Legal policy analysis of inclusive schools in Physical Education (pe): human resources and infrastructure challenges for students with special needs

Análisis político legal de la implementación de escuelas inclusivas en Educación Física (ef): desafíos de recursos humanos e infraestructura para alumnos con necesidades especiales

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Abstract. This study used the systematic literature review to investigate legal policies governing inclusive schools in Physical Education (PE). Particularly, it focused on identifying challenges related to human resources and infrastructure in supporting students with special needs. Data were obtained from articles searched through Google Scholar. The search was conducted in September 2024 using keywords: "Legal policy OR policy analysis AND implementation OR application AND inclusive schools OR inclusive education AND Physical Education OR PE AND challenges OR obstacles AND human resources OR HR AND facilities OR infrastructure AND students with special needs OR special needs students". During the search, inclusion and exclusion criteria were applied. For example, the search focused on articles published in Scopus-indexed journals between 2019 and 2024. From this initial search, 17,300 articles were found. Furthermore, they were screened again in several stages, and 16 articles that fit the theme and met the inclusion requirements were yielded. During the article selection, this study followed the PRISMA guidelines. The results showed that the main challenges in governing inclusive schools in PE lie in human resources and infrastructure. In addition, the readiness and competence of teachers were greatly affected by the lack of adequate training in dealing with students with special needs. Thus, comprehensive ongoing training is needed to enhance teachers' pedagogical skills, curriculum adaptation, and Universal Design for Learning (UDL). Although there were policies that support inclusion, their implementation in PE is still suboptimal, requiring strengthening of the curriculum and resources. Another challenge was the lack of supportive infrastructure, especially in terms of physical accessibility and specialized facilities. In conclusion, a combination of strong policies, teacher training, infrastructure improvements, adaptive teaching strategies, and stakeholder collaboration is needed to create effective, inclusive learning environments.

Keywords: Policy, Law, Inclusive Schools, PE, Challenges, Human Resources, Infrastructure, Students with Special Needs.

Resumen. Este estudio utilizó la revisión sistemática de la literatura para investigar las políticas legales hacia la implementación de escuelas inclusivas en PE en términos de desafíos de recursos humanos e infraestructura para estudiantes con necesidades especiales. Los datos se obtuvieron de artículos buscados a través de Google Scholar. La búsqueda se centró en aquellos publicados en revistas indexadas en Scopus publicadas en 2019-2024. Las revistas fueron seleccionadas considerando criterios de inclusión y exclusión. La estrategia de búsqueda se realizó en septiembre de 2024 utilizando las palabras clave: «Legal policy OR policy analysis AND implementation OR application AND inclusive schools OR inclusive education AND Physical Education OR PE AND challenges OR obstacles AND human resources OR HR AND facilities OR infrastructure AND students with special needs OR special needs students». Con base en la búsqueda de 2019-2014, se encontraron 17,300 artículos. Además, se revisaron de nuevo en varias etapas y se obtuvieron 16 artículos que se ajustaban al tema y cumplían los requisitos de inclusión. Durante la selección de artículos, este estudio siguió las directrices PRISMA. La conclusión del análisis de la política legal sobre la implantación de escuelas inclusivas en educación física fue que el principal reto reside en los recursos humanos y la infraestructura. Además, la preparación y competencia de los profesores se ve muy afectada por la falta de formación adecuada para tratar con alumnos con necesidades especiales, por lo que es necesaria una formación continua exhaustiva que abarque habilidades pedagógicas, adaptación curricular y Diseño Universal para el Aprendizaje (DUA). Aunque existen políticas que apoyan la inclusión, su aplicación en los PE sigue siendo subóptima, por lo que es necesario reforzar el plan de estudios y los recursos. Otro reto es la falta de infraestructuras de apoyo, especialmente en términos de accesibilidad física e instalaciones especializadas. Se necesitan sinergias entre políticas sólidas, formación del profesorado, mejoras de las infraestructuras y estrategias pedagógicas adaptativas, así como la colaboración de las partes interesadas, para crear entornos de aprendizaje integradores

Palabras clave: Política, Ley, Escuelas inclusivas, PE, Desafíos, Recursos humanos, Infraestructura, Alumnos con necesidades especiales

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Introduction

Inclusive education is one of the strategic steps aimed at providing equal opportunities for all children, including children with special needs, to obtain quality education. This principle is based on educational equity, where all students, regardless of physical or mental differences, have equal rights to education. In Physical Education (PE),

the implementation of inclusive schools faces a number of significant challenges, mainly related to human resources and the infrastructure needed to support optimal learning for students with special needs.

