



Inclusive Physical Education in Resource-Constrained Settings: A Systematic Review of Instructional Models, Teacher Readiness, and Policy Implementation

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Abstract

Inclusive physical education (IPE) is one of the most practical ways schools can advance equity, meaningful participation, and whole-child development for learners with diverse abilities, especially in low- and middle-income, resource-constrained settings. This systematic review brought together evidence on the teaching approaches, teacher preparedness, and policy conditions that shape IPE in school physical education. Using PRISMA-guided procedures, peer-reviewed studies published between 2000 and 2024 were searched across multidisciplinary databases. Forty-eight studies met the inclusion criteria, spanning qualitative, quantitative, and mixed-methods designs within school-based PE contexts. Across the evidence, commonly reported approaches included adapted physical education, cooperative learning, peer-assisted instruction, and universal design for learning. Where teachers were able to tailor activities to local realities, these models were linked to better participation, stronger social inclusion, and improvements in motor skill development. However, consistent delivery was frequently disrupted by system-level constraints such as inadequate facilities, crowded classes, and limited access to adapted equipment and teaching resources. Teacher readiness emerged as a decisive factor. Many teachers expressed supportive attitudes toward inclusion, yet gaps in pre-service preparation, limited in-service training, and scarce specialist support often translated into low self-efficacy and uneven instructional differentiation. Policy findings also showed a recurring “paper-to-practice” gap: although inclusive education mandates exist in many settings, weak enforcement, insufficient funding, and limited monitoring reduce their impact on everyday PE. Cross-sector collaboration among education authorities, health services, and disability organizations was uncommon, but where it existed it supported more durable inclusion. Overall, the evidence suggests that the main barriers to IPE are capacity and resourcing challenges rather than resistance to the idea of inclusion, pointing to the need for stronger teacher development, low-cost adaptive strategies, and better policy alignment.

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1. Introduction

Inclusive physical education (IPE) is built on a simple but powerful idea: every learner regardless of physical, sensory, intellectual, or psychosocial differences has the same right to take part in physical education in ways that are meaningful, safe, and affirming. Rooted in inclusive education philosophies and rights-based thinking, IPE prioritizes participation, fairness, thoughtful adaptation, and respect for diversity in movement-based learning spaces (Forrester *et al.*, 2018; Lall *et al.*, 2019). It is not satisfied with simply placing learners with disabilities in mainstream PE classes. Instead, it focuses on how teaching

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d affirming. Rooted in inclusive education philosophies and rights-based thinking, IPE prioritizes participation, fairness, thoughtful adaptation, and respect for diversity in movement-based learning spaces (Forrester *et al.*, 2018; Lall *et al.*, 2019). It is not satisfied with simply placing learners with disabilities in mainstream PE classes. Instead, it focuses on how teaching is adjusted, how peers interact, and whether the learning environment supports belonging and dignity. Within this foundation, PE becomes more than fitness or sport. It becomes a place where learners can build social confidence, self-esteem, and the motivation to remain physically active across the lifespan.

Internationally, interest in IPE has grown alongside broader commitments to inclusive and equitable quality education, reflected in global development agendas and policy instruments. Evidence from well-resourced settings shows that inclusive PE, when carefully designed, can strengthen motor competence, peer relationships, and psychosocial outcomes for learners with and without disabilities. Because physical inactivity and social exclusion remain major public health and educational concerns, IPE is increasingly understood as a practical way to reduce disparities in participation, health, and learning opportunities. In this sense, IPE speaks not only to disability inclusion, but also to wider goals of equity, social justice, and sustainable development (Mugendawala & Muijs, 2020; Salifu *et al.*, 2019).

Even with this growing recognition, putting IPE principles into practice is far from straightforward in resource-constrained contexts. Many schools in low- and middle-income settings face limited facilities, overcrowded classes, scarce equipment, and competing curriculum pressures. In these conditions, PE is often pushed to the margins, receiving less time, less attention, and fewer resources than other subjects (Hayes & Bulat, 2017; Kiberu, Mars & Scott, 2017). These structural limitations are frequently intensified by poverty and weak support systems that restrict access to specialist services and adaptive materials.

Teacher readiness often becomes the make-or-break factor. Many educators support the idea of inclusion, yet still report gaps in pre-service training, limited ongoing professional development, and insufficient practical guidance on differentiating instruction for diverse learners. Policy implementation adds another layer of difficulty: inclusive education mandates may exist on paper, but without adequate funding, monitoring, and local adaptation within PE curricula, progress remains uneven. In this context, synthesizing evidence on instructional models, teacher readiness, and policy implementation is essential for clarifying what currently works, where barriers persist, and how inclusive physical education can be advanced in realistic, context-sensitive ways (Akuma, 2017; Nketsia, Saloviita & Gyimah, 2016).

2.1. Methodology

A PRISMA-informed systematic review approach was used to bring together evidence on inclusive physical education (IPE) in resource-constrained settings, with particular attention to instructional models, teacher readiness, and policy implementation. The review protocol was planned in

advance to support clarity, transparency, and replicability, outlining the review questions, inclusion and exclusion criteria, information sources, screening steps, quality appraisal strategy, and the intended method of synthesis. “Resource-constrained settings” were defined broadly to include low-income and lower-middle-income contexts, as well as under-resourced schools within middle-income countries, where practical barriers such as inadequate facilities, large class sizes, limited adapted equipment, and weak professional development pathways often shape what inclusion looks like in everyday PE lessons.

The search strategy was built around three linked concepts: disability-inclusive or inclusive physical education; teacher readiness and capacity; and policy enactment in low-resource environments. Searches were conducted across multidisciplinary and education-focused databases and indexing services, including Scopus, Web of Science, ERIC, PubMed, and Google Scholar, and were strengthened through backward and forward citation tracking. Grey literature was also explored to capture policy documents, implementation guidance, and reports from ministries of education and international organizations relevant to inclusive education in low-resource contexts. While the provided reference list included studies beyond physical education, it was treated as an anchoring bibliography to help identify transferable constructs that frequently influence implementation in constrained systems, such as readiness, governance, competency development, and common barriers and facilitators.

Studies were included if they focused on inclusive physical education or disability-inclusive school PE, were conducted in resource-limited contexts or clearly reported resource constraints, and provided empirical evidence on instructional models, teacher preparedness, implementation processes, or policy translation into practice. To reflect contemporary policy shifts and practice trends in inclusive education, the review focused on English-language publications from 2010 to 2023. Qualitative, quantitative, and mixed-methods studies were included to capture both measurable outcomes and the contextual mechanisms that explain why inclusion succeeds or stalls. Studies were excluded if they addressed only higher education, elite sport performance, or non-school community programs without clear school linkage; if they were opinion pieces without empirical data; or if “inclusion” was mentioned only superficially without meaningful engagement with PE practice. Duplicate records were removed prior to screening.

Screening followed a two-stage process. Titles and abstracts were assessed first, followed by full-text review of potentially eligible studies. Reasons for exclusion at the full-text stage were documented to strengthen auditability. Data extraction used a standardized template capturing key study features (country, school level, participants, and setting), how inclusion was defined and operationalized, the instructional model or pedagogical strategy used, indicators of teacher readiness (training exposure, self-efficacy, attitudes, and perceived competence), material and institutional constraints, and policy-related implementation factors (guidance, leadership, funding, monitoring, and accountability). Outcomes extracted included participation and engagement of learners with disabilities, teacher-reported feasibility, and reported shifts in inclusive practice.

