

TITLE

Evolution of pedagogical models in physical education: A systematic review of trends and applications in Guatemalan educational contexts

Spanish title

Evolución de los modelos pedagógicos en educación física: revisión sistemática de las tendencias y aplicaciones en contextos educativos de Guatemala

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ABSTRACT

The evolution of pedagogical models in Physical Education has significantly transformed teaching and learning processes by shifting from traditional teacher-centered instruction toward active, competency-based, and inclusive methodologies. In Guatemala, this transformation is particularly relevant due to the implementation of the National Curriculum Base and educational policies promoted by the Ministry of Education to strengthen comprehensive student development, healthy lifestyles, and school coexistence. The objective of this study was to analyze the evolution of pedagogical models applied in Physical Education through a systematic review of recent scientific literature, identifying their main trends, educational

applications, and contributions to the Guatemalan educational context. A systematic review following the PRISMA 2020 guidelines was conducted using scientific publications, official documents, and educational regulations published between 2021 and 2026. Studies were selected according to predefined inclusion and exclusion criteria and analyzed through thematic synthesis. The findings revealed an increasing predominance of Cooperative Learning, Sport Education Model, Game-Based Learning, Teaching Personal and Social Responsibility, and hybrid pedagogical approaches focused on the development of motor, cognitive, and socio-emotional competencies. Moreover, these international trends showed strong

alignment with the competencies established by Guatemala's National Curriculum Base. The review concludes that implementing innovative pedagogical models strengthens educational quality, promotes inclusion, and contributes to students' comprehensive development when supported by continuous teacher professional development and

curricular adaptation.

Keywords: Physical Education; pedagogical models; systematic review; National Curriculum Base; Guatemala; educational innovation.

RESUMEN

La evolución de los modelos pedagógicos en Educación Física ha transformado significativamente los procesos de enseñanza-aprendizaje, desplazando enfoques tradicionales centrados en la instrucción técnica hacia propuestas orientadas al desarrollo integral del estudiante mediante metodologías activas, inclusivas y basadas en competencias. En Guatemala, esta transformación adquiere especial relevancia debido a la actualización del Currículo Nacional Base y a las políticas educativas impulsadas por el Ministerio de Educación para fortalecer la formación integral, la salud y la convivencia escolar. El objetivo de esta investigación fue analizar la evolución de los modelos pedagógicos aplicados en Educación Física mediante una revisión sistemática de la literatura científica reciente, identificando sus principales tendencias, aplicaciones y aportes al contexto educativo guatemalteco. Se desarrolló una revisión sistemática siguiendo los lineamientos PRISMA 2020, consultando publicaciones científicas, documentos oficiales y normativa educativa publicados entre 2021 y 2026 en bases de datos especializadas y repositorios institucionales. Los estudios fueron seleccionados mediante criterios de

inclusión y exclusión previamente definidos y posteriormente organizados mediante análisis temático. Los resultados evidenciaron un predominio creciente de modelos centrados en el aprendizaje cooperativo, el Modelo de Educación Deportiva, el Aprendizaje Basado en Juegos, el Modelo de Responsabilidad Personal y Social y los enfoques híbridos orientados al desarrollo de competencias motrices, cognitivas y socioemocionales. Asimismo, se identificó una alta correspondencia entre estas tendencias internacionales y las competencias establecidas por el Currículo Nacional Base de Guatemala. Se concluyó que la incorporación de modelos pedagógicos innovadores fortalece la calidad educativa, favorece la inclusión y contribuye al desarrollo integral del estudiantado, siempre que su implementación se acompañe de procesos permanentes de formación docente y adecuación curricular.

Palabras clave: Educación Física; modelos pedagógicos; revisión sistemática; Currículo Nacional Base; Guatemala; innovación educativa.

INTRODUCCIÓN

Over the past two decades, Physical Education has undergone a significant transformation as a result of social, cultural, technological, and educational changes that have redefined teaching and learning processes. Traditionally, this curricular area was characterized by a predominantly technical and sports-oriented approach, focused on the repetition of motor skills and physical performance. However, contemporary pedagogical trends have promoted models that place the student at the center of their learning, fostering holistic development through contextualized, inclusive motor experiences geared toward acquiring life skills.

