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Integrated learning in physical education: a science mapping exploration of emerging current trends and future directions

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Abstrak: Pembelajaran terintegrasi telah menjadi pendekatan pedagogis yang menonjol dalam Pendidikan Jasmani (penjas), dengan mendorong keterhubungan antara ranah pembelajaran fisik, kognitif, emosional, dan transdisipliner. Meskipun demikian, penelitian di bidang ini masih terfragmentasi secara konseptual, dengan upaya yang belum memadai untuk mensintesis tren global dan perkembangan intelektualnya. Studi ini bertujuan untuk menguraikan lanskap penelitian pembelajaran terintegrasi dalam pendidikan jasmani secara komprehensif dengan menggunakan metodologi pemetaan ilmiah. Penelitian ini menganalisis perkembangan disiplin tersebut selama satu dekade terakhir dan menyoroti pola-pola baru guna memberikan informasi bagi metodologi pendidikan dan arah penelitian ke depan. Analisis bibliometrik dilakukan terhadap 690 publikasi yang telah ditinjau sejawat dari Web of Science Core Collection (2015–2024). Bibliographic coupling digunakan untuk menelaah hubungan intelektual antar publikasi, sementara analisis co-word mengungkap pola tema dan gagasan yang sedang berkembang. VOSviewer digunakan untuk menghasilkan peta jaringan visual dan melakukan analisis klaster. Penelitian ini mengidentifikasi lima klaster konseptual utama yang berfokus pada pedagogi berpusat pada siswa, motivasi, pertumbuhan kognitif, integrasi interdisipliner, dan pendidikan guru. Analisis co-word juga menemukan empat domain tema, yaitu strategi pedagogis inklusif, promosi aktivitas fisik dan kesehatan, keterlibatan yang memotivasi, serta inovasi digital. Secara keseluruhan, hasil penelitian ini menggambarkan kemajuan pendidikan jasmani terintegrasi menuju disiplin yang holistik dan progresif. Artikel ini menyintesis pembelajaran terintegrasi dalam pendidikan jasmani secara komprehensif melalui pendekatan pemetaan ilmiah. Hasilnya memperkuat pemahaman terhadap kerangka konseptual bidang ini dan menekankan kebutuhan pendidikan untuk mengembangkan pendekatan yang inklusif, multidisipliner, dan berbasis bukti. Temuan ini menjadi sumber strategis bagi pendidik, peneliti, dan pembuat kebijakan yang ingin meningkatkan pendekatan terintegrasi dalam kurikulum penjas.
Kata kunci: Pendidikan jasmani, Pembelajaran terintegrasi, Analisis bibliometrik, Pemetaan ilmiah, interdisipliner

Abstract: *Integrated learning has become a prominent pedagogical approach in Physical Education (PE), promoting connections across physical, cognitive, emotional, and transdisciplinary learning domains. Nonetheless, research in this field remains conceptually fragmented, with inadequate efforts to synthesize global trends and intellectual progress. This study aims to comprehensively outline the research landscape of integrated learning in physical education using scientific mapping methodologies. It analyses the progression of the discipline over the last decade and highlights new patterns to inform future educational methodologies and research. A bibliometric analysis was conducted on 690 peer-reviewed publications from the Web of Science Core Collection (2015–2024). Bibliographic coupling was used to examine intellectual relationships across publications, while co-word analysis uncovered theme patterns and emergent ideas. VOSviewer was used to generate visual network maps and perform cluster analyses. The research revealed five main conceptual clusters centered on student-centered pedagogy, motivation, cognitive growth, integration, and teacher education. Co-word analysis identified four theme domains: inclusive pedagogical strategies, health and physical activity promotion, motivating engagement, and digital innovation. These results together illustrate the progression of integrated PE into a holistic and progressive discipline. This paper comprehensively synthesizes integrated learning in physical education using scientific mapping. The results enhance understanding of the field's conceptual framework and emphasize educational needs for advancing inclusive, multidisciplinary, and evidence-based approaches. The results serve as a strategic resource for educators, researchers, and policymakers seeking to improve integrated approaches within the PE curriculum.*
Keywords: *Physical education, Integrated learning, Bibliometric analysis, Scientific mapping, Interdisciplinarity*

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INTRODUCTION

Physical education (PE) is increasingly acknowledged for its contribution to physical literacy and significant impact on students' overall intellectual, social, and emotional growth. As global education systems evolve to promote 21st-century competencies, integrated learning has emerged as a potential pedagogical strategy that links physical education with other courses to facilitate comprehensive student development (Macovei & Popescu, 2022; Marttinen et al., 2024). This transition establishes new expectations for physical education instructors to facilitate physical development and adopt multidimensional evaluations that include cognitive, emotional, and social results (Kim, 2024).