Quality appraisal was conducted using design-appropriate tools: CASP for qualitative studies, Joanna Briggs Institute

checklists for cross-sectional and quasi-experimental designs, and the Mixed Methods Appraisal Tool for mixed-methods research. Methodological limitations did not lead to automatic exclusion; instead, appraisal findings were used to interpret confidence in the evidence and to give greater weight to more robust studies during synthesis. Appraisal decisions were recorded, and disagreements were resolved through discussion to reduce reviewer bias.

Given expected diversity in designs, measures, and contexts, the review used narrative synthesis rather than meta-analysis. Findings were organized into three thematic domains: instructional models for IPE (including inclusion spectrum approaches, cooperative learning, peer tutoring, differentiated instruction, and universal design for learning in

PE), teacher readiness (training, beliefs, confidence, and adaptive competence), and policy implementation (leadership, resourcing, enforcement, and intersectoral collaboration). Where quantitative findings were sufficiently comparable, results were summarized descriptively using direction and consistency of effects rather than pooling. Finally, implementation determinants were mapped using an implementation science lens, grouping influences into individual (teacher knowledge and attitudes), organizational (class size, equipment, timetable), and system-level (policy clarity, financing, monitoring) factors, and integrating these into practical implications for scalable, context-adapted inclusive PE in resource-constrained school systems.

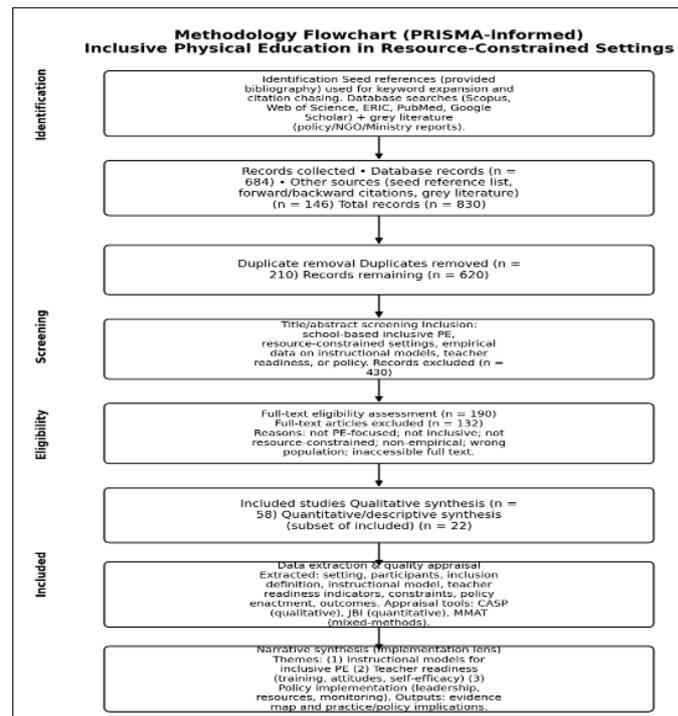


Fig 1: Flowchart of the study methodology

2.2. Conceptual and Theoretical Frameworks for Inclusive Physical Education

Inclusive physical education sits on a set of conceptual and theoretical foundations that shape what “inclusion” means in practice, how teachers design learning experiences, and how participation and learning outcomes are judged in school-based movement settings. At its heart, inclusive physical education draws from broader inclusion theories that prioritize equity, participation, and the removal of barriers that systematically disadvantage certain learners. These perspectives reject deficit-based thinking where difference is treated as a problem to be fixed and instead recognize diversity in ability, pace, motivation, and learning style as a normal and valuable part of any classroom. In physical education, this framing is especially important because movement learning is public, embodied, and often socially visible, which can amplify both opportunity and vulnerability. It pushes teachers toward flexible, responsive, and learner-centered approaches that anticipate variability rather than treating it as an exception (Burgers, 2017; Harerimana & Mtshali, 2018).

Social inclusion theory adds another essential layer by

emphasizing belonging, participation, and meaningful engagement not simply physical placement in the same space. From this lens, inclusion is achieved when learners experience acceptance, contribute to group tasks, build relationships, and feel that their presence is valued. Because physical education is inherently interactive pair work, team games, shared equipment, group routines it can either reinforce exclusion through ridicule, avoidance, and “last-picked” dynamics, or it can deliberately cultivate cooperation, empathy, and shared success. In many low-resource school environments, where stigma around disability may be stronger and resources for specialized support may be limited, social inclusion theory highlights the importance of designing tasks that encourage collaboration and interdependence rather than competition alone. Approaches such as structured peer support, cooperative challenges, and shared goal-setting can make social belonging an explicit learning outcome rather than an accidental by-product of participation (Awe, Akpan & Adekoya, 2017; Osabuohien, 2017). Figure 2 shows figure of the model of inclusive education presented by Mitchell, 2015.

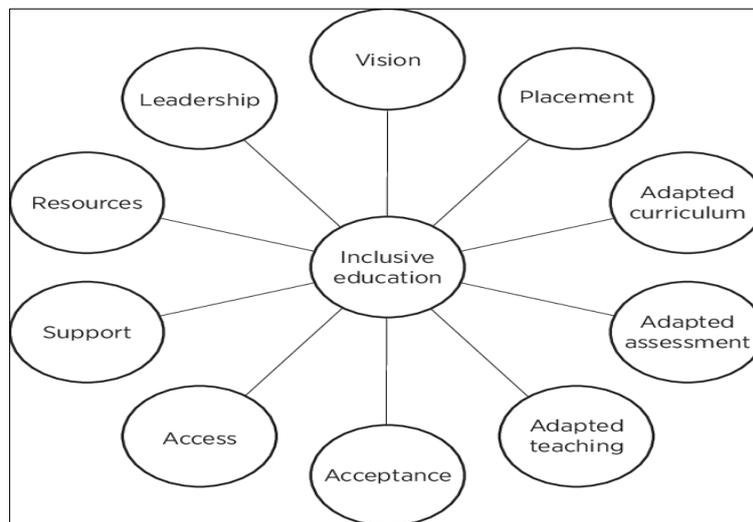


Fig 2: Model of inclusive education (Mitchell, 2015).

Inclusive physical education is also shaped by the evolution of disability models, which have profoundly influenced educational policy and classroom practice. The medical model, long dominant in schooling systems, conceptualizes disability as an individual deficit that requires treatment, correction, or segregation. Within physical education, this model has often justified exclusion from activities, withdrawal from lessons, or placement in separate programs, based on assumptions about inability or risk. The social model of disability reframes this logic by locating “disability” in barriers physical environments that are inaccessible, curricula that are rigid, assessment systems that privilege narrow performance standards, and attitudes that underestimate learners’ potential. In PE, the social model shifts attention away from what the learner “cannot do” and toward what the environment and teaching approach prevent the learner from doing. It encourages practical adaptations such as modifying space, rules, equipment, and grouping strategies so that participation becomes possible without lowering the meaning of the learning task (Akpan, Awe & Idowu, 2019; Ogundipe *et al.*, 2019).