Indeed, the Indonesian government has facilitated special education as stated in the Law of the Republic of Indonesia Number 20 of 2003 concerning the National Education System (Republik Indonesia, 2003). Article 32,

Paragraph (1) states that special education is education for students who have difficulty following the learning process due to physical, emotional, mental, or social abnormalities and/or special intelligence and talent potential. Furthermore, Article 5 Paragraph (2) stipulates that citizens with physical, emotional, intellectual, and or social abnormalities have the right to obtain special education. Nevertheless, although the Law of the Republic of Indonesia No. 70 of 2009 on Inclusive Education has established a clear legal framework, implementing the law in the field is still challenging and requires improvement in various aspects (Aprianto et al., 2023; Ester, 2021).

Previous studies mention that the main challenge in implementing inclusive PE is limited human resources, especially teacher competencies. According to Zainalabidin and Ma'rof (2021), many PE teachers have not received adequate training to handle students with special needs. In fact, teachers should adapt their teaching methods to be more responsive to the needs of children with disabilities. According to Rasmitadila et al. (2023), inadequate training means educators lack the skills to design inclusive learning. As a result, the learning delivered often does not meet the needs of students with special needs, making it difficult to effectively achieve the goals of inclusion in PE.

The lack of training and professional development for teachers is a real barrier to creating an inclusive PE environment. Teachers who do not have an in-depth understanding of adaptive teaching methods tend to feel insecure about implementing innovative approaches that can support the active engagement of students with special needs in physical activities (Neupane & Giri, 2021). Hence, continuous training that emphasizes inclusive and adaptive teaching methods is needed to improve the quality of inclusive PE. Training programs should cover various aspects, such as understanding students' special needs, sharpening adaptive teaching techniques, and learning to create a supportive learning environment for all students (Gülay & Altun, 2023).

In addition to limited human resources, infrastructure issues are a major obstacle in implementing inclusive PE. Adequate facilities, such as accessible classrooms and appropriate sports equipment for students with special needs, are necessary to ensure an inclusive learning process. Studies (Pawestri et al., 2024; Rangkuti, 2021) highlighted that many schools in Indonesia still have inadequate facilities to support children with disabilities' participation in physical activities. Without adequate facilities, students with special needs will find it difficult to participate in physical activities, potentially hindering their physical and social development (Nuarilenzy et al., 2022). Inadequate facilities can create a non-inclusive learning environment where students with special needs feel marginalized and lack the support they need. Darnawan et al. (2022) emphasize that sports equipment that is not specifically designed to meet the needs of students with disabilities will limit their participation in physical learning. This not only hinders the learning process but also negatively affects

their motivation and confidence to engage in physical activities (Wasilah et al., 2023). In addition to infrastructure and resource limitations, there are also significant societal and governmental challenges. One of the challenges that central and regional governments need to pay attention to is the community's understanding of and attitude toward inclusive education. The community still has a negative stigma towards children with special needs. Moreover, parents are still hesitant to send their children to school because there is still a lot of discrimination and bullying in the school environment. In addition, the commitment of local governments to implementing inclusive education is still lacking.

To overcome these challenges, investment in disabilityfriendly PE infrastructure is crucial. The government and relevant stakeholders must ensure that every school has accessible infrastructure to all students, including those with physical limitations. In addition, providing sports equipment that meets the needs of children with disabilities should be a priority, as well as training for teachers to use these facilities effectively (Fajarani et al., 2021; Hasnadi, 2022). If done consistently, it will not only improve the quality of inclusive PE but will also have a long-term impact on the students' overall well-being. Supportive facilities and infrastructure play an important role in creating an inclusive environment where all students, including those with disabilities, can feel safe, comfortable, and valued. Thus, proper management of PE facilities and infrastructure can be the key to success in creating an inclusive learning environment for all students (Isnaniah, 2022; Susiani, 2022).

Academically, research on physical education has touched on many areas. For example, some popular studies investigated the effect of physical education on learning outcomes (Martono et al., 2024; Komari et al., 2024a; Komari et al., 2024b; Septiantoko et al., 2024; Suyato et al., 2024; Widiyanto et al., 2024; Putro et al., 2024; Harmanto et al., 2024; Zulbahri et al., 2024; Susanto et al., 2024), motor development (Susanto et al., 2024; Susanto et al., 2024). Other studies examined specific areas of PE or sports, such as health and fitness sports (Widiyanto et al., 2024a; Widiyanto et al., 2024b; Syaukani et al., 2024; Pranoto, et al., 2024; Astuti et al., 2024; Wayoi et al., 2024; Akhmad et al., 2024), law and sports (Ardiyanto et al., 2024; HB et al., 2024a; HB et al., 2024b), sports communication (Charlina et al., 2024), active lifestyle with exercise (Tafuri et al., 2024a), interval training and physiological (Latino et al., 2024a), circuit training programme (Tafuri et al., 2024b; Tafuri et al., 2024c; Latino et al., 2024b; Latino et al., 2024c; Adirahma et al., 2024), injury risk on sports (Anam et al., 2024a; Fahrosi et al., 2024), endurance training and physiological (Latino et al., 2024c), therapeutic sports (Zanada et al., 2024), movement skills (Susanto et al., 2023; Anam et al., 2024b; Pranoto et al., 2024), and sports training and performance (Kurniawan et al., 2024; Susanto et al., 2024), curriculum and management of physical education learning (Mardiyah et al., 2024a; Yani et al., 2024; Mardiyah et al., 2024b), and the

