
Time Management Strategies in Physical Education : Contrasting Electronic Software with Traditional Approaches for First Year Middle School Students.

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Abstract

This study aimed to compare the proportion of academic time allocated in physical education classes using traditional methods versus electronic methods. The sample comprised four students and two professors. Data was collected through Anderson's form and analyzed using SPSS to calculate arithmetic means and standard deviations. The results supported two hypotheses: first, that the ratio of learning time to non-learning time favoured learning time, and second, that the ratio of direct to indirect learning favoured direct learning. Key findings indicated a preference for e-learning in the ratio of direct to indirect learning for both methods.

1. Introduction

The allocation of academic time plays a pivotal role in the educational landscape, profoundly influencing the quality and efficacy of the learning process across various disciplines, notably including physical education and sports. Despite its universal acknowledgement as an integral component of school curricula, the time dedicated to physical education and sports is often limited within school schedules. This restriction poses significant challenges, hindering the achievement of course objectives and reducing the potential benefits for students.

The ongoing evolution of technological paradigms in education presents new opportunities to enhance the learning process. Educators can proactively incorporate advanced technological tools and electronic programs to create engaging and diverse educational content. On the other hand There is a growing interest in exploring non-traditional pedagogical methodologies and assessing their efficacy in maximizing academic time. While embracing these innovative approaches, it is also crucial to acknowledge that traditional learning methods may retain significant value in certain contexts. This study aims to systematically compare both traditional and ICT-based paradigms to determine which method optimally harnesses academic temporal resources.

This research aims to delve into the utilization of academic time in physical education and sports lessons, employing both e-learning and traditional instructional approaches. The assessment seeks to gauge their respective impacts on the quality of learning and the efficacy of teaching. Additionally, the study examines how school time is allocated in accordance with student needs and educational objectives.

The central inquiry of this study revolves around the following question:

- Are there differences in the use of academic time in physical education and sports lessons, and what is the most effective way to use academic time to achieve educational goals?

To address this primary question, several sub-questions have been formulated:

- What is the ratio of learning time to unused time in skill acquisition for both e-learning and traditional methods?

- What is the ratio of direct learning to indirect learning in both e-learning and traditional methods?

By understanding the essence of the subject and recognizing the importance of time in physical education and sports classes, the following hypotheses

were formulated for this research:

- There are differences in the use of academic time in physical education and sports lessons.

Based on this general hypothesis, sub-hypotheses were identified as follows:

- There are statistically significant differences between the percentage of time devoted to learning and the percentage of wasted time in physical education and sports classes for both methods.

- E-learning is the most effective in utilizing school time to achieve educational goals.

- The ratio of direct learning to indirect learning is positive for both e-learning and traditional methods.

This research seeks to provide a comprehensive analysis of how academic time is used in physical education and sports classes. By comparing traditional and ICT-based methods, the study aims to identify which approach more effectively utilizes academic time to achieve educational goals. The findings are expected to contribute to the development of strategies that integrate technology into pedagogical practices, enhance learning outcomes, and foster greater student engagement in physical education and sports. Additionally, Through this systematic comparison, the study aims to offer valuable insights into optimizing the use of academic time in this vital educational domain.

1.1. Literature Review

The evolving landscape of educational methodologies has seen significant advancements, particularly in the integration of technology into physical education. Traditional teaching methods, characterized by direct instruction and physical demonstration, have been the cornerstone of physical education for decades. These methods emphasize immediate feedback and physical engagement, which are essential for developing motor skills and fostering an understanding of physical activities. However, the rapid development of educational technologies has prompted a reassessment of these conventional approaches.

Several studies have explored the efficacy of e-learning and digital tools in physical education. A seminal study by (Horton, 2019, p. 158) highlighted the potential of interactive software to enhance student engagement and provide tailored feedback, thereby improving skill acquisition.

In contrast, traditional methods are often critiqued for their limited ability to accommodate diverse learning styles. According to (Metzler, 2017), while these methods excel in promoting direct physical engagement,

they may not sufficiently address the cognitive aspects of learning, such as understanding the underlying principles of physical movements and strategies. This limitation underscores the necessity of incorporating more versatile teaching tools that can cater to varied learning preferences.

Moreover, the integration of e-learning in physical education has shown promising results in enhancing both direct and indirect learning. Research by (Fiorini, 2018, p. 146) demonstrated that e-learning platforms could provide students with continuous access to instructional content, enabling them to review and reinforce their learning outside the classroom. This asynchronous learning capability is particularly beneficial in physical education, where repetitive practice and reflection are key to mastering skills.

However, the transition to e-learning is not without challenges. (Lee, 2017, p. 57) pointed out that the success of digital tools in physical education largely depends on the teachers' proficiency with these technologies and their ability to integrate them effectively into their teaching practices. This finding suggests that professional development and training are essential to fully leverage the benefits of e-learning in physical education.

