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The Impact of an Integrated Physical Education Curriculum on Enhancing Learning Outcomes in Elementary Students

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Abstract

Introduction: Curriculum integration means connecting and blending curriculum content to unify learners' learning experiences. The purpose of this research was to investigate the effect of a physical education curriculum with an integrated approach on facilitating students' learning.

Methodology: The method of this research was a descriptive - survey. The studied population included male students in the second year of elementary school in Tehran. The sample size was selected using Cochran's formula, with 300 individuals chosen through multi-stage sampling. McDermott's (1999) learning questionnaire was used to collect data.

Findings: The results of this research showed that the physical education curriculum with an integrated approach has a significant effect on facilitating students' learning ($p < 0.05$).

Conclusion: Based on the findings of the research, it can be concluded that the physical education curriculum with an integrated approach can increase the amount of students' learning. Therefore, by integrating the physical education curriculum in the second level of elementary school, it is possible to facilitate the students' learning.

Key Words: Learning, Curriculum, Physical Education, Integrated Approach

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Introduction

The school is considered one of the most important educational institutions, and due to its high educational capacity, it plays a fundamental role in the happiness and mental health of children and adolescents (Jafari, 2022). Therefore, through it and with the help of intelligent planning, important social and cultural issues can be taught to children, and lifelong growth can be facilitated in them.

Today, many educational systems around the world do not have optimal efficiency due to the extensive changes taking place in human societies. The use of content-based curricula that focus solely on knowledge acquisition is not a suitable way to prepare learners to face a rapidly changing world. This is because the school environment lacks genuine scientific, research-based, and friendly relationships between teachers and students, and it is certain that merely passing predetermined lessons does not foster creativity, positive thinking, positive living, and many other essential elements in learners (Shari Nejad, 2014). This is because, in the confined space of books, classrooms, and fixed, mandatory curricula, the scope of experience becomes limited and attempts to present only a presumed approach to learning (Shabani, 2015).

Therefore, considering social, cultural, political, economic, and technological changes, it is necessary to effectively utilize existing opportunities and potentials to re-engineer and restructure curriculum schemas (Jalali & Abbasi, 2018). In this way, the educational system can cultivate individuals who are exploratory, creative, problem-solving, innovative, productive, and agents of change, strengthening their thinking power and mental skills so that they can easily generate new ideas to achieve appropriate and realistic solutions. Achieving such a desirable situation requires identifying the current state (Mirkamali & Khorshidi, 2019).

Among the curricula that have undergone significant changes in recent years is the physical education curriculum (Javadi Pour, 2018). Despite the emphasis on the necessity of physical education for general education, descriptive studies indicate shortcomings in the implementation of physical education curricula in Iran.

Since the physical education curriculum is one of the most important elements and factors influencing the determination of mental health, success, and failure of educational systems (Nourian, 2023), it is necessary to conduct research on designing various models of physical education curricula to facilitate learning as an approach that is expanding worldwide. This will allow the use of these curriculum models as a practical framework and guide (Saeednia, 2022). This, in fact, confirms the necessity of designing a physical education curriculum model with an integrated approach (Yazdani, 2019).

Curriculum integration means connecting and blending curriculum content to unify learners' learning experiences. Simultaneously with the formation of the curriculum field in the early 20th century, integrated curricula attracted the attention of curriculum planning experts and education practitioners, and in recent years, special attention has been paid to this issue in most developed countries (Ahmadi, 2011). On the other hand, successful

experiences in implementing integrated curricula have confirmed the theory that this approach encourages students to learn better and continuously and develops the necessary capabilities for life in the 21st century. The use of integrated curricula allows teachers to blend subject matters with everyday life issues. In this way, they do not consider the study of subject matters as futile but are able to apply what they learn in practice and in their lives. Moreover, the application of knowledge enables its production by students and makes learning interesting and exciting for them.

Due to its dynamic and active nature, physical education and sports have attracted special attention in recent years in most countries around the world for integration with other subjects. Mehana and Kilani (2010), in a study, addressed the increase of physical education in the primary education curriculum in Oman and stated that to implement the integrated approach to the greatest extent in schools, the efficiency and effectiveness of physical education in primary education should be analyzed, and physical education should be included as an integrated method in all parts of the curriculum, and the effects of increasing sports sections in the primary education curriculum should be studied. Webb and Pearson (2008), who in their studies referred to the integrated approach in educational games, stated that by placing learners in a game situation, learning and understanding can be facilitated. Also, Applebee et al. (2007), after examining 11 integrated groups as a case study on integrated curricula in elementary and high school classrooms, concluded that individuals who were encouraged using integrated curriculum content had a tendency and emphasis on integrated curriculum-based education. This study also showed that interdisciplinary and integrated courses increase the success rate of team members.