PE teaching is thus seeing a significant shift. It is progressing towards more integrated, cohesive, and comprehensive strategies to address contemporary educational requirements. Kirk (2013) contended that creative approaches are necessary to align with contemporary educational objectives and effectuate significant alterations in PE teaching. Integrated learning has arisen as an effective strategy to link movement with disciplines such as mathematics (Cecchini & Carriedo, 2020), geography (Vlcek et al., 2019), science (Marttinen et al., 2024), health education (Ward et al., 2021), and language learning (Gil-López et al., 2021)

In reality, integrated learning in PE manifests in several ways, such as cross-curricular models, transdisciplinary instruction, content and language-integrated learning (CLIL), and STEM-oriented physical activities (Schmidthaler et al., 2023). These concepts challenge the antiquated perception of PE as a solitary or exclusively physical discipline. They conceptualize PE as a dynamic environment in which students actively connect with and embody academic knowledge. Embedding language teaching inside PE has enhanced linguistic proficiency and student confidence (Coral & Lleixà, 2016).

The theoretical foundation for integrated PE learning is embodied cognition, social constructivism, and holistic education. These viewpoints underscore the interrelated development of the body, mind, and emotions (Macovei & Popescu, 2022). Numerous research substantiates this perspective, demonstrating that integrating PE with academic disciplines may enhance learning results, elevate motivation, and promote increased involvement in physical activities (Cecchini & Carriedo, 2020). This corresponds with the overarching objectives of UNESCO and the WHO to advance lifelong health, social-emotional well-being, and physical literacy (Coral & Lleixà, 2016).

By integrating academic material with movement-based activities, PE offers students significant possibilities to investigate physical and social concepts. This kind of involvement fosters enhanced cognitive processing and conceptual comprehension. According to Gashaj et al. (2024), cognition is influenced by bodily experience, and PE provides a distinctive framework for this kind of learning. For instance, resolving mathematical problems during physical activities reinforces academic ideas and improves student engagement and knowledge retention (Macovei & Popescu, 2022). Among academic disciplines, PE emerges as a rich domain for cultivating multidimensional growth. Integrated learning in PE has been associated with enhanced academic achievement, physical competencies, and social-emotional development, including motivation and student agency (Cecchini & Carriedo, 2020: Zhang et al., 2024).

A literature study by Griffo et al. (2020), including 45 papers, indicated that technological integration was the predominant topic across the analyzed literature. Nonetheless, it was observed that most of this research failed to provide knowledge evaluations or use physical activity monitoring instruments. A study by Lenzen et al. (2023) of 13 scholarly studies highlighted the many methodologies for imparting life skills in PE. Research by Syaukani et al. (2023) examined 15 publications and demonstrated the use of integrated learning in PE to promote whole-child development. The framework includes the components of body, mind, and spirit in the educational process. Despite these advantages, the research literature on integrated PE remains disjointed and philosophically varied. Consequently, further research is required to elucidate the knowledge framework in this domain by identifying new topics and directing

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future inquiries. To address this gap, this research employs a bibliometric methodology to thoroughly investigate the conceptualization and examination of integrated learning within PE. This approach enhances the review process's rigor and impartiality by pinpointing significant publishing patterns, theme clusters, and temporal research trends (Saini et al., 2022).

This research uses bibliographic coupling to examine relationships among publications and co-word analysis to identify emerging themes and topics. Utilizing these scientific mapping approaches, we provide visual networks and cluster analyses that explain the evolution of the field and its potential future trajectory. The results clarify the conceptual framework of integrated learning in PE and provide significant insights for educators, researchers, and policy-makers aiming to enhance integrated learning methods in this field.