Several studies published in recent years agree that active pedagogical models foster not only the development of motor skills, but also cognitive, social, and emotional competencies, increasing student motivation, autonomy, critical thinking, and participation. Furthermore, the incorporation of methodologies such as Cooperative Learning, the Sport Education Model, the Personal and Social Responsibility Model (PSSR),

Game-Based Learning, and hybrid models has strengthened the quality of educational processes at various levels, demonstrating better results compared to traditional approaches.

Recent scientific literature also indicates that educational systems have begun to orient Physical Education toward a competency-based approach that integrates the promotion of healthy habits, inclusion, equity, physical and emotional well-being, and the development of skills for democratic coexistence. This evolution responds to the recommendations of international organizations that consider physical activity an essential component for sustainable human development and for achieving the Sustainable Development Goals related to health, quality education, and the reduction of inequalities.

In Guatemala, this curriculum transformation process is supported by the National Education Law (Decree 12-91), which establishes that education is an inherent human right and a scientific, humanistic, critical, participatory process oriented toward the student's holistic development. Furthermore, the law stipulates that the education

system must reflect the country's historical, cultural, and social characteristics, strengthening competency-based learning and student participation.

In accordance with this legal framework, the National Curriculum Framework (CNB) promoted by the Guatemalan Ministry of Education fosters a student-centered educational paradigm, organized around competencies, achievement indicators, and contextualized learning. In the area of Physical Education, the CNB emphasizes the development of motor skills, the formation of healthy habits, social interaction, intercultural understanding, and the strengthening of values through active and participatory learning experiences—aspects closely aligned with contemporary pedagogical models developed through international research.

Despite these regulatory advances, scientific evidence continues to show that traditional practices focused on directive instruction, the repetition of exercises, and the exclusive evaluation of physical performance persist in many schools, limiting the formative potential of Physical Education. This situation highlights the need to analyze how research on pedagogical models has evolved in recent years and how these

trends can contribute to strengthening curriculum implementation in Guatemala.

In this context, systematic reviews are especially important because they allow for the integration of results from multiple studies, the identification of trends, knowledge gaps, and levels of evidence, as well as providing a solid foundation for curricular decision-making and the updating of teaching practices. From an educational perspective, this type of study facilitates the transfer of scientific knowledge to pedagogical planning and the continuous improvement of teaching.

The relevance of this research lies in the fact that, to date, there are few review studies that specifically analyze the evolution of pedagogical models in Physical Education, considering their potential application within the Guatemalan regulatory and curricular context. Consequently, this work seeks to offer an integrated perspective that can serve as a reference for teachers, researchers, curriculum designers, and educational authorities interested in strengthening the quality of Physical Education through pedagogical strategies based on scientific evidence.

Based on this problem, the study poses the following research question:

What have been the main trends in

the evolution of pedagogical models used in Physical Education during the period 2021-2026 and what is their potential contribution to the implementation of the National Curriculum Framework of Guatemala?

In accordance with this question, the general objective was to analyze the evolution of

pedagogical models in Physical Education through a systematic review of the scientific literature published between 2021 and 2026, identifying the main trends, applications and contributions for the educational contexts of Guatemala, in accordance with the National Education Law and the National Basic Curriculum.

Table 1: Main contemporary pedagogical models in Physical Education identified in recent literature

Pedagogical Model	Main Purpose	Competencies developed	Alignment with the Guatemalan National Curriculum Framework
Cooperative Learning	Promote learning through interaction among students	Teamwork, communication, and coexistence.	High
Sport Education Model	Foster an understanding of sport from an educational perspective	Leadership, responsibility, and participation.	High
Teaching Personal and Social Responsibility (TPSR) Model	Promote values and autonomy.	Responsibility, respect, and self-control.	Very High
Game-Based Learning	Enhance learning through game-based situations.	Tactical thinking, creativity, and problem-solving.	High
Hybrid Models	Integrate the strengths of different pedagogical models.	Motor, cognitive, and socio-emotional competencies.	Very High

Note. Prepared by the author based on a review of scientific literature published between 2021 and 2026 and a review of the National Curriculum Framework of the Ministry of Education of Guatemala.

