content. Such devices can be integrated into teaching in an innovative way, which allow for more visual and dynamic learning, complementing practical activities and making learning more meaningful and engaging. This context presents specific challenges for Physical Education, traditionally based on body movement, which is also part of this new panorama. Thus, it is likely that there will be difficulties in integrating technologies into the pedagogical practices of Physical Education (Tahara and Darido, 2016).

Traditionally, Physical Education classes are based on conventional sports practices, games and outdoor activities. The contemporary educational scenario requires constant adaptation in order to incorporate modern technologies into the teaching and learning process, making it necessary for teachers to take responsibility for the use of technology in a critical and proactive manner (Falsetti; Delbin; Martelli, 2021).

The theoretical framework of this study explores the insertion of Digital Information and Communication Technologies (DICT) in School Physical Education, with emphasis on the use of the *smartphone* as a pedagogical resource. The integration of DICT into the school environment has provided new possibilities for student interaction and engagement, but it also faces challenges, such as the lack of adequate infrastructure and the need for continuous teacher training (Gemente, Silva & Matthiesen, 2021). Teacher training is essential for pedagogical practices to adapt to the use of these technologies, allowing teachers to develop technical and pedagogical skills to critically and reflexively integrate *smartphones* and other DICT into the teaching-learning process (Falsetti, Delbin & Martelli, 2021).

The use of *smartphones* in Physical Education classes can reconfigure pedagogical methodologies, promoting learning aligned with the technological demands of students. In this sense, the use of applications (in the case of this study, the tactical board applications) stands out, allowing a dynamic visual support for the teaching of sports, especially in invasion sports. Studies indicate that pedagogical resources, used from *smartphones*, can

increase the interest, engagement, and participation of students in classes, transforming physical activities into more interactive experiences (Oliveira, 2020).

However, the effective adoption of these technologies requires a coherent articulation between pedagogical and technological demands, as well as an effort in teacher training to ensure the full and effective use of smartphones in teaching. This study investigates, through a survey of 9th grade students, the opportunities and challenges of using *smartphones* in Physical Education classes, particularly with a focus on understanding tactical systems through a tactical board app. The research is justified by the difficulty that many students have in understanding these systems from traditional materials, such as notebooks and textbooks, highlighting the potential of the smartphone to make learning more accessible and engaging.

Thus, the relevance of the use of DICT, especially *smartphones*, in the context of School Physical Education, reflects the need for a pedagogical approach adapted to the reality of students, promoting a more dynamic teaching environment and aligned with the new demands of the contemporary educational context.

METHODOLOGY

The quantitative-qualitative research (Bogdan, 1994) was carried out with 67 students from the 9th grade of Elementary School in a public school. Of these, 10 students (5 boys and 5 girls) participated in the focus group. The selection of participants considered criteria such as participation in the didactic sequence, with the objective of capturing students' opinions and experiences about the use of *smartphones* in Physical Education classes, in the final years of Elementary School. The investigation was structured around a didactic sequence composed of six classes that used *smartphones* as a pedagogical resource for the teaching of invasion sports. After these classes, a focus group was organized to understand their perceptions (Gatti, 2005).

The focus group participants were selected considering those who completed the didactic sequence and had previously volunteered. Data collection included 2 focus group sessions. 10 students participated, with equal distribution between genders, and the discussions were transcribed and analyzed using the content analysis technique (Bardin, 2011) and quantitatively using the IRAMUTEQ software, which helped to map the most frequent words and emerging themes from the students' discussions.