management of sports education and archery (Hamsyah et al., 2024; Mulyanti et al., 2024; Setyawan et al., 2023a; Setyawan et al., 2023b; Setyawan et al., 2024a; Setyawan et al., 2024b; Destriani et al., 2024), students' motor skills (Sayekti et al., 2024). However, there are still few studies that examine legal policies governing inclusive schools in physical education. Therefore, it is necessary to conduct a literature review to better understand the legal policies that are implemented in inclusive PE in Indonesian schools. The research focused on (1) human resource challenges in inclusive PE, (2) the role of policies and regulations in supporting inclusion in PE, (3) infrastructure and facilities challenges for inclusive PE, (4) adaptive teaching strategies to improve inclusion in PE, and (5) the importance of continuous training for PE teachers. It is hoped to provide insights and propose solutions to address these issues, ultimately enhancing the effectiveness of inclusive PE in Indonesian schools.

Materials & Methods

This study employed a systematic literature review method by identifying, evaluating, and interpreting all rel-

sive strategy by searching articles in research journal databases. Data were obtained from articles searched through Google Scholar. The search strategy was conducted in September 2024 using keywords: "Legal policy OR policy analysis AND implementation OR application AND inclusive schools OR inclusive education AND Physical Education OR PE AND challenges OR obstacles AND human resources OR HR AND facilities OR infrastructure AND students with special needs OR special needs students". Several inclusion and exclusion criteria were applied. For example, the articles must be published in Scopus-indexed journals. In addition, the publication period was limited between 2019 and 2024. Based on this timeframe, 17,300 articles were found from various international journal indexing databases, including Scopus and other database sources. Then, these articles went through several stages of the screening process, and 16 articles that fit the theme and met the inclusion requirements were selected. The complete list of inclusion and exclusion criteria are shown in Table 1 be-

evant research results. It was conducted with a comprehen-

Inclusion and exclusion criteria

Criteria	Inclusion	Exclusion	
Period	Journals published in 2019 - 2024	Journals published outside 2019-2024	
Indexed	Scopus-indexed international journal	lexed international journal Non-Scopus-indexed international journal	
Access	Open access Close access (Subscription)		
Language	English language journal	Non-English language journal	
Article Type	Original research article and review article	Conference proceedings, books, book chapters, book series, editorials,	
Article Type	Original research article and review article	and the likes	
Full Text	Articles fulfill the scope/topic of research	Articles do not fit the scope/topic of the research	
	The article's content is relevant to the theme of legal policy	The article's content is not relevant to the theme of legal policy towards	
T	towards the implementation of inclusive schools in PE, fo-	the implementation of inclusive schools in PE, which focuses on challenges	
Topic of Discussion	cusing on challenges related to human resources and the in-	related to human resources and infrastructure for students with special	
	frastructure for students with special needs.	needs.	

During the article selection, this study followed the "Preferred Reporting Items for Systematic Reviews and Meta-Analyses" (PRISMA) guidelines. These guidelines are expected to produce systematic literature review reports that are more transparent, complete, and accurate, thus facilitating evidence-based decision-making (Page et al., 2021). This systematic literature review gathered all available scientific evidence according to the inclusion and exclusion criteria (Martín-Moya et al., 2021). The process of the article selection under the PRISMA method is shown in Figure 1.

Results

This section presents the results from the literature review related to legal policies that influence the implementation of inclusive schools in Physical Education (PE) for students with special needs. The analysis focuses in two critical areas: challenges related to human resources and infra-

structure for students with special needs . The detailed results of this review are summarized in Table 2, highlighting key insights and implications for effective implementation.

