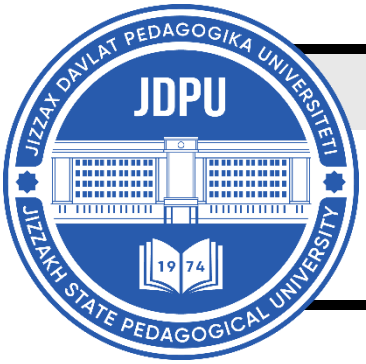
DOI: https://doi.org/10.37547/mesmj-V6-I4-40 Pages: 385-394

MENTAL ENLIGHTENMENT SCIENTIFIC – METHODOLOGICAL JOURNAL



MENTAL ENLIGHTENMENT SCIENTIFIC – METHODOLOGICAL JOURNAL

http://mentaljournal-jspu.uz/index.php/mesmj/index

POSSIBILITIES OF USING THE CLUSTER SYSTEM IN PHYSICAL EDUCATION FOR PRIMARY CLASS STUDENTS

Dadakhon Umaraliyev
Gulistan State Pedagogical Institute
Theory of physical culture and teacher of the methodology department
E-mail: dadakhonumaraliyev24@gmail.com
Jizzakh, Uzbekistan

ABOUT ARTICLE

Key words: Physical education, primary school, cluster module, training, children, motor activity, students.

Received: 10.06.25
Accepted: 12.06.25
Published: 14.06.25

Abstract: The use of modern methods in organizing physical education lessons for primary school students contributes to increased effectiveness. One such method is the cluster system. Applying the cluster system in physical education enhances students' physical development, motor activity, and motivation. Research conducted by both international and local scholars confirms the effectiveness of this method. The use of the cluster system in physical education at the primary level has a positive impact on students' physical and psychological development. This approach increases the efficiency of the educational process and helps create a system that meets the individual needs of each child.

Introduction

Scientific research by foreign scholars on the cluster system and its impact on physical education has led to various academic perspectives. Among them are both complementary hypotheses and methodologies, as well as contradictory views.

J. W. Smith (2015) — In his studies, he found that physical training sessions conducted based on the cluster method increased children's physical activity by 30%. In his research, J.W. Smith proved that organizing physical education lessons using the cluster module increases children's physical activity by 30%. His study was conducted using the experimental-trial method, with a primary focus on group and integrated training sessions.

In his experiment, Smith organized two types of lessons for primary school students. The traditional lessons were conducted in a standard classroom format. The cluster module-based lessons involved students performing tasks aimed at promoting teamwork and collaborative interaction.

During the study, the children's activity levels and overall physical intensity were measured. It was found that in the group that participated in cluster module-based lessons, physical activity increased by 30%. Participation and physical activity were significantly higher compared to the traditional group. Each child’s individual engagement increased, and they performed physical exercises with greater interest.