METODOLOGY

Research design

This research was conducted using a qualitative approach, through a systematic literature review, following the recommendations established by the 2020 PRISMA statement (Preferred Reporting Items for Systematic Reviews and Meta-Analyses),

considered one of the international standards for conducting systematic reviews. This design allowed for the identification, selection, evaluation, and critical synthesis of scientific evidence related to the evolution of pedagogical models in Physical Education and their application in educational contexts, with particular attention to their

relevance within the Guatemalan educational system.

The study adopted a descriptive-analytical scope, aimed at examining the main pedagogical trends developed between 2021 and 2026, considering empirical research, systematic reviews, institutional documents, and current educational regulations.

Bibliographic search strategy

The literature search was conducted between January and February 2026 using nationally and internationally recognized scientific databases to ensure the quality and currency of the information gathered.

The sources consulted were:

- Scopus
- SciELO
- Redalyc
- Dialnet
- ERIC
- Google Scholar (as a supplementary source)
- Repository of the Guatemalan Ministry of Education (MINEDUC)
- Institutional repositories of Latin American universities

To locate the studies, Spanish descriptors were combined using Boolean operators AND and OR. The main search terms were:

- "Modelos pedagógicos" AND "Educación Física"
- "Educación Física" AND "Aprendizaje Cooperativo"
- "Modelo de Educación Deportiva"
- "Teaching Personal and Social Responsibility"
- "Aprendizaje Basado en Juegos"
- "Currículo Nacional Base" AND Guatemala
- "Educación Física escolar" AND innovación pedagógica

This strategy aimed to retrieve as many research studies related to the object of study as possible.

Inclusion and exclusion criteria

To ensure the relevance and methodological quality of

the review, predefined criteria were established for the selection of documents

Table 2: Inclusion and exclusion criteria for the analyzed studies

Inclusion criteria	Exclusion criteria
Publications between 2021 and 2026	Studies prior to 2021, except for current official regulations
Peer-reviewed scientific articles	Conference abstracts without full text
Systematic reviews and empirical studies	Opinions or essays without methodological support
Publications in Spanish	Duplicate studies
Research related to pedagogical models in Physical Education	Studies outside the educational field
Official documents from the Guatemalan Ministry of Education	Gray literature without institutional support

Note. Prepared by the authors according to the methodological criteria of the systematic review.

Study selection process

The literature selection process was carried out in four phases, following the methodological workflow recommended by PRISMA 2020.

In the first phase, potentially relevant documents were identified by searching the selected databases. Subsequently, duplicate records were removed using bibliographic management software. In the third

phase, titles and abstracts were reviewed to determine their relevance to the study's objective. Finally, the selected articles were evaluated through full-text reading to verify compliance with the eligibility criteria.

This procedure ensured the transparency and reproducibility of the scientific evidence selection process.

Table 3: Scientific article selection process

PRISMA stage	Number of records
Records identified	186
Duplicate records removed	28
Records assessed by title and abstract	158
Articles assessed in full text	72
Articles excluded	38
Studies included in the systematic review	34

Note. Prepared by the author based on the documentary search process.

Analysis Variables

To systematize the information obtained, each of the selected studies was analyzed considering the following variables:

- Year of publication.
- Country where the research was conducted..
- Type of study.
- Pedagogical model analyzed.
- Educational level.
- Competencies developed.
- Main results.
- Relationship to the school curriculum.
- Potential for application in the Guatemalan educational context.

These categories facilitated comparison between studies and allowed for the identification of common trends in the evolution of pedagogical models.

RESULTS AND DISCUSSION

The systematic review identified 34 studies that met the established inclusion criteria. The selected studies demonstrate a progressive evolution of Physical Education toward student-centered pedagogical approaches, characterized by participation, meaningful learning, and the comprehensive development of competencies.

The analyzed scientific output shows a decrease in the predominance of traditional methodologies based exclusively on technical instruction and physical performance, favoring models that integrate motor, cognitive, affective, and social dimensions.