2. Method and Materials:

Data Collection Tools: Anderson's form was employed for observation and evaluation during physical education and sports lessons. The teacher instructed one student, chosen based on specific criteria, including suitable height and weight for their age. The observation ensured the student's movements and behaviour were natural. The typical time system developed by Anderson and Sherman in 1980 was used to record and document the student's activities during the lesson. Additionally, electronic learning methods were incorporated for a comprehensive analysis.

Main Survey: a pilot study was conducted involving a physical education and sports teacher at the intermediate stage. The primary objective was to assess the validity of the proposed tools for the main experiment. This process confirmed the validity, reliability, and objectivity of the tools, ensuring accurate and dependable results upon application.

The study was structured as follows: The researcher utilized the Anderson form to observe and evaluate students' behaviour during lessons. A meticulous examination of the implementation process was undertaken to ensure the quality and appropriateness of the study. Key aspects included:

- Identifying potential difficulties and consequences of conducting the Anderson viewing test.
- Confirming the validity of the tool for use in the main study.
- Determining the primary themes of the research.

The investigator conducted a comprehensive inquiry using the Anderson observation and evaluation form to systematically document student's behaviour and interactions during physical education and sports lessons. This questionnaire was a fundamental component of the principal investigation, involving the participation of two physical education and sports instructors. **Participants:** the study focused on teachers of physical education and sports for middle-school and middle-school students.

The sample was deliberately chosen, considering several factors, including the availability of necessary sports equipments and facilities in secondary schools where physical education and sports are taught under normal conditions. The sample comprised two physical education and sports teachers from the intermediate level in the municipality of Boukhanefis, Sidi Bel Abbes governorate.

2.1. Materials :

2.3. Design and Procedure

The research was conducted over a period of 11 week from February 6, 2023, to April 21, 2023, and was divided into specific phases: the pilot experiment took place from February 6 to February 14, 2023, and the Anderson test was applied during physical education and sports classes from April 15 to April 21, 2023. The study was geographically conducted at the middle school of Kabbane Slimane in Boukhanefis municipality, within the Sidi Bel Abbes governorate. The research focused on academic time as the dependent variable, while the independent variables included physical education and sports sessions, traditional teaching methods, and electronic teaching methods. Several random variables were controlled to ensure consistency: the time allocated for lessons within institutions was standardized; the age of students ranged from 13 to 15 years; the sample was exclusively male; and all evaluations were conducted using uniform pedagogical tools and devices.

2.4. Statistical Analysis:

Test Stability: Preliminary tests were conducted to calculate the stability coefficient using the Test-Retest method. Initial observation tests were applied to a sample of male students deliberately chosen from the community on February 6, 2023, over two days. The same tests were repeated exactly one week later, on February 13, 2023, at the same time and place, under similar conditions.

Validity of the Test:

Virtual Validity: Given that the test was based on scientific references, previous studies, and research with high validity and reliability coefficients, it was logically expected to be accurate and reliable.

Basic Study: The main study was conducted on a sample of four male students. Each professor was assigned to observe one student per class, across two sessions, with two teachers participating, both from the same educational institution.

3. Results :

Table No. (01): It shows the stability of the observational test (observation) during the lessons.

Learner involvement level	Sample	Degrees of Freedom	significance level	Stability Coefficient		critical value	Statistical significance
				CG	EG		
Skill practice	04	03	0.05	0.92	0.94	0.602	Significance
Receive information				0.68	0.73		Significance
Information Processing				0.82	0.71		Significance
Waiting				0.65	0.69		Significance
Transition				0.95	0.63		Significance
Other behaviour				0.84	0.73		Significance

The table demonstrates that the calculated stability coefficient for various fields—motor performance, receiving information, giving information, waiting, changing location, and other movements—are as follows: 0.94, 0.73, 0.71, 0.69, 0.63, and 0.73. These values exceed the tabular value of 0.602 at a degree of freedom of 3 and a significance level of 0.05. This confirms that the observational test possesses a high degree of stability, consistent with findings from previous similar research and studies.

Table No. (02): shows the arithmetic mean of frequencies and percentages of subscription time.