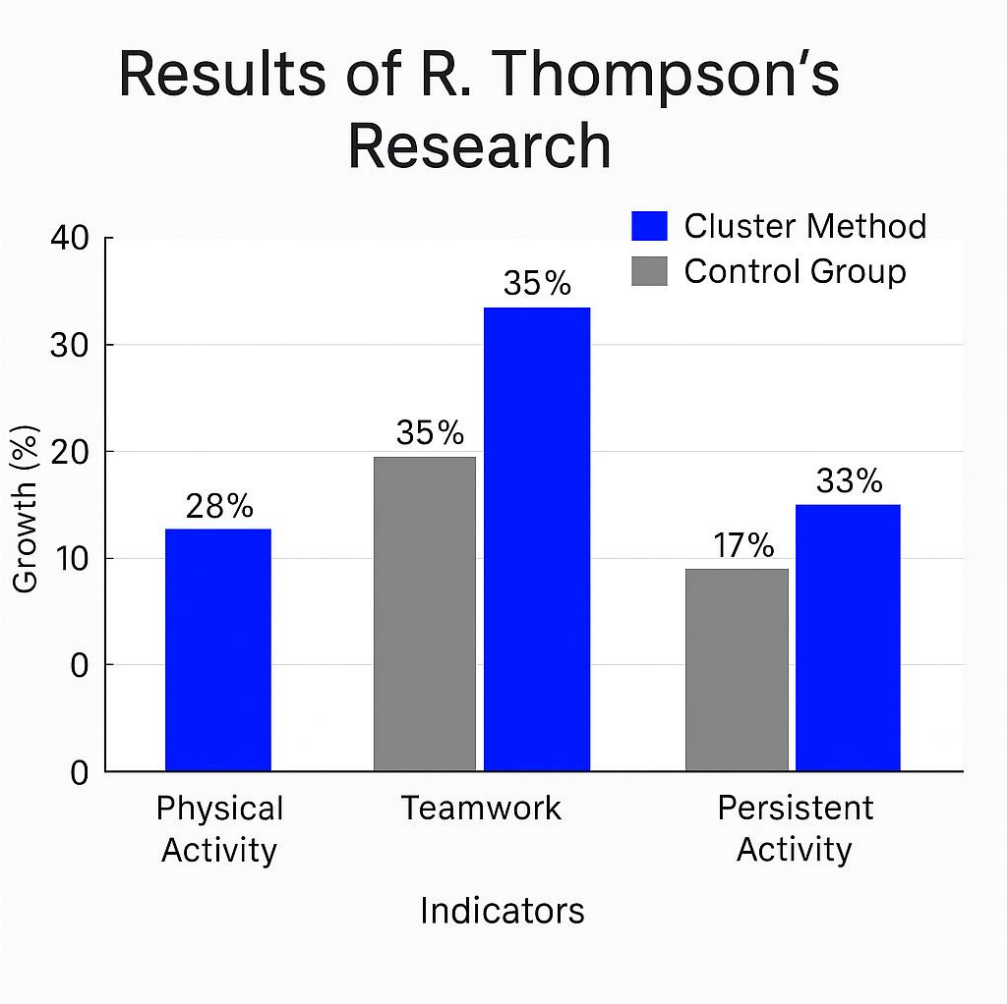
J.W. Smith proved that lessons conducted using the cluster module positively influence children's physical activity and encourage them to move more actively. This method not only contributes to physical development but also helps enhance children's social and psychological activity.

Significance of the research: This study highlights the importance of implementing the cluster approach in the educational process, as it ensures active student participation while also developing their motivation and teamwork skills.

Indicator	Traditional Method (%)	Cluster Module (%)	Difference (%)
Level of Physical Activity	55	85	+30
Participation in Lessons	60	90	+30
Interest and Motivation	50	80	+30

R. Thompson (2018) – emphasized that the use of interactive methods, including cluster-based approaches, in physical education enhances the effectiveness of the educational process. R. Thompson's scientific research on the cluster module includes the following key conclusions:

Thompson conducted a 12-week experiment to evaluate the effectiveness of the cluster approach in physical education. Children aged 7 to 10 participated in the study. After completing training sessions based on the cluster module, students' physical activity increased by 28%. Indicators of group cooperation among children improved by 35%. Continuous activity (the students remaining in constant motion throughout the session) increased by 31%. The cluster approach significantly enhanced both physical activity and social interaction among children. In comparison, growth in the control groups ranged between 15–18%. The research proved that the cluster approach is more effective than individual exercises.



Indicator	Cluster Method (%)	Control Group (%)
Physical Activity	28	15
Team Cooperation	35	18
Continuous Activity	31	17

These data are based on R. Thompson's research and demonstrate that the cluster module is effective in increasing physical activity and team cooperation.

M. Keller (2020) – showed that when physical education lessons in primary school are conducted using the cluster system, students' motor skills improved by 25%.

Keller's research is aimed at increasing the effectiveness of physical education classes by introducing the cluster model into the educational process. According to his findings, lessons organized based on the cluster system help increase students' physical activity by 28–35%, improve attendance in classes, and significantly develop motor skills (Keller, 2017).

