



## THE MAIN OBSTACLES TO THE USE OF TECHNOLOGY IN PHYSICAL EDUCATION LESSONS FOR SECONDARY SCHOOL STUDENTS

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### ABSTRACT

**Background.** The incorporation of technology in education has emerged as a crucial factor in improving teaching and learning methodologies. Nonetheless, the application of technology in physical education (PE) is still restricted in comparison to other fields. This study examines the primary challenges that impede the effective integration of technology in physical education classes for secondary school students. **Objectives.** The research seeks to pinpoint the primary challenges encountered by physical education teachers in the integration of technological tools and to examine the factors that affect their utilization in both classroom and field-based instruction. **Method.** The research utilized a descriptive survey methodology. The target population comprised 122 physical education instructors from intermediate and secondary institutions associated with the General Directorate of Education in Wasit. A purposive sampling technique was used to choose 80 teachers (65.57%) from a group of 80. A validated and reliable questionnaire with 38 items spread across several dimensions was used to collect data. The instrument was administered electronically through Google Forms, and the data were analyzed utilizing descriptive and inferential statistical methods. **Results.** The findings indicated that the principal barriers to technology integration encompassed inadequate administrative and technical support, insufficient digital infrastructure, limited teacher proficiency in utilizing technological devices and software, a deficiency of digital teaching resources, and ambiguous institutional policies. These barriers show that technology adoption is limited by a combination of technological, human, and organizational factors. **Conclusion.** The study finds that for technology to be successfully integrated into physical education, teachers need to be trained in a systematic way, the infrastructure needs to be improved, and administrative support needs to be consistent. Creating a strategic vision for digital transformation in physical education can give teachers the tools they need to use technology effectively and help students learn more and be more interested in what they're learning.

**Keywords;** obstacles, technology integration, physical education, secondary education.



## A. INTRODUCTION

In recent years, a tremendous scientific revolution has taken place, achieved by humans as the cornerstone of scientific and technological advancement. Within the global competition among nations to achieve further progress and improve the standard of living, the development of education at all levels has become a primary goal to ensure advancement, prosperity, and alignment with developed countries (Ferraz et al., 2023; Morkhat, 2018). In this context, the Ministry of Education is considered one of the key institutions striving to achieve the desired objectives for the advancement of society. Education is a human system and a national construct that fulfills social, political, economic, psychological, health-related, and intellectual functions (Chiu et al., 2021; Musa, 2022; Zult et al., 2014).

The remarkable scientific progress of recent years has posed a major challenge to scholars and specialists across various scientific fields, particularly in physical education. Utilizing such progress in teaching physical education is essentially linked to behavioral changes that foster the learning process. This process plays a vital role in the advancement of nations, as it positively influences the upbringing of new generations on modern and scientifically grounded principles (Aziz, Okilanda, Permadi, et al., 2023; Hardinata et al., 2023; Tantri et al., 2023). Technological modernization, therefore, requires societal transformation to confront challenges, resolve issues, and achieve cultural growth through continuous adaptation to technological changes (Mashud, Warni, et al., 2023; Suryadi et al., 2024). This occurs by integrating scientific theories with their applications and employing them in service of society, with curricula forming the foundation for utilizing technological tools to meet modern developments in human knowledge.

Physical education is considered one of the most significant contemporary educational fields aimed at developing the individual. Physical education teachers increasingly recognize the importance of their subject, as supported by modern educational trends and scientific discoveries that highlight the critical role of physical education and elevate it among other school subjects (Aziz, Okilanda, Rozi, et al., 2023; Rismanto et al., 2024; Yulianti et al., 2024). As an independent educational system, school-based physical education seeks to foster individual development, enhance physical fitness, and build motor and skill-related abilities, while shaping social values that contribute to a well-rounded personality. Its importance lies in its connection to play as a human phenomenon proven by scientific and psychological

research to be crucial for building balanced personalities that embody recognition, acceptance, and belonging (Mashud, Arifin, et al., 2023).

In today's context, physical education has gained increasing importance due to its role in addressing leisure-time issues that have become more apparent with scientific and technological progress. Within the contemporary Iraqi society and considering educational research on the development of physical education, the use of modern technology has become even more essential in advancing this field. Educational technologies have thus become central to educational development, as emphasized in the National Mubarak Project, which called for a comprehensive renaissance across all sectors, including education. This requires the production and utilization of advanced instructional technologies, alongside training for educators to embrace and integrate these innovations into teaching across different educational stages.