The findings were organized into four thematic categories: evolution of pedagogical models, predominant methodological trends, contribution to competency development, and alignment with the Guatemalan National Curriculum Framework

Information Analysis Technique

The collected information was organized using document matrices created in Microsoft Excel. Subsequently, a thematic analysis was conducted, grouping the studies according to the identified pedagogical models and the competencies promoted by each. The analysis allowed for the establishment of relationships between the international trends described in the scientific literature and the competencies defined by the Guatemalan National Curriculum Framework, identifying convergences and opportunities to strengthen teaching practices in Physical Education.

Evolution of pedagogical models in Physical Education

A chronological analysis of the scientific literature revealed a significant transformation in the approaches used in Physical Education over the past five years. While earlier research favored technical learning and direct instruction, more recent studies highlight the incorporation of models focused

on active learning, cooperation, autonomy, and the holistic development of the student.

The reviewed articles agree that contemporary pedagogical models promote more flexible and inclusive teaching processes adapted to students' needs, strengthening motivation, participation, and commitment to physical activity.

Table 4: Evolution of the main pedagogical models identified in the review

Pedagogical model	Educational purpose	Competencies developed	Frequency in the reviewed studies
Traditional teaching	Technical mastery and motor execution	Specific motor skills	Low
Cooperative Learning	Learning through group interaction	Collaborative work, communication, and leadership	High
Sport Education Model	Comprehensive understanding of the sport	Leadership, responsibility, and decision-making	High
Teaching Personal and Social Responsibility (TPSR)	Ethical training and personal development	Autonomy, respect, and coexistence	Very High
Game-Based Learning	Contextualized learning through play	Creativity, tactical thinking, and problem-solving	High
Hybrid Models	Integration of different pedagogical approaches	Motor, cognitive, and socio-emotional competencies	Very High

*Note.*Prepared by the authors based on the studies included in the systematic review.

Pedagogical Trends Identified

The literature reviewed shows that research in Physical Education is currently focused on methodologies that promote active learning and contextualized experiences. Among the most frequent trends are the combination of various pedagogical models

within a single lesson plan, the incorporation of technological resources, formative assessment, and the strengthening of socio-emotional skills.

Furthermore, several studies report that the use of active methodologies significantly increases student participation,

improves the classroom climate, and fosters higher levels of motivation toward physical

activity, especially when activities are developed through cooperative strategies and real-life learning situations.

Table 5: Main trends found in the scientific literature (2021–2026)

Trend identified	Evidence found	Educational impact
Cooperative learning	Very frequent	Increases interaction and inclusion
Sports education	Very frequent	Promotes leadership and autonomy
Hybrid models	Frequent	Integrates multiple skills
Formative assessment	Frequent	Improves learning feedback
Gamification	Moderate	Increases motivation and engagement
Challenge-based learning	Moderate	Promotes problem-solving
Technological integration	Increasing	Enriches the learning experience
Socio-emotional development	Very frequent	Strengthens school community

Note. Original work.

Competencies Promoted by Pedagogical Models

Scientific evidence has identified that current pedagogical models go beyond the development of motor skills, promoting essential competencies for the student's holistic development. Among the most frequently highlighted competencies are:

- motor skills;
- autonomy in learning;
- collaborative work;
- leadership;
- critical thinking;
- problem-solving;
- effective communication;
- social responsibility;
- emotional self-regulation;
- healthy lifestyle habits.

Studies agree that meaningful learning is strengthened when motor activities are related to real-life situations and allow students to take an active role in their own learning process.

Relationship between Pedagogical Models and the Guatemalan National Curriculum Framework

Uno One of the most relevant findings of the review is the high degree of alignment between the competencies promoted by contemporary pedagogical models and the principles established by the National Curriculum Framework (CNB) of the Guatemalan Ministry

of Education.

The document analysis revealed that the competency-based approach proposed by the CNB coincides with the foundations of active learning models, especially in aspects related to meaningful learning, participation, democratic coexistence, civic education, and holistic development..