Learner involvement level	Mean		Percentage		Standard deviation	
	C G	E G	C G	E G	C G	E G
Skill practice	93.56	131.91	32.48	39.97	2.89	3.49
Receive information	63	66.56	21.87	20.17	3.36	2.53
Information Processing	62.56	71.18	21.72	21.57	2.96	2.21
Waiting	32.75	23.57	11.37	7.14	4.86	4.82
Transition	26.62	26.88	9.24	8.15	2.15	3.16
Other behaviour	9.5	9.9	3.29	3.00	2.96	2.91

The table elucidates the variability in time allocation across different behavioural fields observed among students during lessons. For motor performance, the arithmetic mean of repetitions was 131.91, corresponding to 39.97%, with a standard deviation of 3.49. In the field of information reception, the mean repetition was 66.56, representing 20.17%, and a standard deviation of 2.53. "The giving information" field exhibited an arithmetic mean of 71.18, equating to 21.57%, with a standard deviation of 2.21. The waiting field had a mean repetition of 23.57, or 7.14%, with a standard deviation of 4.82. For location changes, the mean repetition was 26.88, accounting for 8.15%, with a standard deviation of 3.16. Additionally, other non-class-related movements had a mean repetition of 9.9, representing 3%, with a standard deviation of 2.91.

These findings are further corroborated by the accompanying chart, highlighting that motor performance had the highest arithmetic mean of behavioural repetitions, followed by receiving and giving information. The primary objective of physical education classes is to maximize students' time in motor activities, as evidenced by the high percentage of time allocated to motor performance. In contrast, behaviours related to changing location and non-class-related movements were less prevalent. This observation aligns with the notion that students' participation in physical education should foster growth across physical, psychological, cognitive, and skill domains.

The table offers additional insights into the distribution of participation time, revealing that student engagement percentages were notably high

throughout the lesson, particularly in motor performance (39.97%). This suggests substantial student benefit from lesson time. According to (Arjen J. Jansen, 2015, p. 573), teachers must diagnose students' needs and understand individual learning processes while being well-versed in the subject matter and teaching strategies. This enhances the positivity of the learning process, benefiting students across physical, skill-based domain, social, and psychological domains.

In his study, Ismail (Ismail Abd Zaid, 2010) illustrates that if two students engage in learning a skill, with one participating 30% and the other 15% of lesson time, qualitative and quantitative differences in performance are expected. This underscores the importance of maximizing motor performance time during lessons. Additionally, Symeon in his study (Symeon Retalis, 2008, p. 2902) advises physical education teachers to avoid excessive presentation time, focusing on concise, effective lesson delivery and minimizing unnecessary speech.

The study observed that prolonged explanations during lessons could be mitigated by using visual aids. Teachers spent significant time conveying information, reflected in the minimal recorded time for location changes and unrelated behaviours. This often indicates students are not in a passive state of information reception.

Lesson Observation Analysis: The examination of the provided table reveals that the percentage distributions for both traditional and e-learning methods display a comparable trend, with a general decline from motor performance to other movements. Nevertheless, a notable divergence is observed in the extent of these percentages. The e-learning method consistently outperforms the traditional approach across multiple domains, particularly in motor performance, and in managing both positive and negative changes in locations and other movements. This indicates that e-learning is more effective in facilitating dynamic and responsive engagement during physical education lessons.

Findings:

Table No. (03): shows the percentages and standard deviation for the fields of the observation form after collection.

Collect levels	Percentage		Standard deviation	
	C G	E G	C G	E G
Academic Time of Engagement	76.06	81.71	4.16	4.32
Direct engagement time	32.48	39.97	2.54	3.49
Indirect engagement time	43.59	41.74	3.12	4.74
Lost Time	23.93	18.29	5.04	5.82

The analysis of students' participation rates in physical education classes reveals distinct patterns in both direct (motor performance) and indirect (receiving and giving information) engagement. The collected data shows that students spend an average of 81.71% of lesson time in academic participation activities, including motor performance, receiving information, and giving information, with a standard deviation of 4.32. This aligns with the study conducted by David (David Hortigüela Alcalá, 2017, p. 21) asserting that direct teaching strategies involve the teacher's control over classroom activities, delivering ready-made information, and providing solutions to problems.

Further analysis indicates that students dedicate 41.74% of lesson time to indirect participation (receiving and giving information), with a standard deviation of 4.74. The remaining time is spent on activities unrelated to the lesson, such as waiting, changing location, and other movements, showing a standard deviation of 5.82. Direct participation, specifically motor performance, accounts for 39.97% of the lesson time, with a standard deviation of 3.49.

Data illustrates that academic participation time surpasses wasted time, suggesting a positive level of student engagement in the educational process compared to the time spent waiting. A previous study (Bouchentouf Abdelhafid, 2019, p. 350) Emphasizes that activity-based teaching strategies focus on learning through mental and physical efforts to achieve outcomes, contrasting with time wasted on non-academic behaviours.

Additionally, Host in his study (Horst, 2012) remarks, "A weak and unserious teacher makes his students disengaged from the learning activities," highlighting the importance of effective teaching in maintaining student engagement.

Analyzing the table further reveals discrepancies between the two teaching methods, with notable convergence in indirect participation time

percentages. Both methods show similar durations for indirect participation compared to direct participation. E-learning exhibits a 5.11% advantage in academic participation over the traditional method and a 5.64% reduction in lost time.