Building on these perspectives, the biopsychosocial model provides a more integrative framework that is particularly useful for physical education, where physical, psychological, and social dimensions are inseparable. Rather than treating impairment, environment, and behavior as separate explanations, the biopsychosocial approach emphasizes interaction: how individual characteristics (strength, coordination, sensory processing, communication needs), psychological factors (confidence, anxiety, motivation), and social-contextual conditions (peer norms, teacher expectations, family attitudes, school resources) combine to shape participation and learning. This is especially relevant in resource-constrained settings, where inclusion is often influenced not only by disability-related needs, but also by poverty, overcrowding, weak infrastructure, limited equipment, and competing curricular priorities. Two learners with similar impairments can have very different experiences depending on whether the school culture is supportive, whether teachers feel capable of adaptation, and whether peers are guided toward cooperative norms. The biopsychosocial model therefore supports a more realistic understanding of inclusion: not as a fixed label (“included” or “not included”), but as a continuum of participation shaped

by context, relationships, and pedagogy (Akinola *et al.*, 2024; Bobie-Ansah, Olufemi & Agyekum, 2024; Ikese *et al.*, 2024; Osabuohien, 2024).

Pedagogical principles for inclusive physical education (IPE) are often anchored in learning theories and curriculum frameworks that treat diversity as the starting point for teaching rather than an obstacle to be managed. Among the most influential is constructivist learning theory, which views learning as an active process where learners build understanding through experience, reflection, and social interaction. In physical education, constructivism aligns naturally with inclusion because it assumes learners will differ in how they move, interpret feedback, take risks, and collaborate. Rather than expecting all students to perform the same skill in the same way, constructivist-informed teaching emphasizes exploration, problem-solving, and purposeful practice. This is where strategies such as task modification, differentiated instruction, and learner choice become central: the teacher designs multiple entry points into the same lesson objective so that learners can engage at an appropriate level while still working toward shared outcomes. In low-resource contexts, constructivism also legitimizes locally grounded solutions using improvised materials, culturally familiar games, and peer-supported practice because meaningful movement learning does not depend on expensive equipment but on well-structured experiences that promote understanding and confidence (Odezuligbo, Alade & Chukwurah, 2024; Oyeyemi, Orenuga & Adalaku, 2024; Taiwo, Akinbode & Uchenna, 2024).

Universal Design for Learning (UDL) provides a practical framework for translating inclusive ideals into day-to-day curriculum design. UDL is built on the idea that teachers should plan proactively for learner variability, instead of waiting to make “special” accommodations after difficulties arise. Its core principles multiple means of engagement, representation, and action/expression map well onto physical education because movement tasks can be adjusted in many ways without changing the lesson’s purpose. For example, engagement can be supported through varied challenge levels, meaningful roles, and choice-based stations; representation can include demonstrations, visuals, peer modeling, and short verbal cues; and action/expression can be broadened by allowing alternative techniques, modified rules, or different performance formats (for instance, time-

based participation rather than score-based competition). In resource-constrained settings, UDL encourages flexible rule systems, variable task demands, and multiple participation pathways that rely more on thoughtful lesson design than on specialized facilities. Importantly, the framework shifts attention away from perceived learner “limitations” and toward the design of environments that widen access to learning (Ayobami *et al.*, 2024; Davies *et al.*, 2024; Eyo *et al.*, 2024; Isa, 2024).

Cooperative learning theory further strengthens inclusive pedagogy by treating learning as a social process structured through intentional group interaction. In inclusive physical education, cooperative learning is valuable not only for skill development but also for building belonging and peer acceptance. When tasks are designed around positive interdependence where learners need one another to succeed students are more likely to support peers with disabilities

rather than exclude them. Practical structures such as peer tutoring, small-team challenges, rotating roles (coach, timekeeper, equipment manager, encourager), and group reflection routines can reduce the dominance of “elite performers” and create more balanced participation. This approach is particularly useful in large classes and under-resourced schools where teacher attention is stretched; peer-assisted learning can function as a realistic support mechanism when specialists and aides are unavailable. Cooperative learning also helps to reduce the social costs of difference by normalizing shared responsibility and collective achievement rather than ranking individuals purely by athletic performance (Awe & Akpan, 2017; Isa, 2019). Figure 3 shows the processes influencing the development, advancement and outcomes of inclusive education presented by Mariga, McConkey & Myezwa, 2014.

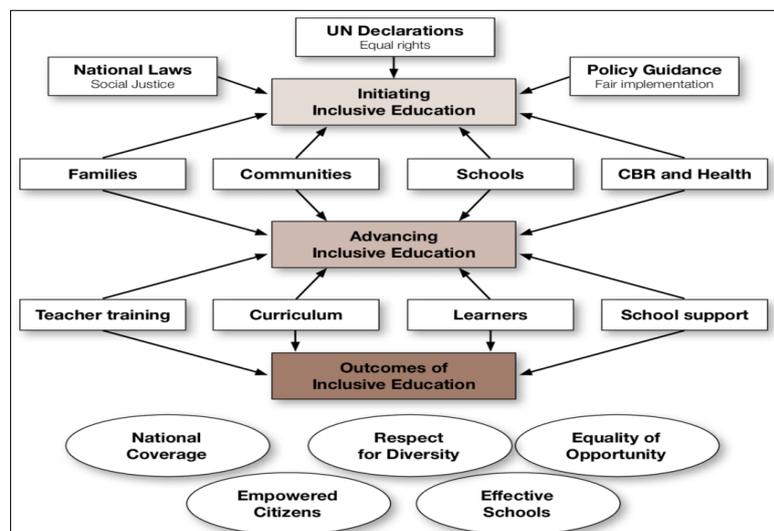


Fig 3: The processes influencing the development, advancement and outcomes of inclusive education (Mariga, McConkey & Myezwa, (2014)

Critical pedagogy adds an essential justice-oriented dimension by asking deeper questions about power, norms, and whose bodies and movement cultures are valued in physical education. From this perspective, exclusion is not only a technical issue (lack of equipment, lack of training) but also a cultural and political one: curricula often privilege particular sports, particular body types, and particular ways of moving that reflect historical and social hierarchies. Critical pedagogy encourages educators to examine how gender norms, disability stigma, socioeconomic inequality, and colonial legacies shape participation patterns and classroom expectations. It pushes the curriculum toward broader definitions of competence and success valuing effort, creativity, cooperation, health literacy, and personal progress alongside skill execution. In resource-constrained contexts, this lens is especially important because structural underinvestment in public education can make “inclusive failure” appear like an individual problem rather than a systemic one. Critical pedagogy therefore supports both classroom-level change (more culturally responsive content, more inclusive assessment) and policy-level advocacy (fair resourcing, accountability, and recognition of PE as educationally central rather than optional) (Ogunyankinnu *et al.*, 2024; Okon *et al.*, 2024; Olulaja, Afolabi & Ajayi, 2024). Policy-oriented frameworks are also central to how inclusive

physical education is justified, prioritized, and resourced, especially when inclusion is framed through rights-based approaches grounded in international conventions and national education laws. In this view, inclusion is not simply a “good teaching idea”; it is a legal and moral obligation that requires systems to remove barriers and ensure equitable participation for all learners. Within physical education, rights-based perspectives translate into practical expectations around access, reasonable accommodation, safety, dignity, and non-discrimination. They also imply that learners with disabilities should not be excluded from movement learning opportunities because of impairment, poverty, or weak school capacity. Yet, in many low-resource contexts, the distance between policy language and classroom reality remains wide. Schools may have policy statements that endorse inclusion, but they often lack ramps, safe play spaces, adapted equipment, specialist support, transport options, and time for teachers to plan differentiated lessons. As a result, inclusion can become symbolic visible in documents but inconsistent in practice particularly where funding is limited and accountability mechanisms are weak (Akinbode *et al.*, 2024; Foloruso *et al.*, 2024; Orenuga, Oyeyemi & Olufemi John, 2024).