Table 6: Alignment between Pedagogical Models and the Competencies of the National Curriculum Framework

Pedagogical model	CNB competencies that strengthens	Level of correspondence
Cooperative Learning	Coexistence, teamwork, and participation	Very High
Sport Education Model	Participation, leadership, and citizenship	Very High
TPSR	Values, autonomy, and responsibility	Very High
Game-Based Learning	Creativity and problem-solving	High

Note: Prepared by the author based on a comparative analysis of scientific literature and the Guatemalan National Curriculum Framework..

Summary of Results

The results obtained allow us to affirm that the evolution of Physical Education during the analyzed period reflects a transition from teaching-centered models to learning-oriented approaches. The review reveals a growing consolidation of active methodologies that promote the development of motor, cognitive, and socio-emotional skills, as well as a close relationship between these trends and the curricular guidelines of the

Guatemalan education system..

Overall, the studies reviewed indicate that the adoption of innovative pedagogical models contributes to improving the quality of teaching, promoting inclusion, strengthening student engagement, and fostering holistic development. These findings support the progressive integration of such models into curriculum planning and teaching practice.

DISCUSSION

The results obtained demonstrate a significant transformation in the pedagogical models used in Physical Education during the period 2021–2026. The systematic review identified that teaching has evolved from traditional approaches focused on the transmission of technical skills toward pedagogical models that promote active learning, student participation, and the comprehensive development of competencies. This evolution reflects a paradigm shift consistent with international trends in education, which prioritize the development of citizens capable of responding to dynamic and complex social contexts.

One of the main findings of this research was the consolidation of Cooperative Learning, the Sport Education Model, the Personal and Social Responsibility Model (PSRM), Game-Based Learning, and hybrid models as the methodological strategies with the strongest scientific support.

The growing presence of these approaches in recent literature demonstrates that Physical Education has ceased to be conceived solely as a space for the development of physical abilities and has become a setting for constructing

meaningful learning, democratic coexistence, and socio-emotional development.

The results align with research conducted in various Latin American countries, which maintains that active pedagogical models increase student motivation, foster autonomy, and improve the acquisition of motor and social skills. The evidence analyzed also shows that these methodologies strengthen student participation, reduce exclusionary behaviors, and generate more collaborative learning environments—aspects that represent an advance over traditional approaches based on rote memorization and direct instruction.

From a curricular perspective, one of the most relevant contributions of this review is demonstrating the close relationship between contemporary pedagogical models and the competency-based approach promoted by Guatemala's National Curriculum Framework (CNB). The comparative analysis revealed that the competencies developed through these models—such as collaborative work, problem-solving, autonomy, responsibility, and social interaction—are highly aligned with the expected learning outcomes defined by the Ministry of Education for the Physical Education area.

This curricular convergence is especially significant because it confirms that incorporating active methodologies does not imply modifying the objectives established by the Guatemalan education system, but rather strengthening their implementation through teaching strategies consistent with the principles of meaningful learning. Consequently, the identified pedagogical models constitute methodological tools that can contribute to achieving the competencies outlined in the national curriculum.

Likewise, the reviewed literature reveals a progressive expansion of hybrid models, understood as the planned combination of two or more pedagogical approaches within the same teaching unit. These models allow for leveraging the particular strengths of each methodology and adapting them to the characteristics of the educational context, offering greater flexibility to address the diversity present in classrooms.

For Guatemala, where educational institutions exhibit significant cultural, linguistic, and territorial differences, this approach represents a particularly relevant alternative for fostering inclusive and contextualized teaching processes.

Another relevant aspect identified during the review was the growing interest in integrating socio-emotional competencies into Physical Education. Traditionally, assessment in this area focused almost exclusively on motor performance; however, recent research shows that current pedagogical approaches simultaneously promote skills related to communication, empathy, leadership, cooperation, and peaceful conflict resolution. This finding aligns with international trends that recognize the role of Physical Education as a privileged space for the holistic development of students.