The calculation of the ratio of actual academic time to unused time demonstrates a 4.46-fold advantage for e-learning, compared to a 3.18-fold advantage for the traditional method. Additionally, the ratio of direct to indirect learning is 0.96 for e-learning and 0.74 for the traditional method.

4. Discussion

To validate the first hypothesis of this study, which asserts a favourable discrepancy in the ratio of learning time to unused time, the data presented in Tables 02 and 03 are crucial. These tables outline the distribution of time in physical education and sports lessons, specifically focusing on motor performance, receiving information, giving information, waiting, changing location, and other movements.

The percentages derived from the data show that motor performance accounts for 39.97%, receiving information for 20.17%, and giving information for 21.57%, totalling 81.71% for learning time, excluding unused time in the lesson. This underscores educators' emphasis on optimizing actual learning moments. In his study, Panos (Panos Constantinides, 2022, p. 8) advocates for teachers to control classroom dynamics through the systematic presentation of information, facilitating experiential learning and access to knowledge through both direct and indirect teaching methods.

Furthermore, findings from Table 02 reveal that waiting, changing location, and other movements comprise 18.29% of the lesson time, categorized as unused time but deemed within acceptable norms (Derri, Emmanouilidou, & Vassiliadou, 2007, p. 19). This balance is crucial in fostering positive students' behaviour through varied activities and structured downtime.

The calculated ratio of learning time to unused time is 4.46, affirming a significant preference for learning time over unused time. This result aligns with previous research by (Bouchentouf Abdelhafid, 2019, p. 352), who similarly found a positive ratio favouring learning time, reporting a ratio of 4.20 in a comparable educational context.

In conclusion, the first hypothesis positing a favourable discrepancy in favour of learning time in physical education and sports lessons, particularly utilizing electronic software for basketball skill development, is

substantiated by data analysis and scholarly perspectives cited. This underscores the efficacy of strategic educational approaches in maximizing learning opportunities and optimizing students's engagement in active learning processes.

The second hypothesis of this study posits a discrepancy favouring direct learning over indirect learning in the context of physical education and sports education using electronic software for basketball skill development. Analyzing the data from Tables 02 and 03 provides insights into the distribution of time across various learning activities.

Motor performance, which directly engages students in physical activities related to the lesson content, occupies 39.97% of the lesson time, reflecting direct learning involvement. Conversely, the percentages for receiving information (20.17%) and giving information (21.57%) contribute to indirect learning, totalling 41.74% of the lesson time. This disparity indicates a greater emphasis on theoretical information over motor experiences, a concern highlighted by Rabei (Rabei, 2005), who argues that excessive theoretical emphasis can hinder motor performance development. Effective teaching, as emphasized by (Kretschmann, 2015, p. 268) prioritizes maximizing motor performance time during lessons to achieve optimal skill development efficiently.

In an another study, Tim (Tim Hopper, 2002) underscores the importance of concise lesson delivery to avoid unnecessary time consumption, thereby ensuring effective use of class time for practical learning activities. Similarly, (Galdi, D'Anna, Pastena, & Paloma, 2015, p. 3801) illustrate that variations in skill acquisition can result from different levels of engagement in practical tasks versus theoretical instruction.

The calculated ratio of direct learning time to indirect learning time is 0.96, indicating that indirect learning time slightly surpasses direct learning time. This finding contradicts the second hypothesis, which anticipates a discrepancy in favour of direct learning. This discrepancy underscores the challenges in balancing theoretical instruction with practical application in physical education and sports education settings, particularly when integrating electronic softwares for skill development.

In conclusion, while direct learning through motor performance remains integral to effective physical education and sports education, the prevalence of indirect learning highlights the need for educators to strike a balance that optimizes both theoretical understanding and practical skill development. Further research may explore strategies to enhance direct learning

opportunities without neglecting the essential theoretical foundations necessary for comprehensive learning outcomes.

5. Conclusion

Based on the comprehensive analysis of the research sample and objectives, the study reveals significant findings in the realm of physical education and sports instruction. It highlights distinct disparities between active learning time and unused time in lessons conducted using electronic software versus traditional methods. Furthermore, Electronic software appears advantageous in optimizing lesson time for effective learning, while traditional methods struggle with time utilization efficiency. Moreover, there is a discernible preference for direct learning, particularly in motor performance, over indirect learning like receiving and giving information, with e-learning demonstrating a more favourable ratio compared to traditional approaches. Effective teaching in physical education demands careful time allocation strategies to balance theoretical instruction with practical application, which is crucial for holistic student development. The study also underscores consistent patterns in academic behaviours, such as information exchange, across instructional methods, emphasizing their foundational role in facilitating educational engagement and interaction. Future research should explore innovative approaches to further refine teaching methodologies and enhance overall learning outcomes in physical education settings.

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