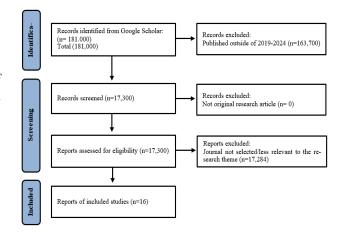


Figure 1. PRISMA flowchart of the article selection process

Table 2. Literature Review Results

Author	Study objectives	Main Findings
(Majoko, 2019)	The study aims to explore the pedagogical practices employed by Zimbabwean primary school teachers to include children with disabilities in regular Physical Education (PE) classrooms. Given the global push for inclusive education, Zimbabwe adopted inclusion in 1994, significantly increasing the number of children with disabilities in mainstream schools.	The study found that Zimbabwean teachers demonstrated positive attitudes toward the inclusion of children with disabilities in PE despite facing individual and systemic challenges such as large class sizes and lack of specialized support. Teachers utilized various adaptive strategies, such as modifying activities based on individual abilities and fostering social relationships among students, to promote inclusion. Collaborative structures within schools, including support from staff development committees and community involvement, were critical in addressing some barriers to inclusion. However, the study also highlighted the need for enhanced teacher training and specific policies to further support the inclusion of children with disabilities in PE.
(Alves, 2019)	This study critically analyzes the development of inclusive education in Portugal by examining the last three legislative frameworks that shape the country's approach to special and inclusive education.	The study found that Portugal has made significant strides towards inclusive education over the past three decades, with the most recent policy, Decree-Law 54/2018, marking a shift towards a more comprehensive and inclusive framework. This legislation moves away from categorizing students based on medical conditions and instead emphasizes the diversity of all students. It introduces a tiered approach to supporting learning and inclusion, aiming to address the needs of each student within mainstream schools. The research highlights the influence of international policies, such as the Salamanca Statement, on Portugal's education system while also identifying challenges in fully realizing these aspirations, such as the need for better teacher training and resource allocation.
(Castillo- Paredes et al., 2023)	The purpose of this research is to review and contextualize the current educational reality in Chile regarding the inclusion of students with special educational needs (SEN) in physical education and health (PEH) classes.	The study found that despite the presence of national and international regulations supporting inclusive education, significant gaps were found, such as in the inclusion of students with special educational needs in Chilean physical education and health classes. Teacher training programs in Chile often lack sufficient focus on the skills necessary to work with students with SEN, resulting in a limited ability of educators to provide appropriate and inclusive physical education experiences. Additionally, the existing curriculum does not explicitly address the needs of students with disabilities, which further exacerbates the challenge. The study highlights the need for better teacher preparation and curriculum adjustments to ensure that all students, regardless of their abilities, can fully participate in physical education.
(O'Connor & McNabb, 2021)	The purpose of this study is to explore how the rights of students with special educa- tional needs and disabilities (SEND) are be- ing addressed in mainstream physical educa- tion (PE) classes in Ireland.	The study found that while teachers generally support the idea of inclusion and recognize the rights of students with SEND to participate in PE, there are significant barriers that prevent full participation. These include a lack of specialized teacher training, insufficient support resources, and physical accessibility challenges in some schools. Teachers expressed a need for more focused professional development to equip them with the skills to adapt PE lessons effectively for students with diverse needs. Additionally, the research highlighted the positive role of Special Needs Assistants (SNAs) in enhancing participation, although their involvement is often limited due to a lack of formal training in PE-specific contexts.
(van Kessel et al., 2021)	This study analyzes the development of inclusive education policies for children with autism across 30 legislative regions in the European Union.	The study found that several factors are essential for developing inclusive education for children with autism in the EU. Specifically, mixed mainstream classrooms and support services for children with SEN were identified as necessary conditions for effective inclusion. Other important factors, such as support for teaching staff, individualized learning outcomes, parental involvement, and the presence of inclusive education policies, were also found to contribute significantly. The research concluded that while inclusive education policies are widely implemented, additional efforts are needed in teacher training and support services to ensure consistent and effective inclusion across different regions.
(Liang et al., 2022)	This systematic review aims to provide a comprehensive summary of the factors influencing the inclusion of students with special education needs (SEN) in inclusive physical education (IPE) in China.	The systematic review analyzed 14 studies, revealing that multiple factors at different levels affect the participation of students with SEN in IPE in China. At the intrapersonal level, disability type and low self-efficacy in students with SEN negatively impacted their engagement in IPE. Interpersonal factors, such as teachers' attitudes, knowledge gaps, and peer relationships, also posed barriers to effective inclusion. Organizational challenges included a lack of school support, unmodified curricula, and inadequate professional training for teachers. At the societal level, the absence of specific policies and financial support further hindered the successful implementation of inclusive physical education. These findings underline the need for more comprehensive teacher training and policy development to promote an inclusive and supportive IPE environment.
(Fierro & Contreras, 2024)	The primary goal of this study is to analyze the historical development of the concept of inclusion for students with disabilities in physical education within the school context.	The study revealed that the concept of inclusion has undergone significant transformation throughout history, with medical and social models playing prominent roles. Historically, individuals with disabilities were seen as needing medical intervention, and inclusion was based on their condition. However, the social model shifted the focus towards creating supportive environments that remove societal and architectural barriers. The findings suggest that while the social model is widely adopted in promoting inclusion, there are still tensions between medical and social approaches in educational practices. These insights highlight the importance of comprehensive strategies for inclusive physical education, involving both the removal of barriers and specific support for students with disabilities.
(DeMatthew s et al., 2020)	This study explores the evolving role of school principals in leading inclusive schools for students with disabilities in the United States. Specifically, the study reviews the historical and legal context of inclusive education, examines leadership frameworks that support inclusive practices, and analyzes how principals can promote inclusion through effective leadership.	The review highlighted that effective principal leadership is crucial for creating and sustaining inclusive schools. Key leadership practices identified in this study include developing a shared vision for inclusion, promoting high-quality learning experiences, and building professional capacity among teachers. Additionally, principals must create supportive organizational structures and collaborate with external partners, such as families and community organizations. The study highlights that while progress has been made, disparities in inclusive education persist, especially among different racial and economic groups, and emphasizes the need for principals to be proactive in addressing these challenges.