#### *Problem of the Study*

The rapid change in knowledge and information resulting from data processing and communication technologies has extended to all different fields. It has become evident in the field of education that the methods currently employed are no longer able to keep pace with the increasing growth of knowledge or to address the rising number of learners (Rakha, 2024; Zeng, 2020). There is now a necessity to find more effective means of delivering information and activating the learner's role in the educational process to achieve competency-based education and the practical application of developed educational skills. This, in turn, enables the learner to acquire the ability for sound scientific thinking.

It is essential to emphasize the significant interrelationship between the integration of technology in education for curriculum design, teaching, and assessment systems, and the enhancement of learners' capabilities (Li & Xiong, 2023; Zhang et al., 2024). This is based on the premise that the scientific progress in advanced societies is largely attributed to the utilization of technology, its management, and its modern devices within education, which results in the emergence of a generation of learners possessing the knowledge and technological skills necessary for the development of industrial processes and their equipment (Goodyear et al., 2014; Jin & Zhan, 2024; A. Liu et al., 2023; Rocamora et al., 2019).

Thus, the reciprocal relationship between technological advancement and education becomes clear.

Through applying this in practice to learners at both preparatory and secondary levels, the researcher observed the absence of multimedia use in physical education lessons. Considering that multimedia has become widespread in all educational subjects, physical education should likewise benefit from its use in teaching various sports skills (Casey et al., 2017; Friskawati et al., 2020; Y. Liu et al., 2022). Based on this premise, and in line with the scientific and technological progress witnessed in this era, the researcher aimed to conduct this study by surveying physical education teachers to identify the most significant obstacles hindering the use of technology in physical education lessons at the preparatory stage.

This study aims to identify the primary obstacles to the incorporation of technology in physical education instruction. By identifying these obstacles, the research aims to provide insights that can assist policymakers, educational administrators, and teacher training programs in formulating strategies to improve digital readiness and facilitate the effective utilization of technology in physical education. This study focuses on preparatory stage schools located in the center of Wasit Governorate, conducted from February 21 to April 14, 2025.

## **B. METHOD**

### *Participant*

The study population consisted of (122) physical education teachers in preparatory and secondary schools under the General Directorate of Education in Wasit (center). The sample was randomly selected from physical education teachers at the preparatory stage across all educational departments, with the sample size reaching (80) teachers, representing (65.57%) of the study population.

### *Research Design*

The study utilized a descriptive research design through the survey method, considered suitable for identifying and analyzing the primary barriers impeding the integration of technology in physical education lessons. This method enabled the researcher to gather

quantitative data directly from physical education teachers to delineate the prevailing conditions and patterns associated with the research problem.

The research instrument was modified from the scale created by Samah Mohamed Hamdi (2004) to fit the needs of this study. The revised questionnaire originally contained 38 items organized into nine categories. These included issues with multimedia availability, teachers' ability to use multimedia devices, the effectiveness and use of multimedia, guidance in physical education, students, school administration, professional and academic preparation, and budgetary constraints. Respondents used a three-point Likert scale to rate each item: Yes (3 points), To some extent (2 points), and No (1 point).

To ensure the scientific rigor of the instrument, the researcher implemented procedures to validate its validity and reliability. After an expert review and a statistical analysis, it was shown that the content and construct validity were correct. Based on the results, three areas—students' problems, professional and academic preparation, and budget—were taken out. The area of guidance in physical education was changed to mean problems with the physical education teacher. The split-half method was used to test the scale's reliability, and it showed that it had good internal consistency. The scale of obstacles to using technology in physical education lessons can be seen in table 1-5.

**Table 1.** Obstacles Related to the Availability of Scientific Material in Technological Form (Domain 1)

No.	Statements	Yes	To Some Extent	No
1	Does the school have a computer and a data projector?			
2	Does the school have physical education material prepared for presentation in PowerPoint?			
3	Does the school have physical education material prepared for presentation on CD/DVD?			
4	Does the teacher use technology in physical education lessons?			

**Table 2.** Obstacles Related to the Ability to Handle Electronic Devices and Technological Software (Domain 2)

No.	Statements	Yes	To Some Extent	No
1	Can you operate a computer?			
2	Can you use a data projector?			
3	Can you use a tablet?			
4	Can you design a PowerPoint file containing physical education lesson skills?			

**Table 3.** Obstacles Related to the Use of Technology (Domain 3)

No.	Statements	Yes	To Some Extent	No
1	Do you use a computer to teach skills in physical education lessons?			

2	Do you use a data projector to teach skills in physical education lessons?
3	Do you use tablets to teach skills in physical education lessons?
4	Do you believe in the importance of using digital technology in teaching physical education?
5	Does lesson time allow the use of technology without affecting the lesson duration?
6	Do you use technology in teaching sports culture lessons?
7	Can common errors in different skills be corrected using digital technology?