METHODS

Bibliometric Approach.

Bibliometric analysis provides an effective method for interpreting an expanding corpus of research. It assists researchers in methodically examining the evolution of a discipline by integrating quantitative metrics such as publication and citation counts with nuanced understandings of nascent concepts and themes (Donthu et al., 2021; Paul & Barari, 2022). Instead of just tallying articles, bibliometric approaches systematically analyze academic literature, uncovering trends in subject evolution, identifying important works, and indicating potential directions for future research (Lim et al., 2024; Mejia et al., 2021). This study used bibliometric approaches to analyze the progression of research on integrated learning in physical education. Examining the content and interrelations across research elucidates the evolution of the field and potential future trajectories (Mulet-Forteza et al., 2022).

Two primary strategies guide this analysis. The first aspect is performance analysis, which examines publications' volume and citation frequency. The second aspect is scientific mapping, which examines the interconnections among publications, authors, and central concepts to illustrate forming a field's intellectual structure (Tiberius et al., 2020). This study used scientific mapping to investigate literature trends using bibliographic coupling (aggregating studies with shared references) and co-word analysis (monitoring frequently co-occurring terms). Collectively, these methodologies delineate the present research environment while illuminating the themes and trends poised to influence the future of integrated learning in PE.

Study Design and Data Collection Procedure

The document examined in this research were obtained from the Web of Science (WoS) database, chosen for its extensive citation data across several academic fields (Mónaco et al., 2022). In comparison to other databases like Scopus, WoS presents benefits in selectivity and data correctness due to its stringent curation methods and provision of highly trustworthy bibliometric information (Stuart & Petersen, 2022). The document search used search strings derived from terms pertinent to integrated learning within physical education. Keyword selection was guided by terminology in the literature, including synonyms and phrases found using academic thesauri (see Table 1). The search used the "Topic" search option in WoS, including the article title, abstract, author keywords, and keywords plus. To guarantee the quality and pertinence of the analysis, the research restricted the document type to peer-reviewed journal papers (Fauzi, 2023). This constraint ensured that the analyzed data were from reputable and verified scholarly sources. The publication period was limited to 2015–2024 since literature from the last decade encapsulates the latest approaches and frameworks crucial for tackling contemporary educational difficulties (Hassankhani Dolatabadi & Budinska, 2021). All obtained materials were exported in plain text format for later bibliometric analysis using scientific mapping software.

Table 1. Search string in WoS database

No.	Keywords	Justification
1.	integrated OR integrative	To identify literature related to integrated OR integrative
2.	learning OR teaching	To identify literature related to learning OR teaching
3.	physical education	To identify literature related to integrative learning is limited in physical education scope

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Data Analysis

The document search in the WoS database was performed on 15 June 2025, resulting in an initial total of 909 pertinent documents. An additional filtering procedure was conducted based on publication year, source kinds, and English language requirements, yielding a revised dataset of 690 documents. The papers were downloaded in plain text format and examined using VOSviewer version 1.6.20 for publication mapping. VOSviewer was chosen for its ability to create visual representations of publishing networks based on textual data or citation patterns, thereby providing valuable insights into the structural dynamics and topic evolution within academic discourse (Sinkovics, 2016).

Moreover, VOSviewer utilizes bibliographic coupling and co-word analysis approaches to elucidate current research trends and forecast future trajectories. Bibliographic coupling is an analytical technique based on the notion that two publications referencing the same sources are cognitively connected (Donthu et al., 2021). The link is reinforced when the quantity of standard references escalates (Budler et al., 2021). Concurrently, co-word analysis dissects each cluster's thematic substance and forecasts future research trajectories (Donthu et al., 2021). This research used VOSviewer to represent bibliographic coupling and keyword co-occurrence networks visually.

RESULT AND DISCUSSION

Results

Figure 2 illustrates a distinct increase in trajectory in publication and citation metrics about integrated learning in physical education over the preceding decade. Between 2015 and 2018, publication production was consistently stable, with less than 40 publications a year and moderate citation rates. Beginning in 2019, the discipline saw accelerated growth, marked by a substantial rise in publications and citations. The expansion reached its zenith in 2024, marked by the most significant number of publications (over 140) and citations (exceeding 1,400), indicating a robust and escalating academic interest in the subject. The significant decrease seen in 2025 indicates that the data for that year is incomplete since several fresh articles have not yet had sufficient time to accrue citations. These tendencies indicate that integrated learning in physical education has emerged as a significant domain of academic investigation, garnering attention in research productivity and scholarly influence.