(Carvalho et al., 2022)	The objective of this study is to adapt and validate the Themis Inclusion Tool, a questionnaire designed to measure inclusive education, for use in Portuguese schools.	The study found that the adapted questionnaire renamed the "Resources and Practices for Inclusive Education," demonstrates strong psychometric properties. Exploratory and confirmatory factor analyses revealed a two-factor structure, with one factor representing inclusive resources (such as human, technical, and technological resources) and the other representing inclusive practices (such as teaching behaviors and beliefs that support inclusion). The results showed high internal consistency for both factors, making the tool reliable for assessing the state of inclusive education in Portuguese schools. The tool can be effectively used for self-assessment and reflection to guide schools in fostering more inclusive practices.	
(Alhumaid et al., 2022)	This study investigates the attitudes of physical education (PE) teachers in Saudi Arabia toward the inclusion of students with disabilities in their PE classes. Additionally, the study examines how sociodemographic factors such as gender, teaching experience, and adaptive physical education (APE) training affect teachers' attitudes.	The study found that, overall, Saudi PE teachers exhibited moderately positive attitudes toward the inclusion of students with disabilities. Female teachers were more likely to have positive attitudes compared to their male counterparts. Furthermore, less experienced teachers and those with minimal experience teaching students with disabilities were more likely to hold positive views on inclusion. In contrast, teachers with more experience and higher exposure to students with disabilities demonstrated less favorable attitudes. The findings suggest the need for enhanced professional development, particularly regarding adaptive physical education and inclusion strategies, to improve attitudes and promote inclusive practices in Saudi Arabian schools.	
(Carvalho et al., 2024)	The study aims to explore the experiences of trainers who implement an e-learning course designed to enhance the competencies of school psychologists in Portugal, particularly in supporting inclusive education practices.	The research found that the e-learning course provided valuable opportunities for school psychologists to develop their knowledge and skills in inclusive education. Trainers noted that the online format allowed greater flexibility, accessibility, and networking opportunities for participants from different regions. However, they also identified several challenges, such as the insufficient time for in-depth exploration of complex content and the difficulties participants faced in balancing training with their professional responsibilities, particularly during the COVID-19 pandemic. Trainers suggested improvements, including extending the training duration and providing more individualized supervision to enhance learning and practical implementation of inclusive practices.	
(Alves, 2020)	The research analyzes the process of implementing educational policy reforms in Portugal, specifically focusing on inclusive education during 2017-18. It investigates the changes in policy and the role of continuous teacher education in fostering inclusive practices.	The study found that the 2017-18 educational reforms in Portugal introduced significant changes to promote inclusive education. Mainstream teachers were now expected to accommodate all students, with the policy emphasizing the use of Universal Design for Learning (UDL) and a tiered system of support. However, while teacher education and professional development were central to these changes, there were concerns about the depth and effectiveness of the training provided. The study highlighted that sustained and collaborative teacher education is essential for enabling teachers to successfully transition to inclusive practices, but it also noted that existing educational systems often resist deep and sustainable change.	
(Ainscow, 2020)	The objective of this research is to explore international efforts and strategies to promote inclusion and equity in education. It examines the challenges and opportunities faced by education systems worldwide in creating inclusive environments that cater to all students, including those with disabilities and other marginalized groups.	The study discovered that significant international progress has been made towards inclusive education, particularly through initiatives like UNESCO's Education for All (EFA) and the Salamanca Declaration. Unfortunately, substantial barriers to achieving equity remained. Inclusive schools were reported as the most effective means of combating discrimination and improving educational outcomes. However, successful inclusion required systemic changes, including teacher training, the use of evidence-based practices, and community engagement. The research highlights that developing inclusive cultures within schools and education systems can significantly improve access, participation, and achievement for all students, but achieving this requires sustained collaboration and leadership at all levels.	
(van Kessel et al., 2020)	The objective of this study is to examine how education policies in the Baltic States (Estonia, Latvia, and Lithuania) have evolved following the transition from the Soviet era to the modern-day education systems under the guidance of the United Nations and the European Union.	The study found that after the Baltic States gained independence from the Soviet Union, their education systems underwent significant changes influenced by international guidelines from the UN and EU. The three countries have made strides towards developing inclusive education for children with special educational needs, including autism. However, most policies do not specifically address autism and instead focus on SEN in general. Estonia, Latvia, and Lithuania have integrated the principles of the UDHR and CRPD into their national education systems, promoting the inclusion of children with disabilities in mainstream education. However, the study also highlights the need for more autism-specific policies to better address the unique needs of autistic students, a gap that remains compared to other European countries.	
(Tawa et al., 2024)	The objective of this research is to investigate the effect of visionary leadership and organizational commitment on teacher performance in inclusive schools, specifically for children with special needs.	The study found that both visionary leadership and organizational commitment have a significant positive impact on teacher performance in inclusive schools for children with special needs. Teachers under strong visionary leadership demonstrated higher levels of commitment and performed better in delivering inclusive education. The findings revealed that principals who effectively communicated their vision and fostered an inclusive culture were able to enhance teacher motivation and responsibility. Moreover, the study emphasized that organizational commitment played a vital role in improving teachers' ability to provide tailored educational support to children with special needs, highlighting the importance of leadership and teamwork in achieving the goals of inclusive education.	
(Rojo-Ramos et al., 2022)	The research explores the attitudes of students without disabilities toward their peers with disabilities during Physical Education (PE) lessons. The study specifically focuses on identifying differences in attitudes based on gender (male and female) and the school's location (urban or rural).	The findings revealed that female students and those attending rural schools exhibited significantly more positive attitudes toward their peers with disabilities during PE lessons compared to male students and those in urban schools. This difference was particularly evident in responses to items related to interaction and teamwork. The study concluded that these findings underline the need for targeted attitude-change programs, particularly in urban schools and among male students, to foster more inclusive environments during PE lessons. Additionally, the Scale of Attitudes toward Students with Disabilities in Physical Education Primary Education (SASDPE-PE) was validated as an effective tool for measuring stu-	