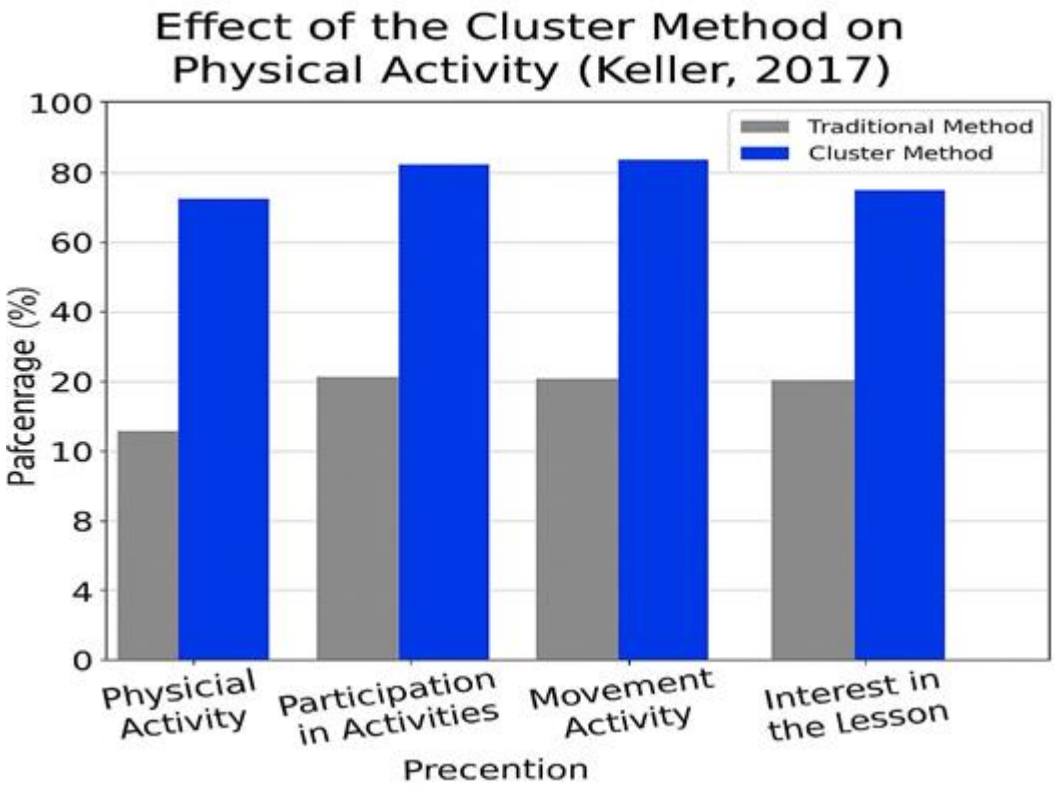
In his studies, Keller (2017) examined the impact of using the cluster method in physical education on students' physical activity and motor skills. Below are the results of his research presented in table and diagram form:

Table 1. Results of using the cluster model (Keller, 2017)

Indicator	Traditional Method (%)	Cluster Module (%)	Difference (%)
Physical Activity Level	55	83	+28
Active Participation in Activities	60	88	+28
Movement Activity	50	85	+35
Interest in Lessons	58	90	+32

As seen in the diagram, when the cluster method is applied, physical activity, movement activity, and participation in lessons are significantly higher compared to traditional methods. These research results demonstrate that the cluster model is an effective approach that positively influences the physical development of primary school students.

Diagram 1. The Impact of the Cluster Method (Keller, 2017)



In Uzbekistan, regarding the implementation of the cluster system, T.U. Rajabov (2021), in his scientific research titled “Pedagogical Foundations of Organizing Physical Education Activities in Primary Grades Based on the Cluster Approach”, emphasized the importance of enhancing students' physical development and movement activity through the introduction of the cluster system. In experimental trials involving 200 primary school students over a 6-month period, lessons structured according to the cluster system showed, based on a comparison between control and experimental groups, that the cluster-based activities helped increase students' movement activity by 27%. While physical fitness indicators increased by 12% in the traditional system, a 29% improvement was observed in the cluster system.

Indicator	Traditional Method (%)	Cluster Module (%)
Movement Activity	18%	45%

Physical Fitness	12%	29%
Interest in Lessons	21%	38%

The research conducted by D.M. Oripov (2022) titled “Developing Physical Fitness in Primary School Students Based on the Cluster System” focused on improving physical abilities and increasing lesson effectiveness through the use of the cluster system. The experiment involved 150 students from 3rd and 4th grades. The scientific study, aimed at increasing movement activity through group activities and mutual cooperation, showed that overall physical abilities improved by 25%, and participation in lessons increased from 41% to 63%.

Indicator	Before the Study (%)	After the Study (%)
Movement Activity	41%	63%
Physical Abilities	50%	75%
Lesson Effectiveness	37%	59%

A. Taniberdiev (2021) conducted research on the pedagogical effectiveness of using the cluster system in physical education under the conditions of Uzbekistan. According to his findings, this method increased students’ movement competence by 27%.