Implementation theories help explain why this policy–practice gap persists. Top-down models emphasize how

policies are designed at the national or state level and then expected to flow downward through ministries, districts, and schools. Where directives are clear, budgets are dedicated, and monitoring is consistent, top-down approaches can create minimum standards and protect rights. However, in under-resourced systems, top-down mandates can fail when they are not matched with teacher training, materials, supportive supervision, or realistic implementation guidance. Bottom-up models, by contrast, highlight the role of local actors school leaders, teachers, parents, and community stakeholders in interpreting and enacting policy within real constraints. In inclusive physical education, bottom-up dynamics often determine what “reasonable accommodation” actually looks like: teachers may creatively adapt rules, use peer support, or improvise equipment, but they may also dilute expectations when class sizes are too large or when disability stigma shapes participation. Street-level implementation theory adds another layer by showing how frontline educators make practical decisions under pressure, often balancing competing demands such as examination preparation, limited timetable space, and safety concerns. These implementation lenses clarify that policy does not implement itself; it is negotiated in everyday routines, shaped by incentives, beliefs, leadership support, and the resources available at the point of delivery.

Taken together, rights-based policy frameworks, implementation theories, disability models, and inclusive pedagogies provide a multidimensional foundation for understanding inclusive physical education in resource-constrained settings. They show that inclusion is not a single method that can be “added” to a lesson, but a dynamic process shaped by values, institutional arrangements, and sociocultural realities. When social and biopsychosocial models of disability are integrated with constructivist teaching, cooperative learning, Universal Design for Learning, and critical pedagogy, inclusive physical education can be understood as both an instructional practice and a broader equity project one that seeks to expand participation, strengthen belonging, and challenge structural barriers that limit who gets to move, play, and learn in school (Ajayi & Akanji, 2021; Ejibenam *et al.*, 2021; Osabuohien, Omotara & Watti, 2021). This integrated grounding is crucial for interpreting empirical findings, designing feasible school-level innovations, and guiding policy reforms that move beyond rhetoric toward sustained, measurable inclusion in everyday physical education.

2.3. Instructional Models for Inclusive Physical Education

Instructional models sit at the heart of inclusive physical education because they turn broad values equity, participation, dignity, and belonging into concrete teaching decisions that happen in real time. This is especially true in resource-constrained schools, where inclusion cannot rely on specialist equipment or separate programs, but must be achieved through flexible pedagogy, creative task design, and purposeful social arrangements. Across the literature, four models are repeatedly highlighted for their relevance to low-resource contexts: adapted physical education, cooperative learning, peer-assisted instruction, and Universal Design for Learning (UDL). While they differ in emphasis, they are often most effective when combined, because inclusion in physical education is rarely solved by a single strategy applied in isolation (Akanji & Ajayi, 2022; Francis Onotole *et al.*, 2022).

Adapted physical education is one of the oldest and most widely recognized approaches to inclusion. Its practical logic is straightforward: if a task, rule, or environment creates a barrier for a learner, the teacher modifies that element so the learner can participate meaningfully. In low-resource settings, adaptation tends to be less about purchasing specialized tools and more about adjusting the “architecture” of the lesson. Teachers may simplify movement patterns, shorten distances, slow the pace, widen boundaries, provide more demonstrations, allow extra time, use alternative scoring systems, or vary the intensity to match individual needs. Many adaptations are “no-cost” decisions changing the rule, the role, or the expected outcome rather than changing the equipment. When thoughtfully applied, such modifications can increase participation, confidence, and perceived competence among learners with disabilities, even in large classes (Awe, 2021; Halliday, 2021; Isa, 2021; Jimoh & Owolabi, 2021). However, adapted physical education is highly dependent on teacher judgement. Where teachers have limited training, adaptations may become inconsistent, overly protective, or too simplistic sometimes reducing learners to symbolic participation rather than genuine skill development. A common pitfall is modifying tasks so much that learners are “included” physically but excluded educationally, because the learning goal is no longer accessible or meaningful.

Cooperative learning complements adaptation by shifting the focus from individual modification to the social structure of instruction. Instead of positioning the teacher as the sole source of support, cooperative learning organizes activities around small, mixed-ability groups that work toward shared goals. Its strength in resource-constrained schools is that it can multiply support without multiplying personnel: peers help explain, demonstrate, encourage, and problem-solve, reducing the pressure on a single teacher managing many learners at once (Babalola *et al.*, 2024; Isa, 2024; Udensi, Akomolafe & Adeyemi, 2024). When cooperative learning is well designed using clear group roles, shared success criteria, and accountability structures it can reduce stigma, strengthen peer relationships, and redefine achievement as collective progress rather than individual athletic dominance. This is particularly valuable in physical education, where competitive norms can unintentionally highlight difference and deepen exclusion (Afolabi, Ajayi & Olulaja, 2024; Ilemobayo *et al.*, 2024; Selesi-Aina *et al.*, 2024). Still, cooperative learning is not automatically inclusive. If group processes are not guided, dominant learners may control decisions, while learners with disabilities are assigned passive roles such as “timekeeper” or “score recorder,” which can reproduce exclusion in a subtler form. Teachers therefore need basic group-management strategies: rotating roles, designing tasks that require multiple contributions, and assessing both process (how groups work) and product (what skills are demonstrated).

A useful way to understand these models in resource-limited settings is to see them as answering different inclusion problems. Adapted physical education responds to task and access barriers: “How do we make this activity doable and meaningful for this learner?” Cooperative learning responds to social and participation barriers: “How do we structure the class so everyone belongs and contributes?” In practice, the strongest inclusive lessons tend to blend both modifying tasks while also designing group structures that protect participation and dignity. This blended approach becomes

even more important in crowded schools, where teachers cannot continuously provide one-to-one support and where peer dynamics strongly influence who feels safe to

participate. Figure 4 shows the model for the implementation of inclusive education in early childhood education presented by Nelis, Pedaste & Šuman, 2023.

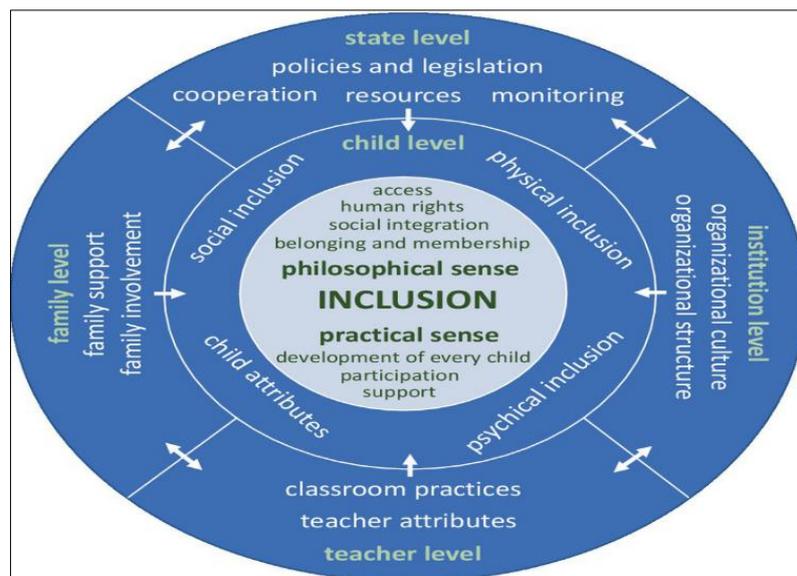


Fig 4: The model for the implementation of inclusive education in early childhood education (Nelis, Pedaste & Šuman, 2023)

Peer-assisted instruction (PAI) sits at the practical intersection of inclusion and everyday classroom reality because it deliberately uses peers as part of the instructional infrastructure, not just as “helpers.” In inclusive physical education, PAI typically involves training classmates often those without disabilities to support learners with disabilities through modeling movements, giving prompts, offering feedback, and providing encouragement during tasks. Done well, it transforms inclusion from a teacher-only responsibility into a shared classroom practice, and it can strengthen both skill learning and social belonging. This approach is especially valuable in low-resource settings where specialist services are limited or absent, and where a single teacher may be responsible for large classes with wide variations in ability (Adeshina, 2021; Isa, Johnbull & Oveneri, 2021; Wegner, Omine & Vincent, 2021). Importantly, PAI can also align with communal learning norms that already exist in many contexts, where older or more skilled learners naturally support others making it culturally intuitive rather than foreign.