**Table 4.** Obstacles Related to the Physical Education Teacher (Domain 4)

No.	Statements	Yes	To Some Extent	No
1	Does the teacher recommend using technology in physical education lessons?			
2	Does the teacher explain how to use technology in physical education lessons?			
3	Does the teacher conduct training sessions on using technology in teaching physical education?			
4	Does the supervisor believe in the importance of technology in teaching physical education?			
5	Is it part of the teacher's plan to utilize technol			

**Table 5.** Obstacles Related to School Administration (Domain 5)

No.	Statements	Yes	To Some Extent	No
1	Is there cooperation from the school administration to provide an appropriate environment for using technology in teaching physical education?			
2	Is there cooperation between the educational technology specialist and the physical education teacher?			
3	Is a physical education lesson allocated in the technology lab schedule?			
4	Does the school administration believe in the importance of using technology?			

After finishing the instrument, the researcher sent the questionnaire electronically through Google Forms to a group of 80 physical education teachers from intermediate and secondary schools in Wasit that were part of the General Directorate of Education. The process of gathering data took place from February 1 to April 1, 2025. Using digital tools like an HP laptop, Microsoft Excel, and SPSS software made it easier to collect, organize, and review data quickly.

### *Data Analysis*

After gathering data, all of the answers were moved from Google Forms to Microsoft Excel so they could be organized and cleaned up. After that, the data were analyzed with the

Statistical Package for the Social Sciences (SPSS), version 25, which is a common tool for research in education and psychology. To summarize the teachers' answers and find out how important each obstacle domain was, we used descriptive statistical methods like means, standard deviations, and percentage frequencies. Inferential statistics, such as t-tests, were utilized to analyze group differences and evaluate the statistical significance of observed patterns. The integration of descriptive and inferential analyses yielded a thorough comprehension of the obstacles to technology integration in physical education, thereby underpinning valid and evidence-based conclusions.

### C. RESULTS AND DISCUSSION

#### Results

Table 6 shows how the physical education teachers (n = 80) thought the questionnaire domains affected them, broken down by percentage. The instrument's maximum score was 6,000 points, which was found by multiplying the number of items, the highest Likert scale value, and the total number of respondents (25 × 3 × 80). The domain scores were between 454 and 1,264, which is between 4.98% and 13.86% of the total estimated score.

**Table 6.** Percentage of the Questionnaire Domains According to Their Level of Impact, n=80

Domain No.	Total Estimated Score	Mean	Percentage of Estimated Scores	Rank
1	913	0.1001	10.01%	3rd
2	454	0.0498	4.98%	5th
3	1264	0.1386	13.86%	1st
4	1163	0.1275	12.75%	2nd
5	624	0.0684	6.84%	4th

The results show that Domain 3, which is about problems with using technology, came in first with 13.86% of the total estimated scores. This means that teachers have a lot of trouble using technology in physical education classes. For example, they may not be very good with technology, not have enough devices, or not have much experience with digital instruction. Domain 4, which deals with problems with school administration, came in second (12.75%). This shows that people thought there wasn't enough institutional support,

administrative encouragement, or policies that made it easier to use technology in physical education classes.

Domain 1, which looks at how easy it is to find scientific and instructional materials in digital form, was third (10.01%). This means that there are some digital resources available, but they are not enough to meet the needs of teachers. Domain 5, which is about problems teachers have with using electronic devices and technology programs, came in fourth (6.84%), showing that teachers need more training and professional development. Lastly, Domain 2, which had to do with the physical education teacher, was ranked fifth (4.98%). This means that while teacher-related factors do play a role, systemic and resource-based challenges are more important.

Overall, the results show that the biggest problems with using technology in physical education are not just personal or teaching-related; they are also technological and administrative. This finding underscores the necessity of enhancing infrastructure, delivering ongoing professional development for educators, and guaranteeing robust administrative support to facilitate effective technology integration in physical education environments.

## **Discussion**

Based on the five domains presented in Table (6), the researcher interprets that the obstacles to integrating technology into physical education lessons are not solely technical. Rather, they constitute a complex combination of human, administrative, logistical, and educational content-related factors. Human-related obstacles include insufficient teacher training; administrative and organizational challenges involve weak support and the absence of a clear vision; logistical/material challenges concern the lack of equipment and infrastructure; and content-related obstacles include the scarcity of digital resources specialized in physical education in the Arabic language. Additionally, the absence of a supportive environment that encourages digital transformation in practical lessons, such as physical education, is a significant barrier. This includes the lack of material, technical, and professional support for teachers (Novian et al., 2024; Purnomo et al., 2024).