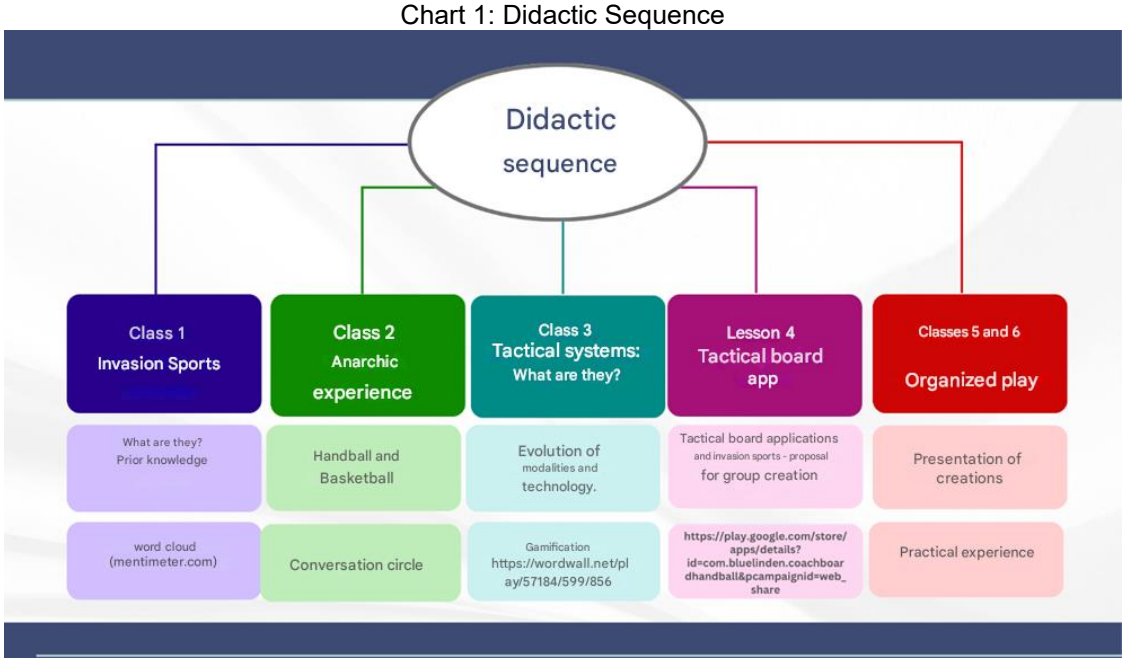
The procedures to ensure research ethics strictly followed the guidelines of the National Council for Ethics and Research (CONEP), with prior approval by the University's Ethics Committee under number 6.764.905/24. The research also respected ethical

precepts, such as the Informed Consent Form (ICF) and the Informed Consent Form (TALE), ensuring the confidentiality and voluntariness of the participants.

DIDACTIC SEQUENCE

Lasting six classes, the didactic sequence addressed the theme of invasion sports (Handball and Basketball), using a tactical board application as a pedagogical tool, having as reference the National Common Curricular Base (Brazil, 2018) and the São Paulo Curriculum (São Paulo, 2019). The method chosen was that of teaching from the tactical approach in invasion sports (Dumke; Ginciene; Borges, 2021).

Chart 1: Didactic Sequence



Source: Prepared by the authors

FOCUS GROUP

Two focus group meetings were held, lasting one hour each, with the aim of deepening the understanding of the influence of the use of smartphones on student participation and understanding. The meetings addressed the following questions:

Meeting 1: How was the use of the tactical board application to understand tactical systems in invasion sports during Physical Education classes?

Meeting 2: How did the use of the smartphone affect your participation in Physical Education classes?

The discussions were recorded and transcribed for later content analysis, using the IRAMUTEQ software for lexical frequency and word cloud analysis, and following the steps proposed by Bardin (2011) for data interpretation.

RESULTS AND DISCUSSION

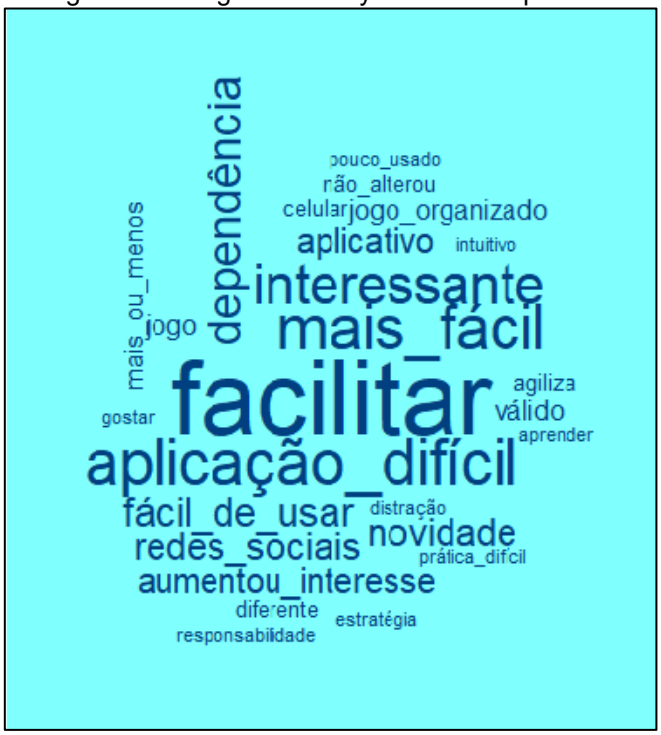
The results of the focus group meetings brought important reflections on the use of the tactical board application on smartphones in Physical Education classes. During these sessions, positive perceptions and practical challenges related to the use of this technology in the pedagogical context emerged.