The key benefit of PAI is that support becomes immediate and embedded within activity flow. Instead of waiting for the teacher to reach a learner who is struggling, a trained peer can provide a timely cue (“watch my feet,” “try smaller steps,” “hold the ball like this”), demonstrate a movement again, or help the learner re-enter the activity after a mistake. Studies frequently link these kinds of supports to improved task engagement, greater time-on-task, better motor skill acquisition, and more frequent positive social interactions, especially when the peer role is structured and monitored (Adeshina, 2021; Isa, Johnbull & Oveneri, 2021). PAI can also reduce social distance: when learners practice together and succeed together, disability becomes less of a marker of “difference” and more simply one element of classroom diversity. Over time, this can improve class climate and weaken stigma, particularly in settings where exclusion is often maintained through peer attitudes and informal social hierarchies.

However, peer assistance can easily drift into unintended harm if it is not guided. Without preparation, peers may over-help, physically move a learner through tasks, speak for them, or “take over” the activity in ways that reinforce dependency and reduce autonomy. In other cases, assistance can become patronizing or public, unintentionally highlighting difference and triggering embarrassment. Teachers therefore play a critical facilitation role, even when resources are scarce. Effective PAI typically includes brief, practical training on: how to prompt without controlling; how to give feedback respectfully; how to encourage effort rather than “pity”; and when to step back so the learner can attempt independently. Rotating peer roles is also important so that support is not concentrated in one “assigned helper,” which can stigmatize both students and create fatigue or resentment over time (Wegner, Omine & Vincent, 2021).

Universal Design for Learning (UDL) offers a broader, preventive logic that complements PAI. While PAI mobilizes peers to support participation within a lesson, UDL begins earlier at the planning stage by designing lessons that anticipate diversity from the outset. Rather than asking, “How do I adapt this lesson for one learner?” UDL asks, “How do I design this lesson so many learners can access it in different ways?” In physical education, that often means offering multiple ways to engage (choice of task, role, or level), multiple ways to understand what to do (demonstrations, cues, peer modeling, visuals), and multiple ways to show learning (different movement options or success criteria) (Ajayi & Akanji, 2023; Halliday, 2023; Udensi, Akomolafe & Adeyemi, 2023). In resource-constrained schools, this can be a major advantage because it reduces reliance on constant individualized accommodations that are hard to sustain with large classes and limited time. Practical UDL-aligned strategies in low-resource PE often look simple but can be powerful: using stations that vary difficulty so learners self-select a starting point; changing rules so success is measured by personal progress rather than a single standard; allowing alternative pathways to

participation (e.g., passing instead of dribbling, rolling instead of throwing, walking instead of running); and building in roles that genuinely contribute to learning (strategy caller, equipment manager, safety monitor) rather than roles that remove a learner from movement entirely. When applied thoughtfully, these strategies can widen access and reduce exclusion, not by lowering expectations, but by widening the routes through which learners can reach learning goals (Ajayi & Akanji, 2023; Udensi, Akomolafe & Adeyemi, 2023).

That said, UDL requires a real shift in teacher mindset. Many physical education systems especially those shaped by exam-oriented schooling and sport-performance traditions encourage uniform drills, standardized pacing, and narrow definitions of achievement. In such environments, teachers may worry that flexibility equals loss of control or reduced rigor. UDL counters this by reframing rigor as “high goals with flexible means.” But to make that shift in practice, teachers often need professional development that is practical, not theoretical: demonstrations of how to plan layered tasks, how to assess progress fairly across different participation modes, and how to manage diverse stations in crowded spaces (Akinbode *et al.*, 2023; Onibokun *et al.*, 2023; Osabuohien *et al.*, 2023).

Across the evidence, a consistent message emerges: no single model solves inclusion on its own, particularly in constrained contexts. A blended approach is usually the most realistic and effective. A teacher might use UDL to design a lesson with built-in choice and varied challenge, use cooperative group structures to strengthen belonging, use PAI to provide immediate support during skill practice, and still apply individualized adaptations where a learner needs specific adjustments. This kind of integration reflects the reality that inclusive physical education is not one technique, but a teaching stance one that values participation and dignity while still aiming for meaningful learning and development (Asonze *et al.*, 2024; Davies *et al.*, 2024; Odezuligbo, 2024; Wegner, 2024).

Overall, peer-assisted instruction and universal design show why inclusive physical education is possible even when material resources are limited. The core “resource” becomes pedagogical design: how tasks are structured, how peers are mobilized, how success is defined, and how support is delivered. When teachers are equipped to use these models thoughtfully and when school leadership and policy environments value inclusive practice rather than treating PE as expendable schools can move from symbolic inclusion to everyday participation that is respectful, skill-building, and socially meaningful (Akande & Chukwunweike, 2023; Awe *et al.*, 2023; Ogundipe *et al.*, 2023).

2.4. Teacher Readiness and Professional Capacity

Teacher preparedness and professional capacity sit at the heart of effective inclusive physical education, especially in resource-constrained contexts where systemic limitations place additional pressure on educators. In such settings, teachers are the key actors responsible for translating inclusive policies and pedagogical ideals into everyday classroom practice. Where resources are scarce, class sizes are large, and specialist support is limited, the extent to which inclusion is genuinely realized often depends less on policy intent and more on teachers’ readiness to adapt, innovate, and persevere (Ajayi & Akanji, 2022; John & Oyeyemi, 2022; Osabuohien, 2022).

Teachers’ attitudes toward inclusion represent a foundational aspect of readiness. Evidence consistently suggests that positive dispositions toward inclusion are associated with greater willingness to modify instruction, trial inclusive strategies, and sustain effort despite practical challenges. In many low-resource contexts, teachers express strong moral and philosophical support for inclusive education and acknowledge its social value (Adeshina, 2023; Onyedikachi *et al.*, 2023; Wegner & Ayansiji, 2023). However, this support is often accompanied by anxiety or ambivalence when inclusion is enacted within the practical realities of physical education. Concerns about insufficient skills, increased workload, classroom management difficulties, and the fear of disadvantaging other learners frequently surface. Importantly, such reservations are rarely rooted in opposition to inclusion itself; rather, they reflect the tension between inclusive ideals and the structural constraints teachers face daily.

Professional competence is closely linked to these attitudes, as confidence in one’s skills strongly shapes openness to inclusive practice. Inclusive physical education demands competencies that extend beyond conventional training, including the ability to assess diverse needs, modify activities, manage heterogeneous groups, and promote positive peer interactions. In resource-constrained environments, teachers are often required to demonstrate these competencies without specialized equipment or external support, heightening the importance of creativity and problem-solving (Akpan *et al.*, 2017; Oni *et al.*, 2018; Isa, 2020). Research indicates that many physical education teachers in low- and middle-income contexts have limited preparation in disability awareness, inclusive instructional strategies, and adaptive assessment. Consequently, inclusion may be reduced to physical presence rather than meaningful engagement, leaving learners with disabilities marginally involved in learning activities.