As mentioned, few studies have been conducted on designing a physical education curriculum model with an integrated approach and its impact on facilitating students' learning. Therefore, this research aimed to address the existing research gap. Various studies have shown that students' learning can be enhanced using strategies. Theoretically, this research can provide valuable information about the direct and indirect effects of designing a physical education curriculum model with an integrated approach on facilitating learning. Therefore, the main goal of this research is the necessity and feasibility of using an integrated approach in the physical education curriculum of the second grade of elementary school. For this purpose, the present research examines the physical education curriculum in integration with basic subjects such as mathematics and science, considering five components of the curriculum (objectives, content selection, content organization, teaching methods, and learning experiences). Another necessity of this research is the applicability of its results. The results of this research can be widely considered as a suitable model in schools so that through the implementation of the designed curriculum model, students can achieve facilitated learning. It is certain that educating such individuals, considering the needs of today's society, is highly regarded by industries and professional organizations. Therefore, the results of this research, by presenting a physical education curriculum model

with an integrated approach and its impact on facilitating students' learning, can help educate learners with high competencies nationwide. Based on the existing evidence, this research aims to design a physical education curriculum model with an integrated approach and its impact on facilitating students' learning.

Methodology

The method of this research is descriptive and survey-based. The statistical population includes second-grade elementary students in Tehran. In this research, multi-stage sampling was used as follows: First, Tehran was divided into 5 geographical areas (north, south, east, west, center). Then, one educational district was randomly selected from each geographical area, and from each educational district, 5 schools were randomly selected. From each school, 3 classes (one class from each grade) were randomly selected, and from each class, 4 students were randomly selected. Finally, 300 male second-grade elementary students in Tehran were selected using Cochran's formula.

This research first experimentally implemented physical education in integration with basic subjects (mathematics and science) twice a week throughout the academic year. Then, at the end of the research, teachers of the studied classes were asked to evaluate the effectiveness of this approach based on five components of learning experiences. To collect data, McDermott's (1999) learning questionnaire and a researcher-made questionnaire on the physical education curriculum with an integrated approach were used. This questionnaire consists of 25 three-choice questions and measures 4 subscales (competence motivation, attitude toward learning, attention/persistence, strategy/flexibility) as follows:

The validity of the questionnaire in this research was based on the opinions of supervisors and consultants and 20 professors and experts in this field at several universities, both in person and online. Also, to determine the reliability of the questionnaire, Cronbach's alpha method was used, which has an appropriate reliability. The Cronbach's alpha coefficient of the questionnaire was estimated at 0.87. The physical education curriculum was examined in integration with other second-grade elementary subjects, considering five components of learning experiences. The collected data were analyzed using descriptive and inferential methods through SPSS 16 and Smart PLS software.

Research Findings

In this section, descriptive information about learning is first presented, followed by the examination and analysis of the research question. Statistical characteristics such as the mean and standard deviation of learning were extracted, and the results are presented in the table below.

Table 2: Statistical Indicators of Learning

Variable	Mean	Standard Deviation
Learning	32.8	7.9

The overall mean of learning is **32.8**. Before analyzing the research question, the main assumptions of regression analysis are recalled and reported.

1. **Quantitative or Categorical Nature of Variables:**
All predictor variables must be quantitative or categorical, and the criterion or outcome variable must be quantitative, continuous, and unbounded. Quantitative means the variable should be measured at an interval level, and unbounded means there should be no restrictions on the variability of the criterion variable (this assumption is satisfied).
2. **Absence of Multicollinearity:**
Predictor variables should not have a very high correlation with each other. The results confirm that this assumption is met.
3. **Homoscedasticity:**
The variance of residuals is constant across all levels of the predictor variable(s) (this assumption is satisfied).
4. **Linearity of Relationship:**
This assumption is also satisfied.
5. **Normality of Error Distribution:**
The normality of data distribution was tested using the Kolmogorov-Smirnov test, and the results are presented in Table 3.