Discussion

The purpose of this systematic literature review was to investigate legal policies regarding the implementation of

inclusive schools in physical education (PE), focusing on the challenges related to human resources and infrastructure for students with special needs. The results indicate that the

 $Physical\ Education-Primary\ Education\ (SASDPE-PE)\ was\ validated\ as\ an\ effective\ tool\ for\ measuring\ students'\ attitudes.$

practical implementation of inclusive schools in physical education still faces various challenges despite the existence of both international and national policies that support inclusion. One of the key challenges identified is the lack of teacher preparedness. Research shows that many PE teachers have not received adequate training to work with students with special needs, which results in reduced effectiveness of learning in inclusive classrooms (Fitriatun, 2022; Kusmaryono, 2023; Mujiafiat & Yoenanto, 2023). Teachers need to understand adaptive learning techniques in PE to ensure students with special needs can actively participate (Rosmi & Jauhari, 2023; Widiyanto & Putra, 2021). Without proper training, many teachers feel unprepared for the challenge, which impacts student learning outcomes (Mujiafiat & Yoenanto, 2023).

In addition, limited infrastructure in schools is a significant obstacle to implementing inclusive schools. Inadequate facilities, such as physical accessibility and specialized equipment, hinder the participation of students with special needs in PE (Ndek et al., 2023; Suvita et al., 2022). In other words, adequate infrastructure is critical to creating an inclusive learning environment where students can interact equally with their peers. Without proper facility support, students with special needs are vulnerable to being alienated from physical activities, which has the potential to negatively impact their physical and social development (Suryadi, 2023). Therefore, investment in inclusive education infrastructure is urgently needed to improve the quality of education for students with special needs.

In terms of policy, although the government has issued regulations, such as Law Number 8 of 2016, concerning Persons with Disabilities, their implementation is still inconsistent (Mukti et al., 2023; Sania, 2019). This policy needs to be strengthened with responsive curriculum development and continuous training for teachers (Kusmaryono, 2023; Munajah et al., 2021). The application of Universal Design for Learning (UDL) principles in PE can be a solution by providing a more flexible and adaptive learning approach (Rosmi & Jauhari, 2023; Widiyanto & Putra, 2021). In addition, parental and community involvement is also very important in supporting inclusive education by providing a better understanding of the needs of students with special needs and reducing stigma and discrimination (Masithah et al., 2023; Sabilla, 2023). Thus, collaboration between all stakeholders, including government, schools, teachers, parents, and communities, is a key factor in ensuring the success of quality inclusive education.

Human Resource Challenges in Inclusive PE

A major challenge in inclusive PE is the lack of preparedness of teachers to work with students with special needs due to the lack of adequate training. Research in various countries shows that many teachers are not optimally prepared to teach in inclusive classrooms. For example, a study by Castillo-Paredes et al. (2023) in Chile revealed that the country's teacher training programs do not provide sufficient skills to support students with special educational

needs (SEN), making teachers often struggle to provide an inclusive PE experience. Another study (Alves, 2020) in Portugal also highlighted the importance of continuous training in implementing Universal Design for Learning (UDL), although its effectiveness still needs to be investigated. Similar findings were found in Africa, where research (Majoko, 2019) indicates that although teachers' attitudes towards inclusion are positive, they face major challenges such as excessive class sizes and lack of specialized support. In Saudi Arabia, scholars (Alhumaid et al., 2022; Gülay & Altun, 2023) showed that teachers with less experience teaching students with special needs had more positive attitudes but still need further professional development to effectively implement inclusive teaching.