Table 1: Lexical frequency analysis

Theme	Number of Occurrences
Facilitate	31
Difficult application	18
Easier	17
Interesting	15
Dependency	12

Source: Prepared by the authors

Image 1: Words generated by the Iramuteq software



Source: Prepared by the authors

The analysis of the data collected in the focus group revealed three main themes: increased interest, ease of handling the application and difficulty in practical application.

INCREASE IN INTEREST

The use of the tactical board application showed a greater interest of students in Physical Education classes. The tool made learning more attractive and dynamic, bringing it closer to the students' digital reality, as evidenced in the reports:

> "The app. It seems that I was more interested. I was able to see things that I didn't see" (Student 1).
> "It has changed. Because I was interested" (Student 3).
> "People are more interested. It's a business that we're about to start. It's an easy thing to do. The person already has a habit. It's easy. The person will make it" (Student 6).

Students' familiarity with *smartphones* and the possibility of interacting with the content digitally contributed to this greater interest, corroborating the observations of Seibel and Isse (2017), and Gemente, Silva and Matthiesen (2021) on the potential of *smartphones* to increase student participation and engagement in Physical Education classes.

EASE OF HANDLING THE APPLICATION

The app was found to be intuitive and easy to use by most participants. Despite some initial difficulties, the user-friendly interface allowed students to focus on the content rather than the technical aspects, as reported by some students:

> "Easy. Easy? He is very intuitive" (Student 6).
> "At first, I thought it was complicated. But once you get the hang of it, it gets easier" (Student 7).

This ease of use corroborates Oliveira's (2020) observation about the ability of young people to handle smartphones. In addition, the ease of use of the app allowed students to explore different possibilities for tactical creation, which contributed to more autonomous and creative learning, as noted by Tahara and Darido (2016).

DIFFICULTY IN PRACTICAL APPLICATION

Although the app has made it easier to understand tactical systems, some students have faced difficulties in applying the knowledge acquired in practical activities on the court. This difficulty may be related to the complexity of the transition from the virtual to the real

environment, as pointed out by Bacich and Moran (2017), who discuss the challenges of integration between the traditional and digital teaching models.

Some reports from the students illustrate this difficulty:

> "We went there to see if it worked. Then, in practice, it got very complicated, you know?" (Student 3);
> "It was difficult and not easy. It was something that if I could visualize it very quickly, I could get there on the court, put it there and stuff, without... Without needing the application" (Student 8).
> "It was harder, right? I think it was more difficult too, to have people who don't help much, right? yes, they were playing there. That's right?" (Student 6).

These reports suggest that practical experience requires additional skills, such as communication, collaboration, and adaptation to unforeseen situations, which may not be fully developed in the virtual environment of the application. The difficulty in practical application highlights the importance of pedagogical strategies that help students to bridge this gap between the virtual and the real, such as creating bridges between the application and practice on the court, through activities that simulate game situations, and stimulating teamwork and communication among students. so that they can apply the knowledge acquired in the application collaboratively.

The research showed, then, that the use of *smartphones* and tactical board applications can be an effective strategy to increase interest and facilitate students' understanding in Physical Education classes. The positive results observed in terms of increased interest and ease of handling of the application corroborate the literature that defends the pedagogical potential of smartphones in EFE.

However, it is critical to recognize the challenges in the practical application of knowledge, such as the need for more time for practice, proper pedagogical mediation, and the development of interpersonal skills. The difficulty in transitioning from the virtual to the real environment highlights the importance of pedagogical strategies that help students in this process. It is necessary to go beyond the simple dichotomy between banning and releasing smartphones in schools, seeking a path that allows exploring the pedagogical potential of these devices, without ignoring the challenges and responsibilities that their use implies.

FINAL CONSIDERATIONS

The integration of *smartphones* in Physical Education classes requires a critical and reflective approach, which considers the needs and perceptions of students. It is important that the use of technology is planned in a way that complements, and not replaces, practical activities, promoting meaningful and contextualized learning.

"Liquid modernity", as defined by Bauman (2001), imposes a constant challenge to education. Technologies, social relations and knowledge itself are in constant flux and transformation, demanding a flexible and critical posture on the part of educators and students. In this context, continuing education for teachers emerges as a crucial element, in order to enable them to use DICT in their pedagogical practices, exploring the potential of smartphones and other digital tools to promote meaningful and engaging learning.

In summary, the research points to a promising future regarding the integration of smartphones in PE, but emphasizes the need for caution, planning and adequate training so that this integration translates into meaningful learning for students. Further research is needed to deepen the understanding of the challenges and potentialities of the use of smartphones in EFE, contributing to the construction of innovative and effective pedagogical practices that accompany the transformations of contemporary society.

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