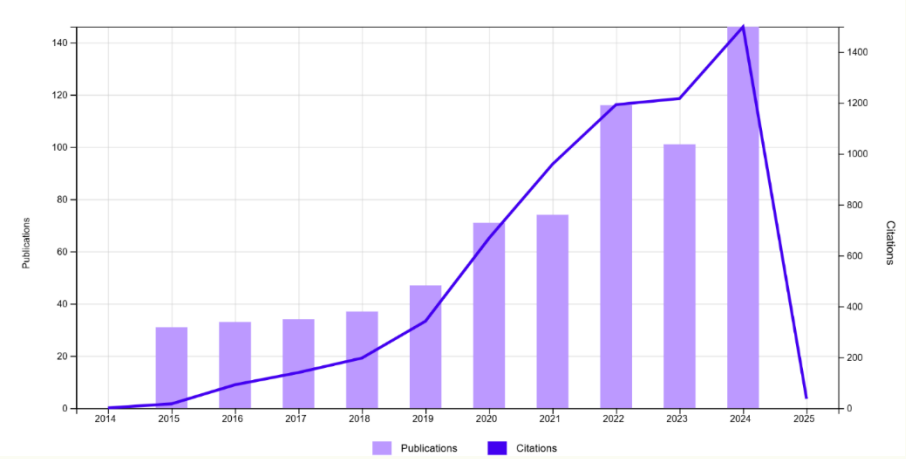

Figure 1. Trends in Publications and Citations on Integrated Learning in PE

Bibliographic coupling analysis facilitates the identification of contemporary and nascent themes within a specific discipline. Before visualizing the network map, it is imperative to establish a minimum citation threshold to guarantee the inclusion of only significant and pertinent documents that accurately represent the thematic framework of the research domain, specifically concerning halal certification in food and beverages. Establishing the threshold requires meticulous deliberation: an excessively high threshold may exclude critical clusters and significant themes. In contrast, an excessively low threshold may result in a disorganized map filled with overlapping or trivial clusters. Consequently, a balanced threshold guarantees thematic clarity and analytical profundity in scientific mapping (Sun et al., 2022).

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This study conducted a bibliographic coupling analysis on a dataset of 690 documents, each above a minimum citation criterion of 30, resulting in a cut-off value 54. Figure 2 depicts the resultant bibliographic coupling network. The representation delineates five separate clusters, each represented by a unique color: Cluster 1 (red), Cluster 2 (green), Cluster 3 (blue), Cluster 4 (yellow), and Cluster 5 (purple). These clusters demonstrate interconnection inside the network. Thereafter, the author conducted a qualitative evaluation to provide theme labels to each cluster, informed by the patterns identified in the investigation.

Cluster 1 (red) included nineteen papers about Student-Centered Pedagogical Models and Game-Based Approaches. The first cluster is grounded on research on pedagogical innovations and game-based tactics in PE that emphasize constructivist learning. Principal research underscores the shift from conventional, teacher-led learning to more student-centered, inquiry-based paradigms. Harvey et al. (2015) elucidate the theoretical foundation of Teaching Games for Understanding (TGfU), emphasizing its capacity to enhance students' tactical awareness and decision-making abilities. Bodsworth (2017) articulates Sports Education (SE) as a paradigm that fosters student autonomy, collaboration, and prolonged involvement. Likewise, Correia (2019) and Rudd (2021) examine the Constraint-Led Approach (CLA), which emphasizes the significance of environmental and contextual factors in motor learning and adaptation. Landi et al. (2016) provide a comprehensive pedagogical and philosophical criticism, highlighting the role of these models in reevaluating contemporary PE curricula. Collectively, these works illustrate a comprehensive educational transition towards frameworks that enhance student agency, cognitive growth, and profound involvement via significant physical experiences.