Initial teacher education plays a crucial role in shaping readiness, yet pre-service training pathways often fall short of preparing teachers for inclusive physical education. In many resource-constrained settings, pre-service curricula prioritize subject knowledge and classroom control, with limited emphasis on differentiation or inclusive pedagogy. Where inclusion is addressed, it is frequently treated in broad or theoretical terms, with little attention to the specific demands of physical education as a movement-based and socially interactive subject. As a result, newly qualified teachers may enter the profession feeling ill-equipped to adapt activities for diverse learners, reinforcing perceptions of inclusion as impractical or unmanageable (Adeleke & Ajayi, 2023; Adeshina, Owolabi & Olasupo, 2023; Oyeyemi, 2023).

In-service professional development has the potential to bridge these gaps, but its availability and effectiveness remain uneven. Short workshops and one-off training sessions are common, yet they often lack sustained engagement, practical relevance, and follow-up support. Teachers may gain conceptual understanding of inclusion without concrete strategies for implementing it in overcrowded classes or in the absence of equipment. Moreover, professional development opportunities are frequently concentrated in urban areas, limiting access for teachers in rural or underserved communities. Evidence increasingly points to the value of ongoing, practice-oriented models such as mentoring, coaching, and professional

learning communities, although these approaches are rarely embedded within low-resource education systems (Ajayi & Akanji, 2022; Leonard & Emmanuel, 2022).

Support structures within schools further shape teachers' capacity to enact inclusive physical education. School leadership is particularly influential in establishing inclusive norms, encouraging collaboration, and legitimizing adaptive practices. Where administrators prioritize examination outcomes or rigid curriculum coverage, teachers may feel constrained and reluctant to experiment with inclusive approaches. In contrast, leadership that values flexibility, professional learning, and innovation can empower teachers to respond creatively to learner diversity despite limited resources (Adeleke & Olajide, 2024; Awe *et al.*, 2024; Davies *et al.*, 2024). Peer support also plays a significant role, as informal collaboration, shared problem-solving, and co-teaching arrangements enable teachers to develop contextually appropriate solutions.

Beyond the school, external support systems influence teacher readiness in important ways. In many low-resource contexts, access to specialists such as physiotherapists, special educators, or adaptive physical education professionals is minimal or absent, leaving generalist teachers to assume roles for which they may not have been formally trained. Partnerships with non-governmental organizations, disability advocacy groups, and local health services can enhance teacher capacity by providing training, materials, and ongoing support (Abdulkareem *et al.*, 2023; Adeleke & Ajayi, 2023; Halliday, 2023). However, these initiatives are often project-based and dependent on external funding, limiting their long-term sustainability.

Policy frameworks also shape teacher readiness indirectly through workload expectations, accountability mechanisms, and resource allocation. Inclusion mandates that lack clear implementation guidance or adequate support can unintentionally increase stress and resistance among teachers. In physical education, inclusion is sometimes perceived as an added burden rather than an integral aspect of teaching practice, particularly when policy expectations are ambiguous. Policies that embed inclusion within curriculum standards, assessment practices, and teacher evaluation systems are more likely to legitimize inclusive practice and encourage sustained professional commitment (Ogunyankinnu *et al.*, 2022; Onibokun *et al.*, 2022). Notably, teachers' perspectives are often underrepresented in policy development, resulting in reforms that insufficiently reflect classroom realities.

Taken together, these interacting factors highlight the dynamic and multifaceted nature of teacher readiness for inclusive physical education. Readiness is not a fixed trait but an evolving condition shaped by attitudes, competencies, training experiences, and the availability of support. Teachers in resource-constrained settings frequently demonstrate resilience, creativity, and commitment to inclusive values, yet their ability to act on these values is often limited by systemic constraints. Strengthening teacher readiness therefore requires a comprehensive and coordinated approach that combines robust pre-service preparation, sustained and contextually relevant in-service development, supportive school leadership, and coherent policy frameworks. Such investment in teacher capacity is essential for moving beyond symbolic inclusion toward meaningful participation for all learners, even in environments where resources are limited (Afolabi, Ajayi & Olulaja, 2024; Joeaneke *et al.*, 2024;

Olulaja, Afolabi & Ajayi, 2024).

2.5. Policy Frameworks and Implementation Dynamics

Policy frameworks and the ways they are implemented play a critical role in determining how inclusive physical education is understood, prioritized, and sustained, particularly in resource-constrained settings where systemic weaknesses widen the gap between policy intentions and classroom realities. Inclusive physical education is usually grounded in broader national and international commitments to inclusive education, disability rights, and equitable access to learning. These commitments are often reflected in constitutions, education acts, disability legislation, and national education policies that emphasize participation, non-discrimination, and reasonable accommodation. Yet translating these broad mandates into effective physical education practice is far from straightforward. Differences in political commitment, administrative capacity, and resource availability mean that implementation is uneven and often fragmented across contexts (Akande *et al.*, 2023; Akinbode, Taiwo & Uchenna, 2023; Onotole *et al.*, 2023).

At the national level, inclusive physical education is rarely treated as a distinct policy concern. Instead, it is subsumed under general inclusive or special education frameworks that focus primarily on access to schooling rather than the quality of subject-specific learning experiences. In many low- and middle-income countries, physical education itself occupies a marginal position within the curriculum, with limited instructional time and minimal policy visibility. As a result, inclusive education policies tend to offer little concrete guidance on how inclusion should be enacted within physical education lessons. This lack of specificity creates uncertainty at the school level, leaving teachers and administrators to interpret inclusive principles without clear standards, benchmarks, or accountability mechanisms tailored to physical education (Akinbode *et al.*, 2024; Isa, 2024; Olufemi, Anwasedo & Kangethe, 2024).

Institutional policies further shape how inclusion is implemented in practice. While curriculum frameworks often acknowledge learner diversity and promote learner-centered approaches, they frequently retain standardized performance expectations that are difficult to reconcile with inclusive practice. Assessment systems that prioritize normative physical performance can unintentionally discourage teachers from adapting activities, as such adaptations may be viewed as lowering standards or compromising comparability. In resource-constrained settings, where high-stakes examinations and inspection regimes dominate educational priorities, inclusive physical education is often sidelined in favor of subjects perceived as more academically important (Babalola *et al.*, 2024; Udensi, Akomolafe & Adeyemi, 2024).

Weak enforcement mechanisms represent a major gap in the policy landscape. Although inclusive education laws typically outline rights and responsibilities, they often lack clear procedures for enforcement or consequences for non-compliance. Monitoring systems tend to focus on enrollment and attendance rather than meaningful participation or learning outcomes, making it difficult to assess the quality of inclusion. In physical education, where learning is experiential and participation is harder to quantify, the absence of robust monitoring tools further limits accountability. Inspectors and supervisors may also lack the expertise needed to evaluate inclusive practice in movement-

based contexts, resulting in superficial checks that fail to capture the lived experiences of learners (Ajayi *et al.*, 2024; Bamigbade, Adeshina & Kemisola, 2024; Taiwo & Akinbode, 2024).