However, the review also identified several challenges that limit the effective implementation of these pedagogical models. Among the main difficulties described by the research are insufficient teacher training in active methodologies, a scarcity of teaching resources, limitations in sports infrastructure, and the persistence of deeply rooted traditional practices in some schools. These conditions hinder the transition to student-centered approaches and highlight the need to strengthen teacher professional development programs.

In the Guatemalan context, these challenges are especially important due to the country's sociocultural diversity and the differences between urban and rural institutions. While the National Curriculum Framework establishes a favorable environment for pedagogical innovation, its effective implementation depends on ongoing training, institutional support, and the availability of resources that allow for the adaptation of pedagogical models to the characteristics of each educational community.

From a methodological standpoint, this review provides an

integrated view of the evolution of pedagogical models in Physical Education over the last five years, synthesizing recent scientific evidence and relating it to Guatemala's regulatory framework. This perspective facilitates decision-making by teachers, administrators, and those responsible for curriculum design, by providing a scientific basis for selecting teaching strategies that align with the current demands of the education system.

However, this study has some limitations. First, the review was restricted to publications in Spanish, so relevant research published in other languages was not included. Furthermore, the analysis focused on studies published between 2021 and 2026, a methodological decision aimed at ensuring the currency of the evidence, although this meant excluding classic research that serves as historical benchmarks in the development of certain pedagogical models. Finally, the limited availability of research conducted specifically in Guatemala highlights the need to strengthen national scientific production on Physical Education and pedagogy.

Based on these findings,

future research could develop empirical studies evaluating the implementation of specific pedagogical models in Guatemalan educational institutions, analyzing their impact on learning, motivation, inclusion, and skills

development. It is also relevant to explore the potential of digital technologies, artificial intelligence, and hybrid learning environments as complementary resources to enrich physical education teaching within the national curriculum framework.

Table 7: Implications of the findings for the Guatemalan education system

Identified finding	Educational implication	Recommendation
Predominance of hybrid models	Promote meaningful learning	Incorporate pedagogical models into official curriculum guidelines
Alignment with the CNB	Facilitates curriculum implementation	Integrate active methodologies into educational planning
Development of socio-emotional competencies	Contributes to comprehensive education	Design didactic strategies focused on holistic development
Expansion of hybrid models	Greater methodological flexibility	Adapt pedagogical models to diverse educational contexts
Need for teacher training	Improves teaching quality	Strengthen ongoing professional development programs

Note. Prepared by the author based on a systematic review of the literature and an analysis of the National Basic Curriculum of Guatemala.

CONCLUSIONS

This systematic review identified a significant evolution in pedagogical models in Physical Education during the period 2021–2026, demonstrating a transition from traditional approaches focused on technical instruction to active methodologies oriented toward the holistic development of the student. This change responds to new educational demands, which prioritize competency-based learning, inclusion, active participation, and the development of life skills.

The findings demonstrated that Cooperative Learning, the Sports Education Model, the Personal and Social Responsibility Model (PSSR), Game-Based Learning, and hybrid models currently constitute the pedagogical approaches with the strongest scientific support. Their implementation fosters the balanced development of motor, cognitive, social, and emotional skills, increasing student motivation and promoting more participatory and inclusive learning environments.

Furthermore, the

comparative analysis established a high degree of alignment between the principles underpinning these pedagogical models and the competency-based approach promoted by Guatemala's National Curriculum Framework. This relationship demonstrates that incorporating active methodologies can strengthen curriculum implementation without altering the educational goals established by the national education system, contributing to a more relevant, contextualized, and holistically oriented approach to Physical Education teaching..

The review also identified ongoing teacher training as one of the main challenges for consolidating these models. Methodological updates, institutional support, the availability of teaching resources, and the adaptation of pedagogical strategies to diverse sociocultural contexts are essential conditions for ensuring effective implementation in Guatemalan educational institutions.

Finally, this research provides an updated synthesis of the available scientific evidence on the evolution of pedagogical models in Physical Education and

offers theoretical and methodological foundations that can guide future research, curriculum innovation processes, and teacher training programs. It is recommended that empirical studies be conducted in Guatemalan educational institutions to evaluate the impact of these models on student learning, inclusion, and holistic development, thereby strengthening national scientific output in this field.

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