Cluster 2 (green) included eleven research studies on physical activity interventions and student motivation. The second cluster is on treatments to improve student motivation and engagement in physical activity via organized PE programs. Haerens et al. (2015) establish a foundation for behaviourally informed interventions to enhance physical activity levels by promoting inclusive and well-organized PE settings. Lubans et al. (2017) emphasize the significance of physical literacy in promoting lifetime participation in physical activity, especially via curricula that focus on developing core motor skills. Research conducted by Evans (2015) and Säfvenbom et al. (2015) investigates the psychological and motivational factors affecting involvement in PE, often contextualized within self-determination theory and social identity frameworks. Furthermore, King & McInerney (2019)present digital treatments such as applications, fitness monitors, and virtual coaching as instruments to enhance motivation and compliance with active lifestyles. This cluster underscores the need to create PE settings prioritizing student involvement, motivational support, and responsiveness to health promotion and digital engagement trends.

Cluster 3 (blue) included nine research about Physical Literacy, Cognitive Development, and Motor Learning. This cluster emphasizes integrating motor skill development with cognitive and emotional learning in PE environments. Cairney et al. (2019) define physical literacy as a holistic notion that includes mental, emotional, and physical dimensions. Myer et al. (2015) examine the significance of neuromuscular training and motor learning in avoiding injuries and enhancing sports performance. Research conducted by Lorås (2020) and Kolbe (2019) investigates the influence of cognitive systems, such as perception and decision-making, on movement efficiency and performance. Cronin et al. (2018) emphasize the significance of feedback, self-assessment, and reflection in improving skill development and learner autonomy. Collectively, these studies emphasize the need for PE to implement a comprehensive learning framework that concurrently promotes motor competence, cognitive engagement, and emotional resilience.

Cluster 4 (yellow) included six research studies on digital integration and interdisciplinary innovations. The fourth cluster indicates an increasing interest in using digital technology and multidisciplinary methodologies in PE. This cluster emphasizes the transformational capacity of digital tools and emerging technology in promoting personalized, evidence-based, and integrated learning within PE. Gil-Arias (2020) and Gil-Arias et al. (2021) investigate the potential of digital game-based learning, including simulations and gamification, to augment student motivation and cognitive engagement. Lin et al. (2021) examine using artificial intelligence and personalized learning algorithms that provide adaptive feedback and tailored advancement. Calderón et al. (2020) present flipped classroom tactics that advocate using digital information before physical activity sessions to enhance

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practice and application. Martinez et al. (2022) underscore the significance of wearable technology and data analytics in delivering real-time feedback to students and educators.

Cluster 5 (purple) included five pieces of research about Teacher Training, Assessment Innovation, and Professional Development. The concluding cluster emphasizes teacher training, assessment reform, and continuous professional development in facilitating integrated PE. Richards (2015) examines how teacher identities and institutional frameworks may either promote or obstruct the execution of integrative pedagogies. Hemphill et al. (2015) support competency-based evaluation that aligns with realistic learning experiences. However, Leirhaug & MacPhail (2015) emphasize the significance of reflective practice and ongoing professional development among PE instructors. Starck et al., (2018)examine the use of digital technologies in teacher education, proposing that technology-enhanced assessment methods may facilitate formative evaluation and feedback. This collection of studies underscores that integrative PE necessitates curriculum change and investment in teacher autonomy, integrated learning proficiency, and creative assessment methodologies.