Funding arrangements strongly influence what is realistically achievable. Inclusive physical education requires investment in teacher training, curriculum adaptation, infrastructure, and adaptive equipment. In resource-constrained systems, education budgets are often absorbed by pressing priorities such as staff salaries, basic access, and examination administration. As a result, inclusive physical education initiatives are commonly underfunded or dependent on short-term donor projects. This project-based approach undermines sustainability and limits the integration of inclusive practices into mainstream education systems. Funding formulas also rarely account for the additional costs associated with inclusion, leaving schools to manage increased demands without corresponding financial support (Ajayi & Akanji, 2022; Isa, 2022).

Decentralized governance structures add further complexity. While decentralization can allow for context-sensitive adaptation, it can also deepen inequalities when local authorities lack the capacity or resources to support inclusive physical education. Schools in rural or disadvantaged areas may therefore experience compounded exclusion, as limited local funding and weak administrative support restrict their ability to implement inclusive policies effectively (Adeleke & Ajayi, 2024; Isa, 2024; Oboh *et al.*, 2024; Olufemi *et al.*, 2024; Umukoro *et al.*, 2024).

Alignment between global inclusive education commitments and national or institutional policies remains a persistent challenge. International frameworks emphasize the right to inclusive, equitable, and quality education, yet physical education is often overlooked in national implementation plans and sector reviews. Where alignment does occur, it frequently focuses on access or infrastructure rather than pedagogical quality and learner experience. This reflects a broader tendency to frame inclusion in physical education as a logistical issue rather than as a pedagogical and cultural transformation (Akomea-Agyin & Asante, 2019; Awe, 2017; Osabuohien, 2019).

Stakeholder involvement also shapes implementation dynamics. Teachers, school leaders, parents, learners, and disability advocacy groups all influence how policies are interpreted and enacted. However, policy development in resource-constrained settings is often top-down, with limited opportunities for meaningful stakeholder engagement. Teachers, despite being central to implementation, are frequently excluded from decision-making processes. This disconnect can result in policies that are poorly aligned with classroom realities, leading to resistance or superficial compliance rather than genuine commitment. In contrast, contexts that actively involve stakeholders in policy design and review tend to demonstrate stronger ownership and more innovative approaches to inclusive practice (Adeleke & Ajayi, 2024; Babalola *et al.*, 2024; Davies *et al.*, 2024; Egbemhenghe *et al.*, 2024).

Cross-sector collaboration is increasingly identified as a promising, though underutilized, strategy. Inclusive physical education intersects with health, social welfare, and community development, yet coordination across these sectors is often weak. Integrated approaches that link education with health promotion, disability services, and community recreation can enhance coherence and resource

sharing. In resource-constrained settings, such collaboration offers opportunities to maximize limited resources and extend inclusion beyond the school. However, institutional silos, fragmented governance, and short-term planning cycles frequently undermine sustained collaboration (Adeleke, Olugbogi & Abimbade, 2024; Ikese *et al.*, 2024; Ojuade *et al.*, 2024).

Overall, the literature suggests that challenges in inclusive physical education arise less from the absence of policy commitments than from weaknesses in enforcement, funding, and alignment. Policies often articulate inclusive ideals without providing the practical mechanisms needed for implementation. Advancing inclusive physical education therefore requires moving beyond declarative statements toward coherent, well-resourced, and context-sensitive policy frameworks. This includes explicitly integrating physical education into inclusive education mandates, developing clear implementation guidelines, investing in sustainable funding, and strengthening monitoring systems that prioritize participation and quality. Addressing these policy and implementation gaps can create enabling environments in which teachers and schools are better positioned to deliver equitable and meaningful physical education experiences, even in resource-constrained contexts (Ogunyankinnu *et al.*, 2022; Oyeyemi, 2022).

2.6. Barriers, Enablers, and Contextual Adaptations

Inclusive physical education in resource-constrained settings is shaped by an intricate mix of systemic pressures, cultural expectations, and infrastructural realities that can both constrain and, in some cases, stimulate creative forms of inclusive practice. Although policy commitments and contemporary pedagogical models increasingly affirm inclusion as a right and a quality indicator, low-resource schooling environments often limit how far these commitments translate into consistent classroom practice. The literature suggests that the central challenge is not simply a lack of willingness to include learners with disabilities, but the presence of durable structural conditions that make inclusion difficult to enact without locally grounded adaptation (Ajayi & Akanji, 2022; Isa, 2022). A realistic understanding of inclusive physical education therefore requires attention to barriers alongside the enabling conditions and context-responsive strategies that teachers and schools use to make inclusion workable and sustainable.

Systemic barriers remain among the most persistent obstacles. Overcrowded classes, limited instructional time, and competing academic priorities frequently marginalize physical education, particularly in contexts where it is framed as recreational or non-examinable. This marginal status often translates into minimal resource allocation and weak administrative attention, limiting teachers' capacity to plan, differentiate, and supervise inclusive activities in safe and meaningful ways (Akande *et al.*, 2023; Akinbode *et al.*, 2023; Chukwuemeka, Wegner & Damilola, 2023). The challenge is intensified by weak alignment between inclusive education policy and subject-specific implementation. Teachers may receive broad directives to "include all learners" without practical guidance on adapting physical activities, assessment methods, or lesson structures. Fragmented governance and inconsistent monitoring further weaken accountability, enabling exclusionary routines such as assigning learners with disabilities to passive roles or withdrawing them from activity to persist without systematic review.

Cultural barriers also shape participation patterns in ways that can be subtle but powerful. Societal beliefs about disability, gender roles, and physical competence influence how learners are viewed and how their participation is valued. In some settings, disability is associated with stigma, dependence, or reduced social worth, producing low expectations for involvement in physical education. These perceptions may be reinforced by peers, families, and even educators, reproducing exclusion despite official inclusion policies. Gender norms can add another layer, particularly for girls with disabilities who may face dual marginalization linked to expectations around modesty, limited public visibility, or restrictions on vigorous physical activity. Furthermore, physical education curricula that emphasize competition and athletic prowess can narrow the definition of success, disadvantaging learners whose abilities do not align with sports-oriented performance standards (Adeshina & Ndukwe, 2024; Isa, 2024; Joaneke *et al.*, 2024; Olufemi *et al.*, 2024). In such contexts, inclusion requires not only pedagogical adjustment but also cultural reframing of what counts as achievement in movement-based learning.

Infrastructural constraints are often the most visible barriers and can directly affect safety and access. Many schools lack basic facilities such as safe play spaces, accessible toilets or changing areas, suitable flooring, and storage for equipment. Equipment shortages are widespread, and where equipment exists it is often standardized, making it difficult to modify for diverse needs. For learners with mobility impairments, inaccessible school layouts, poor pathways, and transportation barriers may further reduce regular participation, especially in rural or underserved areas where broader socioeconomic inequalities intensify school-level deprivation (Ajayi & Akanji, 2023; Isa, 2023; Oyeyemi & Kabirat, 2023). These infrastructural limitations do not only hinder inclusion materially; they also shape teacher perceptions of risk and feasibility, sometimes leading educators to restrict participation out of safety concerns.

Despite these constraints, the literature identifies clear enablers that support inclusive physical education even where resources are limited. Teacher commitment and improvisational skill consistently emerge as central enabling factors. Educators who hold inclusive values and demonstrate flexibility often adapt activities creatively, using minimal resources to maintain participation. Supportive school leadership strengthens this capacity by legitimizing inclusive practice, protecting teachers' discretion, and encouraging experimentation and staff collaboration. Schools that nurture inclusive cultures also tend to redefine success in physical education, emphasizing participation, effort, personal progress, and social interaction rather than normative performance benchmarks. This shift can reduce exclusionary pressures and create learning environments where diverse learners feel visible and valued (Adeleke & Baidoo, 2022; Isa, 2022; Oyeyemi, 2022).