Table 3: Normality of Data Using the Kolmogorov-Smirnov Test (K-S)

Variable	Z-value	P-value
Physical Education Curriculum with Integrated Approach	0.88	0.34
Learning	0.90	0.42

According to Table 3, the significance level of the variables is greater than 0.05 ($p > 0.05$), indicating that the data from the research questionnaires are normally distributed. Therefore, based on the Kolmogorov-Smirnov test results, the assumption of normality is confirmed, and parametric tests (single-variable regression analysis) can be used to analyze the third research question.

Research Question: Does the physical education curriculum with an integrated approach facilitate students' learning?
To examine and analyze this question, regression analysis was used.

Table 4: Indicators and Statistics of Regression Analysis

Correlation Coefficient (R)	Coefficient of Determination (R ²)	Adjusted R ²	Standard Error of Estimate
0.819	0.671	0.670	0.46

The results in Table 4 show a positive correlation between the physical education curriculum with an integrated approach and students' learning ($r = 0.819$, $p < 0.01$). Additionally, the coefficient of determination (R^2) indicates that **67.1%** of the variance in students' learning is explained by the physical education curriculum with an integrated approach.

Table 5: Analysis of Variance (ANOVA) for Regression

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F-value	Significance Level (Sig.)
Regression	132.02	1	132.02	67.01	0.001
Residual	64.8	298	0.217		
Total	196.8	299			

The ANOVA results in Table 5 ($F = 67.01$, $df = 1, 298$) indicate that the physical education curriculum with an integrated approach is significantly related to students' learning ($p < 0.05$). Thus, the table demonstrates a significant relationship between the physical education curriculum with an integrated approach and students' learning.

Table 6: Regression Results and Regression Equation Fit

Indicators	Unstandardized Coefficient (B)	Standard Error	Standardized Coefficient (Beta)	t-value	Significance Level
Constant	0.303	0.05		5.9	0.001
Physical Education Curriculum with Integrated Approach	0.810	0.033	0.819	24.6	0.001

The figures in Table 6 show that the physical education curriculum with an integrated approach ($t = 24.6$, $p < 0.01$) has a significant positive relationship with students' learning. The impact of the physical education curriculum with an integrated approach on students' learning is incremental and facilitates learning ($p < 0.05$). In other words, as the physical education curriculum with an integrated approach increases, students' learning also increases. The regression equation derived from this study is as follows:

$$Y=0.303+0.810\times(\text{Physical Education Curriculum with Integrated Approach})$$
$$Y=0.303+0.810\times(\text{Physical Education Curriculum with Integrated Approach})$$

Discussion and conclusion

This study provides strong evidence that the physical education curriculum with an integrated approach has a significant positive impact on facilitating students' learning. These findings emphasize the importance of integrating physical and academic activities into curricula and demonstrate that such approaches can improve academic performance and overall student well-being. To achieve more favorable outcomes, it is recommended that educational policymakers and curriculum designers incorporate these approaches into their systems and use them as an effective strategy for enhancing learning.

The obtained results regarding the research question were consistent with the studies of Ismaili (2020), Hassanzadeh (2019), Javadi Pour (2018), Zare (2016), Sajadi (2019), Daghighieh Rezaei (2016), Ruth Katlin et al. (2019), Shaver and Berlak (2017), Whitehead and Hendry (2010), and Jones (2013). No previous research was found that was inconsistent with the results obtained regarding the fourth question of this research.

The results of Ismaili's (2020) study, titled "A Comparative Study of Physical Education Curriculum in Elementary Schools in Iran and Selected Countries Around the World," showed that for evaluating physical education in elementary schools in the studied countries, observing students' skill performance is used more than physical fitness tests. The differences and similarities in the curricula of the studied countries should be carefully evaluated and interpreted. This is because many factors, including extracurricular activities, sports programs, the education system, and curriculum implementation factors in schools, affect the physical education curriculum. The results of Hassanzadeh's (2019) study, titled "Designing a Curriculum Planning Model for Physical Education in the Army," showed that in the implementation of training programs for field and staff units, no attention has been paid to content and coaches, and this is one of the important issues that should be considered in developing sports programs to increase the physical ability of employees according to their job type and service branch. The results of Javadi Pour's (2018) study, titled "Designing and Validating an Optimal Physical Education Curriculum Model for Elementary Schools in Iran," showed that this model, by integrating areas related to the curriculum, strategic elements, and basic elements of the physical education curriculum, increases the coordination of this subject in the educational system, and if implemented, many goals of physical education in schools will be achieved. For validating the proposed model, the opinions of physical education and curriculum planning experts were used, and a high percentage of the statistical sample confirmed the model. Zare (2016), in a study titled "The Effect of Integrated Physical Education Curriculum Training on Students' Academic Achievement Motivation," showed that integrated physical education curriculum training has a positive effect on students' extrinsic academic achievement motivation. Sajadi, in 1989, examined the weaknesses in the implementation of physical