There is also a gap between available resources and their practical application. Even when some basic technological devices are available, the inability to employ them pedagogically in ways that enrich the physical education lesson (rather than merely for

display) represents a major obstacle (Amaliya & Pudjijuniarto, 2022). The physical education teacher plays a cornerstone role in the integration process. A lack of belief in the effectiveness of technology, or insufficient skills to use it properly, constitutes a decisive barrier, regardless of the availability of other resources. The practical aspect is often neglected, as training programs tend to emphasize theoretical knowledge of technology without providing practical examples or models that can be directly applied in school gyms or playgrounds (Morgulev et al., 2018).

Therefore, it is essential to provide an appropriate technological infrastructure in school gyms and playgrounds, including dust-resistant, high-lumen projectors, large screens, and quality sound systems. Schools should be equipped with high-speed, free internet packages dedicated to educational purposes. Advanced, shock- and weather-resistant tablets should be provided for recording and analyzing performance in the field. A specialized "technological kit" for the physical education department could include portable devices such as motion sensors, high-speed cameras, and smartwatches to measure heart rate.

School administrations should develop a clear strategic vision for the role of technology in enhancing all curricula, including physical education, and prepare an actionable implementation plan. A dedicated annual budget should be allocated to support and renew technological devices and software specific to physical education. Administrative burdens on teachers should be reduced, and rapid technical support should be made available within the school to resolve any technical issues. Teachers should be encouraged to create and share their own digital content with colleagues through professional collaboration platforms.

Cooperation with specialized sports channels and federations should be sought to obtain rights to use short instructional video clips. Intensive, practical training programs should be designed for teachers, focusing on analyzing motor performance using applications (such as slow-motion and motion analysis apps). Fitness applications and smartwatches should be used to measure performance indicators, including heart rate and distance covered (Athaya et al., 2023; Haïdara et al., 2023).

The role of the Technological Development Center at the Ministry of Education in supplying preparatory schools with multimedia educational resources necessary for teaching physical education is limited. Additionally, supervisors and teachers show little interest in programming certain skills for multimedia presentation. These findings align with

Mohamed and Mohamed (1995), who identified multiple obstacles to using educational devices and tools in physical education lessons, including the scarcity of educational programs (14:38).

The technological advancement witnessed in this era and the study sample's interest in learning about the latest technological devices correspond with the findings of Abdel-Hamid (2002), who noted obstacles to using multimedia, including the basic skills of human resources and their ability to handle modern technological devices (23:36).

Furthermore, the researcher observed a lack of interest among supervisors in applying modern technology in the teaching process, as they continue to adhere to traditional methods in physical education. Supervisory roles in training teachers to use multimedia are limited. The researcher emphasizes that supervisors should actively encourage teachers to use modern educational tools. This is consistent with Ghada Al-Sayed (1998), who highlighted the importance of conducting periodic and serious workshops for teachers and supervisors to discuss new developments and innovations in the profession (48:28).

#### **D. CONCLUSION**

To successfully incorporate technology into physical education classes, all areas must be addressed at the same time and in a coordinated way. Giving teachers technology without enough training is useless, and training teachers without help from administrators is hard to do. So, it is best to set up a working group in each school or school district that includes a technology coordinator (technician), a physical education supervisor, and highly motivated teachers. The primary tasks of this team should include developing a plan for technological integration, identifying needs, monitoring implementation, and evaluating the impact on students' learning outcomes. This approach ensures sustainable development and achieves the intended benefits. The researcher also recommends organizing peer-led workshops, in which experienced teachers train their colleagues to share successful practical experiences. In addition, a simplified instructional guide (Teacher's Manual) should be created to facilitate the use of key applications and devices during lessons. Teachers' beliefs should be shifted by demonstrating the real added value of technology in achieving lesson objectives, such as improving skill performance, enhancing motivation, and enabling objective assessment, rather than perceiving it as a mere luxury. Teachers should be involved in selecting the

devices and software that best suit their practical needs on the playground, which enhances their sense of ownership and responsibility. Material or moral incentives should be provided to teachers who effectively integrate technology into their lesson plans. Finally, reducing student density in classes is recommended to allow teachers to manage the use of technology efficiently.

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#### **F. AUTHOR CONTRIBUTION STATEMENT**

**Ameen Atta Hassan** is the sole author of this study. He conceived and designed the research framework, developed and validated the data collection instrument, conducted the fieldwork, performed data analysis, and prepared the manuscript for publication. All stages of the research and writing were carried out independently by the author.

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