Community engagement is another enabling condition with strong relevance in low-resource contexts. When specialist support services are limited, families, local organizations, and community leaders can provide both practical resources and social legitimacy. Engaged parents can challenge stigma, reinforce participation expectations, and support continuity between home and school. Community sports clubs, faith-based organizations, and non-governmental organizations can contribute through shared spaces, volunteer support, or targeted teacher training. These partnerships are most

effective when they resonate with local values and communal traditions, positioning inclusion as collective responsibility rather than an individualized accommodation (Adeleke & Baidoo, 2022; Isa, 2022; Oyeyemi, 2022).

Context-responsive adaptation is repeatedly identified as the most practical pathway through which inclusive physical education becomes possible in resource-constrained settings. Successful practice often relies on low-cost and improvisational strategies that do not depend on specialized equipment. Teachers modify rules, adjust task complexity, shorten distances, reduce speed demands, and use local materials such as stones, ropes, recycled containers, or chalk markings to replace or simulate equipment. Space limitations are sometimes managed through creative use of corridors, classrooms, and small outdoor areas, demonstrating that inclusive participation can be supported even without purpose-built facilities. Flexible grouping strategies such as mixed-ability teams, rotating roles, and cooperative games allow learners to contribute in different ways while still sharing the same activity space and learning goals (Ajayi & Akanji, 2023; Isa, 2023; Oyeyemi & Kabirat, 2023).

Peer support stands out as one of the most effective and culturally compatible adaptations. Peer-assisted approaches draw on social relationships to reduce dependence on specialist services that may not exist. With appropriate teacher guidance, peers can provide modeling, encouragement, and practical assistance, increasing engagement and social inclusion for learners with disabilities. These strategies also benefit learners without disabilities by building empathy, leadership, and cooperative skills. In many communities where collective responsibility and communal learning are culturally embedded, peer support aligns naturally with existing norms, making it more sustainable than resource-intensive interventions.

Curricular and assessment adaptation also functions as a key enabler. When physical education shifts from a narrow focus on competitive sports toward movement exploration, games, functional fitness, and inclusive play, participation pathways broaden. Assessment practices that emphasize individual improvement, effort, and engagement rather than standardized performance outcomes reduce pressure on teachers to prioritize comparability over inclusion. Such adjustments align with inclusive pedagogical principles and are often feasible within existing curricular structures when teachers have discretion and institutional support (Adeshina & Ndukwe, 2024; Isa, 2024; Joaneke *et al.*, 2024; Olufemi *et al.*, 2024).

Policy flexibility and local autonomy can further support adaptation where they are paired with minimal guidance and capacity-building. While rigid policy frameworks can constrain teachers, policies that allow contextual interpretation enable schools to innovate using local resources and cultural practices. Decentralization may support this process by giving local actors room to tailor inclusive physical education to community realities. However, flexibility is most productive when accompanied by baseline support and accountability mechanisms, ensuring that autonomy facilitates innovation rather than enabling neglect or uneven provision across communities (Ajayi & Akanji, 2023; Isa, 2023; Oyeyemi & Kabirat, 2023).

Overall, the relationship between barriers, enablers, and contextual adaptations indicates that inclusive physical education in resource-constrained settings is challenging but achievable. Systemic, cultural, and infrastructural constraints

shape what schools can do, yet they do not make meaningful inclusion impossible. The evidence suggests that sustainable inclusion is less about importing high-cost models and more about aligning inclusive principles with local realities through teacher creativity, peer support, community engagement, and flexible pedagogy (Akomea-Agyin & Asante, 2019; Awe, 2017; Osabuohien, 2019). Strengthening these enabling conditions, while gradually addressing deeper structural barriers through policy, training, and investment, provides a practical pathway toward equitable and meaningful physical education experiences for all learners even in low-resource contexts.

2.7. Conclusion and Implications for Practice, Policy, and Research

This systematic review synthesized evidence on instructional models, teacher readiness, and policy implementation shaping inclusive physical education in resource-constrained settings. Across diverse low- and middle-income contexts, the findings show a consistent pattern: inclusive physical education is widely understood and endorsed in principle, yet it is unevenly realized in practice. The main constraint is not the absence of suitable pedagogical approaches, but the limits of system capacity manifesting in fragmented policy implementation, weak accountability, and insufficient investment in teacher development. Instructional models such as adapted physical education, cooperative learning, peer-assisted instruction, and Universal Design for Learning have demonstrated positive effects on participation, social inclusion, and learner engagement when applied flexibly and responsively. However, the review indicates that these models are only effective when teachers have the competence and confidence to implement them, schools provide supportive conditions, and policies create enabling structures. A key conclusion is that teachers occupy the pivotal position in advancing inclusive physical education in low-resource contexts. Many teachers hold positive attitudes toward inclusion, but their ability to enact inclusive practice is frequently constrained by limited pre-service preparation, inconsistent in-service training, and weak professional support systems. For this reason, sustainable improvement requires positioning teacher readiness as a central policy and practice priority rather than an optional add-on. In practical terms, this means strengthening everyday inclusive teaching through low-cost adaptations, cooperative learning routines, and structured peer support that fit existing resource constraints. The review also underscores the influence of school leadership: administrators who legitimize flexible instruction, encourage professional collaboration, and allow adapted assessment approaches help create school cultures where inclusive physical education becomes normal practice rather than an exceptional effort.

From a policy standpoint, the evidence points to the need to move beyond broad inclusion mandates toward coherent implementation frameworks that explicitly address physical education. National and institutional policies should treat physical education as a core component of inclusive education, not a peripheral subject. This requires clearer standards for inclusive physical education practice, alignment between curriculum objectives and assessment expectations, and monitoring mechanisms that evaluate meaningful participation rather than attendance or enrollment alone. Sustainable funding is also essential to support teacher training, curriculum adaptation, and basic infrastructural

improvements, particularly in underserved schools. Equally important is the process through which policy is developed and revised: participatory approaches that incorporate teacher input, community perspectives, and the lived experiences of learners with disabilities are more likely to produce policies that are feasible and credible in real classroom environments. The review also identifies important implications for research. While existing studies provide useful insights into instructional strategies and teacher perspectives, there is a notable shortage of longitudinal and implementation-focused research that examines how inclusive physical education initiatives are sustained over time in resource-constrained settings. Future work should prioritize mixed-methods and participatory designs that capture learner experiences, contextual dynamics, and the cost-effectiveness of inclusive interventions. Greater attention is needed for populations and settings that remain underrepresented in the literature, including girls with disabilities and learners in rural, displaced, or conflict-affected contexts. Finally, more research is needed at the intersection of pedagogy and policy, particularly studies examining how governance structures, funding mechanisms, and policy design shape what teachers can realistically implement in daily practice.

In conclusion, the review affirms that inclusive physical education in resource-constrained settings is both achievable and necessary for advancing equity, health, and social inclusion. Sustainable progress depends on aligning instructional innovation with strengthened teacher capacity and supportive policy environments that reflect contextual realities. By investing in teachers, normalizing low-cost and flexible pedagogical solutions, and improving policy coherence and resourcing, education systems can move inclusive physical education from an aspirational goal to an enduring and meaningful practice for all learners.

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