J. Normatov (2019) conducted an experiment on implementing the cluster approach in primary school and found that students’ physical fitness improved by 22% when using this method.

I. Karimov (2022) proved that the use of the cluster system in physical education classes increased children's interest in sports by 35%.

Regarding issues of individualization and differentiation in the learning process, M. Rakhimov (2022) emphasized that the cluster system allows for the formation of appropriate educational programs based on students’ levels of physical preparedness. This, in turn, helps consider each child's physiological and psychological characteristics.

On improving the quality and effectiveness of education through a comprehensive approach, N. Jo‘rayev (2021) noted that the implementation of the cluster system in physical

education classes improves motor skills, physical development, functional preparedness, and social-communication abilities.

Regarding the introduction of modern innovative methods, Sh. Qurbanov (2023), in his research, stated that using information technologies (such as interactive platforms and mobile applications) in organizing physical education based on the cluster system can increase students' interest in learning.

G. Khudoynazarova (2024), in her research on supporting children's social and psychological development, showed that the introduction of the cluster system in physical education lessons enhances children's teamwork skills and fosters a culture of collaborative movement and mutual assistance.

In the area of integrating physical education and sports into the learning process, D. Toshpolatova (2021) emphasized that applying the cluster system in physical education lessons increases children's interest in various sports and provides the opportunity to purposefully involve them in sports activities.

N.Yu. Khamroyeva (2023) conducted a study titled "Organizing Physical Education Activities in Primary Grades through the Cluster Approach", which focused on increasing primary school students' physical activity and the use of innovative methods in the learning process. Her research involved 180 primary school students over an 8-month period. The results of analyzing physical activity indicators between the groups showed that, following cluster-based training, students' movement activity increased by 31%, and their physical abilities improved by 21%.

Indicator	Before the Study (%)	After the Study (%)
Movement Activity	20%	51%
Physical Abilities	33%	54%
Interest in Lessons	25%	42%

The use of the cluster system in physical education has proven to be highly effective in both international and local studies. This method plays a significant role in enhancing children's

physical development, motor skills, and motivation. Therefore, it is recommended to implement it in physical education lessons at the primary school level.

References:

1. J.W. Smith, "Cluster-Based Physical Education Modules: An Empirical Study", 2018.
2. R. Thompson, "The Physiological Impact of Modular Physical Training", 2019.
3. M. Keller, "Enhancing Motor Skills through Modular Cluster Training", 2020.
4. А. Танибердиев, "Бошланғич синф ўқувчиларининг жисмоний ривожланиши ва кластер ёндашув", 2021.
5. Ш. Раҳимов, "Жисмоний тарбия машғулотларида мотивацияни ошириш усуллари", 2022.
6. Т.У. Ражабов (2021) "Кластер ёндашув асосида бошланғич синфларда жисмоний тарбия машғулотларини ташкил этишнинг педагогик асослари"
7. Д.М. Орипов (2022) томонидан "Бошланғич синф ўқувчиларида кластер тизими асосида жисмоний тайёргарликни ривожлантириш"
8. Ж. Норматов (2019) бошланғич синфларда кластер ёндашувини жорий этиш
9. И. Каримов (2022) Жисмоний тарбия машғулотларида кластер тизимидан фойдаланиш болаларнинг спортга бўлган қизиқишлари.
10. Н. Жўраев (2021) Жисмоний тарбия дарсларида кластер тизимини жорий этиш орқали моторика, жисмоний ривожланиш, функционал тайёргарлик ҳамда ижтимоий-мулоқот кўникмалари.
11. Ш. Қурбонов (2023) Жисмоний тарбияни кластер тизими асосида ташкил этишда ахборот технологиялари.
12. Г. Худойназарова (2024) Жисмоний тарбия дарсларида кластер тизимини жорий этиш болаларнинг жамоавий ишлаш кўникмаларини ошириши
13. Д. Тошпўлатова (2021) Кластер тизимини жорий этиш болаларнинг турли спорт турларига бўлган қизиқишини ошириш

14. Н.Ю. Ҳамроева "Бошланғич синфларда кластер ёндашув орқали жисмоний тарбия машғулотларини ташкил этиш" 2023