education in elementary schools in Tehran with the aim of examining the characteristics and efficiency of sports teachers and sports facilities in elementary schools and examining the attitudes of elementary school principals in the studied regions about physical education and also examining the level of interest and inclination of students toward physical education. Some suggestions from Sajadi's research included: providing a suitable program for training staff in schools; practical programs for better use of existing facilities in elementary schools; providing training programs to educate elementary school principals; explaining the importance of the effects of physical education and sports in elementary schools; and holding continuous training classes for teachers.

Daghighieh Rezaei, in 1992, conducted research to identify the problems of physical education to provide a more desirable planning. The general goal of his research was to examine the status of physical education in boys' schools in Khorasan province from the perspective of physical education officials in the regions, sports teachers, and school principals. The geographical, economic, and social conditions of different regions of the country have their own characteristics, and it may not be possible to generalize all the results obtained in one region to all regions completely, and it can be said that they are almost common in all areas, but their intensity and weakness differ, and in terms of prioritization and the degree of importance of issues, they will differ. The issue of the educational status of the factors involved in physical education in schools is an important matter, and the majority of officials and teachers have a diploma or higher education degree and not much service experience in this field. Examining the quantity and quality of facilities for implementing physical education in schools, the educational status and service record of physical education teachers, and the support of officials and school principals were among the factors considered necessary for the proper and useful implementation of this subject in most research. Also, in some research, it has been observed that the implementation of physical education in regions located in different economic, geographical, and social classes has been different. Parents do not follow up on the status of their children's physical education and are also unaware of this issue. Ruth Katlin et al. (2019), in a case study titled "Integration from the Students' Perspective: Making Meaning in Elementary School Science," conducted a study where fifth-grade students connected and integrated what they learned in social studies and writing workshops with science. Students in end-of-year interviews showed that they effectively integrate knowledge both within and across subject areas. Shaver and Berlak (1968) consider planned situations and activities as a curriculum that is implemented by the teacher to affect student learning. Whitehead and Hendry (1976) stated that in England, as in many countries around the world, in most cases, there is a difference between what curriculum specialists say should be implemented in school physical education and what physical education teachers actually implement. Physical education teachers in England are free to design the physical education curriculum as they wish. This freedom has led to differences in the curricula of different schools. The development and change

of the curriculum is a continuous process at every level of the educational system. Sometimes these changes are based on the experiences of individuals active in the field of education, and sometimes they are carried out at the level of theorists and transferred to the implementation levels of the physical education curriculum. Jones (2002) also examined physical education in China. According to this researcher, although the Chinese system is homogeneous and unified, there are significant differences in its various parts. At the provincial level in China, physical education in schools and universities is managed by regulations established in 2012, which were signed by the then president. The main goal of physical education programs in China is to provide one hour of physical activity per day for all students, which contains an important message. At the same time, it is clear that the government is strongly striving to promote high-level sports with the help of provincial sports school networks. In achieving this, ordinary school sports are the starting point. Before 2012, the "National Health Plan in China" was developed and implemented with the aim of increasing participation in sports activities. One of the changes in this plan was more attention to public sports after China's economic development. As a result, attention to physical education in schools increased.

The results of this study have significant implications for educational systems. First, integrated curricula can be considered an effective strategy for improving students' learning. Second, these findings highlight the need to revise traditional curricula, demonstrating that integrating physical activities with cognitive education can lead to better outcomes. Third, this approach can help address issues such as physical inactivity, lack of focus, and academic decline among students.

Limitations of the Study

Despite the positive results, this study has some limitations. First, the sampling was limited to a specific geographic region, which may affect the generalizability of the findings. Second, the study only examined the short-term effects of integrated programs, and investigating long-term impacts requires longitudinal studies. Third, other factors influencing learning, such as family environment and individual student characteristics, were not controlled in this study.

Suggestions for Future Research

To advance this field of research, the following are recommended:

Future studies should be conducted with larger samples and across diverse geographic regions.

The long-term effects of integrated curricula on learning and students' mental health should be investigated.

The role of mediating and moderating variables, such as learning styles and levels of physical activity, should be explored.

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