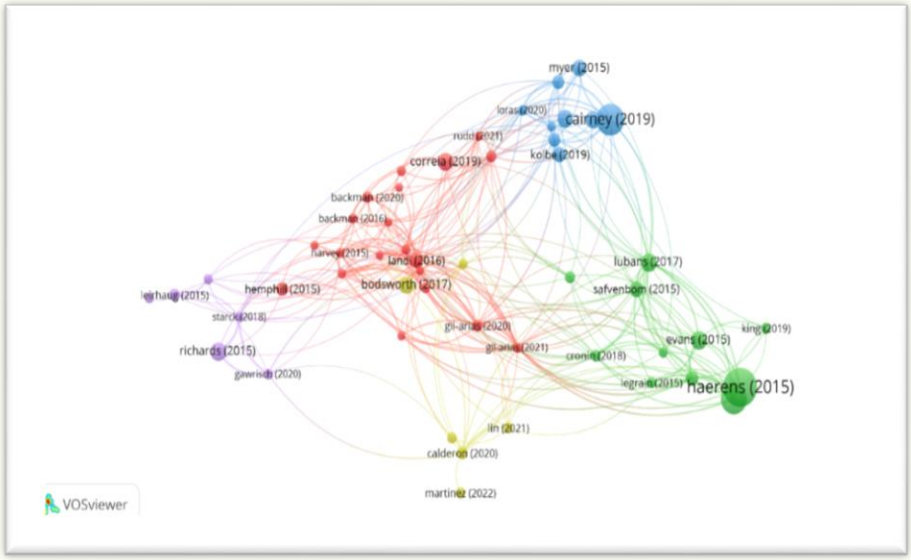

Figure 2. Network Visualization of Bibliographic Coupling

Co-word analysis used the same methodological methods as bibliographic coupling analysis. Of 2,509 words, 58 satisfied the established criterion, each occurring a minimum of 11 times in co-occurrence. The resultant network visualization, shown in Figure 3, demonstrates three unique groupings. Table 2 presents the representative terms associated with each cluster. A qualitative analysis of these clusters is presented in the next section.

Cluster 1 (red) has twenty items labelled as Teacher Education, Inclusion, and Pedagogical Expertise. The first cluster highlights the essential function of teacher education in providing inclusive and comprehensive PE. Commonly referenced phrases such as educators, inclusion, pedagogical expertise, and disability underscore an increasing academic emphasis on equipping instructors to meet the requirements of varied student demographics. According to Kyriakides et al. (2018), successful PE instruction relies on integrating general and content-specific pedagogical methods. Zilz & Pang (2021) further illustrate how digital tools and assistive technology may facilitate inclusive initiatives, particularly for students with impairments. McNamara & Haegele (2021) demonstrate that access to inclusive education materials, including teacher-focused podcasts, significantly improves educators' comprehension of inclusion-related difficulties. This cluster underscores the essential significance of continuous professional development, reflective practice, and technology proficiency as foundational elements of inclusive and prosperous PE teaching.

Cluster 2 (green) has nineteen items labelled as Physical Activity, Health Promotion, and Adolescent Engagement. The second cluster is on the role of PE in promoting public health, namely via its impact on physical activity, health, and well-being among teenagers. Commonly associated phrases like physical activity, health, fitness, and teenagers indicate the field's growing importance in combating

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sedentary lifestyles and promoting sustained physical involvement. Lubans et al. (2017) emphasize the significance of physical literacy as a basis for ongoing physical activity, while Haerens et al. (2015) support organized school-based initiatives to combat inactivity. In addition to these initiatives, King & McInerney (2019) examine how digital tools, including mobile applications and wearable gadgets, augment students' motivation and engagement. These contributions establish PE as a physical realm and a comprehensive platform that fosters physical, emotional, and intellectual growth, enhancing lifetime well-being.

Cluster 3 (blue) has ten items labelled as Motivation, Engagement, and Psychological Drivers of Participation. This cluster emphasizes the importance of motivational and psychological elements in influencing student engagement and learning in PE. Terms like motivation, engagement, autonomy, and self-determination are closely associated with self-determination theory (SDT), which underscores the need for autonomy-supportive contexts to foster intrinsic drive. Säfvenbom et al. (2015) illustrate the impact of identity and personal significance on student participation in PE, especially throughout adolescence. Similarly, Salvador-Garcia et al. (2024) identify cooperative learning and peer interaction as essential factors influencing student satisfaction and engagement. Cairney et al. (2019) enhance this comprehension by linking physical literacy to emotional and cognitive growth. These findings underscore that motivational design is not supplementary but fundamental to successful and enduring integrated PE programs particularly those that promote lifetime physical activity habits.