In addition, the development of more practical and sustainable training is considered very important to improve teachers' readiness to manage inclusive classrooms. The study by Triviño-Amigo et al. (2022) emphasizes the importance of training that includes workshops and practical sessions to improve teachers' understanding of developmental disabilities and appropriate teaching methods. Kazanopoulos et al. (2022) also showed that skills in managing an inclusive classroom are necessary to fulfill the needs of all students. Continuous professional development and collaboration between general and special education teachers are key elements in improving teachers' competencies for inclusive education (Goncharenko et al., 2022). Thus, comprehensive and continuous training is necessary to overcome the challenges faced in inclusive PE. Support from various parties, including the government and educational institutions, is crucial so that teachers have the knowledge and skills to support students with special needs in an inclusive PE environment.

The Role of Policies and Regulations in Supporting Inclusion in PE

Policies and regulations related to inclusion in PE play a central role in creating learning environments that are responsive to the needs of all students, including those with special needs. In Portugal, for example, Alves (2019) showed that Decree-Law 54/2018 changed the approach to inclusion by emphasizing student diversity, although its implementation still faces challenges. Fridayati et al. (2022) highlighted that the difficulties of policy implementation were often caused by a lack of teacher training and infrastructure support. Meanwhile, international initiatives such as the Salamanca Statement and UNESCO Education for All also promote inclusion globally, but their implementation is often hampered by limited resources and training (Hapsari et al., 2022). In Chile, Castillo-Paredes et al. (2023) found that national and international regulations support inclusive education. However, similarly, its implementation in PE and health contexts still requires curriculum adjustments and improved teacher training (Himawan et al., 2022).

In the European Union, van Kessel et al. (2021) emphasize the importance of more comprehensive inclusion policies, particularly in providing individualized support for students with autism. Effective inclusion policies must prioritize not only legal aspects but also practical implementation in schools, including adequate teacher training and provision of sufficient resources (Rahmadi et al., 2022). Collaboration between stakeholders, such as the government, educational institutions, and communities, is also emphasized as a key step in creating inclusive PE (Tea et al., 2023). Thus, it appears that although the policy framework for inclusion has been internationally recognized, implementation challenges remain a key issue that requires more attention, especially regarding teacher training and the provision of supportive resources.

Infrastructure and Facilities Challenges for Inclusive PE

Another main challenge in implementing inclusive PE is inadequate infrastructure and facilities. Research (O'Connor & McNabb, 2021) in Europe revealed that many schools face physical accessibility issues, which hinder students with special needs from participating optimally. Likewise, in the Chinese context, Liang et al. (2022) showed that the lack of organizational support, such as unmodified curriculum and lack of inclusive policies, further worsens conditions for students with special needs. This is because a healthy, clean, and comfortable school environment is an absolute requirement for creating child-friendly schools (Nurhadi et al., 2023; Susanto, 2022).

In this context, good infrastructure support and adequate educational facilities are very important to support inclusive physical learning (Rismayani et al., 2021). A study by Alvi et al. (2023) also emphasizes that providing adequate learning equipment and media is necessary for every educational institution to achieve optimal learning. Thus, without adequate infrastructure support, efforts to create an inclusive educational environment will be hampered, reducing opportunities for children to learn effectively. Furthermore, leadership factors also play an important role in creating an inclusive PE environment. Study (Tawa et al., 2024) emphasized the importance of visionary school leadership that is able to motivate teachers to increase the participation of students with special needs. Research Hebinck et al. (2023) also confirmed that providing good infrastructure resources is strongly related to the participation of students with special needs in physical activities. A clear inclusive education policy and its implementation, as discussed by Kumari et al. (2024), also face major challenges in terms of infrastructure limitations. In addition, the competence of PE teachers is strongly influenced by the inclusive education climate in schools, as expressed by (Xue et al., 2022). Therefore, it is important to ensure that the school environment is supportive and provides adequate infrastructure to assist teachers and students in implementing inclusive education. Collaboration between relevant parties, such as the government, schools, and communities, is needed to overcome these challenges (Jajang et al., 2021). Efforts to improve facilities and infrastructure management should be a priority in inclusive PE policies to ensure that all students can participate fully and equally.