Cluster 4 (yellow) has nine items labelled as Integration and Digital Transformation in PE. The fourth cluster indicates an increasing convergence between multidisciplinary education and digital innovation in PE. Terminology such as CLIL, bilingual education, language acquisition, gamification, and technology emphasize physical development and academic success. Research conducted by Coral et al. (2020) and Gil-López et al. (2021) demonstrates that the incorporation of language teaching into PE via Content and Language Integrated Learning (CLIL) improves linguistic proficiency and physical participation, especially in multilingual educational settings. Marron & Coulter (2021) investigate the efficacy of flipped classroom methodologies and digital tools such as iPads in improving instructional quality. Adaptive technologies, including AI-driven tools, wearable trackers, and gamified platforms, enhance personalized learning and augment motivation. This cluster indicates a significant transition towards technology-integrated, interdisciplinary PE paradigms that correspond with the requirements of 21st-century schooling.

Table 2. Co-word Analysis on Integratif Learning in PE

Cluster No and colour	Cluster label	Number of keywords	Representative Keywords
1 (Red)	Teacher Education, Inclusion, and Pedagogical Expertise	20	PE, inclusion, teachers, disability, pedagogical content knowledge
2 (Green)	Physical Activity, Health Promotion, and Adolescent Engagement	19	Health, adolescents, physical activity, exercise, fitness
3 (Blue)	Motivation, Engagement, and Psychological Drivers of Participation	10	Motivation, students, engagement, self-determination theory, autonomy
4 (Yellow)	Integration and Digital Transformation in PE	9	language learning (CLIL), language, technology, gamification, digital learning

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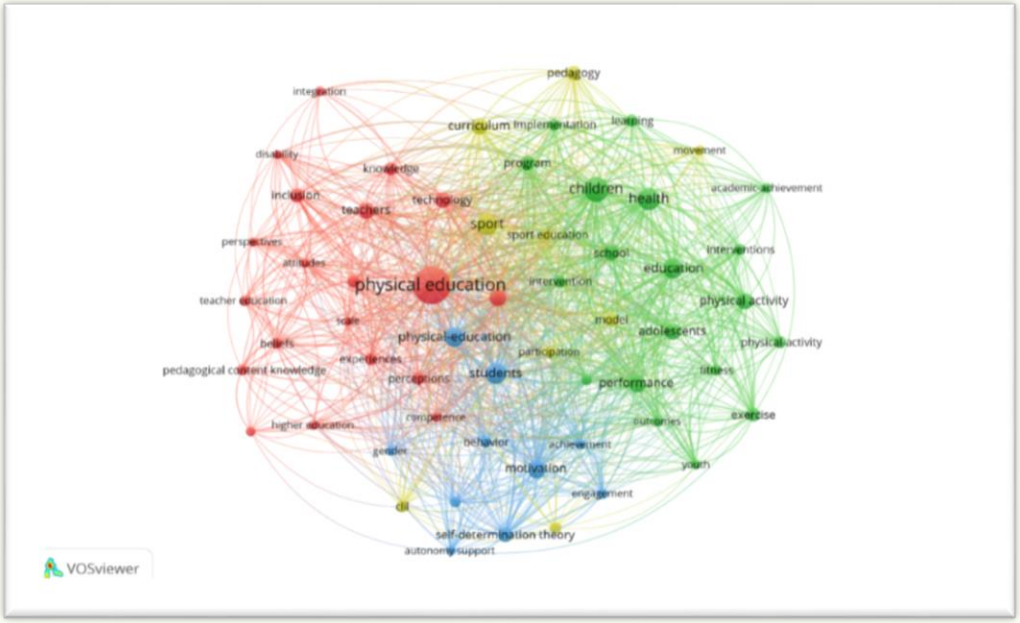

Figure 3. Network Visualization of Co-words Analysis

Discussion

This bibliometric study uncovers a dynamic and swiftly growing domain where integrated learning in PE connects with diverse educational goals and pedagogical advances. This study integrates bibliographic coupling with co-word analysis to delineate the topic framework of contemporary research and track the area's conceptual evolution. A notable cluster emphasizes the emergence of student-centered pedagogical approaches, especially those based on constructivist and embodied learning theories. Methods such as TGfU, SE, and CLA are fundamental to this movement. These methods prioritize active involvement, collaboration, and decision-making as essential learning outcomes. Harvey et al. (2015), Bodsworth (2017), and Correia (2019) provide significant insights into the importance of genuine learning settings that promote profound conceptual comprehension and tactical awareness, highlighting the need for physical contact as a means of cognitive development.