Adaptive Teaching Strategies to Promote Inclusion in PF

Adaptive teaching strategies have emerged as a key solution for PE teachers in addressing the limitations of infrastructure and inadequate training. For example, a study by Majoko (2019) shows that teachers in Zimbabwe often adapt physical activities based on students' individual abilities to promote inclusion despite insufficient systemic support. In other regions, such as Saudi Arabia, Rojo-Ramos et al. (2022) emphasized the role of adaptive approaches in creating positive attitudes of students, especially among women and rural communities, towards peers with special needs. Research conducted by Montaluisa and Vega (2023) further shows that students with autism require more specific teaching methods, emphasizing the importance of adequate training for teachers to implement appropriate teaching strategies for various special needs. This emphasizes the need for special attention to the development of teachers' ability to deal with the diverse needs of students through more flexible and inclusive teaching strategies.

In addition, infrastructure challenges are a major barrier to achieving inclusive PE. Sumarno (2023) highlighted that the lack of infrastructure, especially in rural areas, hinders the use of digital technology in PE, which ultimately limits access for students with special needs. This issue underlines the importance of investing in infrastructure that supports inclusion, including facilities that are friendly for all students. Furthermore, research stated that a positive inclusive education climate in schools greatly influences teachers' competence in running inclusive PE (Xue et al., 2023). Thus, collaboration between the government, schools, and communities is needed to improve the management of facilities and infrastructure so that inclusive PE can run effectively. Ultimately, to achieve better inclusion, concrete steps are needed to improve infrastructure and support teachers in creating an inclusive PE environment.

The Importance of Continuous Training for PE Teachers

Creating an inclusive learning environment in physical education (PE) requires more than just policies; it depends heavily on professional development and ongoing training of PE teachers. A study (Liang et al., 2022) found that in China, the lack of adequate training makes it difficult for teachers to deal with students with special needs, indicating an urgent need for improved training. Fierro and Contreras (2024) also revealed that the tension between medical and social approaches in inclusive education models requires more holistic training for teachers to better manage these different approaches. In the context of leadership, DeMatthews et al. (2020) highlighted why school management is important in strengthening a culture of inclusion through ongoing training and collaboration with

external communities, including parents and local organizations. Thus, comprehensive training and support from stakeholders is necessary for teachers to feel more confident in implementing adaptive and inclusive teaching strategies. In addition to training that targets methodological aspects, evaluation of teacher training and professional development programs is also important to ensure their effectiveness in inclusive PE. Studies in Indonesia (Ningsi et al., 2024) revealed that although Surabaya's policies support inclusive education, implementation in the field still faces many challenges. This highlights the need for in-depth evaluation to find gaps and improve the quality of teacher training. On the other hand, Liriwati et al. (2024) emphasized that training should include the use of technology, as technology integration is proven to increase student engagement in PE learning. Therefore, teacher training that includes technological aspects can improve their ability to teach students with various backgrounds and needs. In addition, Agesti et al. (2024) pointed out the important role of universities in preparing prospective teachers with the necessary skills to effectively implement inclusive PE. The overall synthesis of these various studies underlines that holistic, collaborative, and technology integration-focused ongoing training is key to ensuring the success of inclusive PE in the future.

Conclusion

The legal policy analysis on the implementation of inclusive schools in PE shows that the most significant challenges lie in human resources and infrastructure. The human resources challenge, especially teacher readiness and competence, is strongly influenced by the lack of adequate training in dealing with students with special needs. Many teachers feel unprepared for the complexities of an inclusive classroom, which emphasizes the importance of comprehensive ongoing training to teach adaptive learning techniques. Such training should include pedagogical skills, curriculum adaptation, and an understanding of Universal Design for Learning (UDL) to ensure students' active participation in PE. In terms of policy, although there are regulations that support inclusion, the implementation is often not optimal, especially in PE. Existing policies should be strengthened by developing a more responsive curriculum and providing adequate resources.

In addition, the role of school leadership and collaboration between stakeholders, including government, teachers, parents, and communities, is crucial to creating an educational climate that supports inclusion. In addition, challenges in infrastructure and facilities are significant. Limited facilities, especially physical accessibility and specialized equipment, hinder inclusive learning. Therefore, investment in inclusive infrastructure is a priority to create a safe and comfortable learning environment for all students. The use of adaptive teaching strategies is also an important step that should be implemented in this context, given that flexibility in teaching methods can help teachers to more easily

adapt learning to students' needs. The findings, therefore, emphasize that achieving effective inclusive PE requires a synergy between strong policies, continuous training for teachers, improved infrastructure, and adaptive teaching strategies. Increased investment in teacher training, facility development, and close collaboration between stakeholders will ensure successful inclusion in PE.

These findings suggest that improving the quality of inclusive PE relies heavily on strengthening continuous training for teachers, improving school infrastructure, as well as more consistent policy implementation. Teachers need comprehensive training to develop adaptive skills that accommodate students with special needs, as the absence of such training will limit students' participation in physical activities. Government support, especially through investment in inclusive infrastructure, is equally important to create a welcoming environment for all students. Finally, collaboration across all stakeholders is key to ensuring the success of inclusive PE in the future.

Conflicts of interest

The authors declare no conflicts of interest.

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