The second and third clusters underscore the critical importance of motivation, inclusivity, and the expansive concept of physical literacy. Recent studies indicate that promoting autonomy, pleasure, and competence, particularly in children and adolescents, might improve participation and facilitate sustained engagement in PE. This indicates the increasing interest in using self-determination theory and other behavioral frameworks in physical exercise settings (Haerens et al., 2015; Muñoz-Llerena et al., 2021). Furthermore, physical literacy is now seen as a multifaceted entity that includes both motor abilities and cognitive and emotional development. Research conducted by Cairney et al. (2019), Beni et al. (2019), Myer et al. (2015) substantiate this broadened perspective, illustrating how the amalgamation of physical, cognitive, and emotional skills fosters a more comprehensive learning experience. These results support the embodiment hypothesis, which posits that learning via movement improves memory, attention, and decision-making. These findings underscore the transformational capacity of PE to cultivate mental and physical capabilities that conventional academic disciplines may inadequately address.

The fourth and fifth clusters indicate nascent tendencies in digital innovation and educator professional development. An expanding corpus of literature examines the utilization of tools such as iPads, artificial intelligence, wearable fitness trackers, and gamified learning environments to augment engagement, personalize instruction, and facilitate data-driven feedback (Gil-Arias, 2020; Lin et al., 2021; Martinez et al., 2022). These technologies are progressively incorporated into PE environments, mirroring broader trends toward creative and flexible educational practices. Nonetheless, its implementation presents issues with equality, teacher preparedness, and institutional support (Marron & Coulter, 2021). This cluster emphasizes the need for comprehensive teacher preparation programs that equip educators to instruct in integrated methods with technology adoption. Research emphasizes

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the significance of reflective practice, creative assessment frameworks, and continuous professional development to enable teachers to successfully address the challenges of an evolving educational environment (Kyriakides et al., 2018). This study underscores that high-quality, inclusive PE relies on pedagogical innovation and structural support for teacher development.

This bibliometric study uncovers a vibrant and multifaceted research environment in integrated learning within PE. As educational institutions increasingly emphasize integrated learning, personal development, and lifelong wellness, integrated PE is essential for achieving these objectives. Although theoretical consensus about constructivism and embodiment is increasing, the discipline might benefit from more conceptual clarity and terminological uniformity. Addressing these deficiencies via cohesive frameworks and enhanced cross-cultural research may facilitate realizing the potential of integrated PE as a transformational influence in education.

Moreover, the co-word occurrence map of integrated learning in PE delineates four interrelated research clusters that signify the shifting objectives within the discipline. The first cluster highlights teacher education and inclusive practices' growing significance in successfully implementing integrated PE. Keywords like educators, inclusivity, and pedagogical expertise indicate an urgent need for adequately trained instructors who can address varied learner profiles. As PE increasingly merges with other educational areas, teacher training must adapt to include competencies in individualized teaching, digital pedagogy, and collaborative curriculum development.

The second and third clusters exhibit robust correlations among physical activity, health promotion, and student motivation. Given the rising incidence of sedentary lifestyles and mental health issues among adolescents, PE is positioned as a crucial means for comprehensive well-being. Studies indicate that promoting autonomy, pleasure, and competence, as outlined in the Self-Determination Theory, might enhance engagement and sustain long-term involvement in physical exercise (Haerens et al., 2015; Säfvenbom et al., 2015). Moreover, physical literacy is increasingly seen as proficiency in movement skills and a multifaceted capability that includes emotional and cognitive development. The research by Cairney et al. (2019) and Lorås (2020) confirms that embodied learning enhances executive function, self-regulation, and academic engagement.

The fourth cluster indicates a notable and developing transition towards integrated learning and digital innovation in PE. The significance of buzzwords like CLIL, technology, and gamification illustrates how PE serves as a medium for achieving dual learning objectives, namely language acquisition and digital literacy, particularly in multilingual and technologically advanced environments. Integrating PE with subject and language learning (Coral et al., 2020) enhances movement capabilities, communication abilities, and cognitive involvement. Furthermore, digital instruments such as wearable trackers, AI-enhanced feedback, and gamified applications are progressively used to customize teaching and enhance motivation (Lin et al., 2021). Nonetheless, these potential need investment in teacher preparedness, equitable access, and a reevaluation of pedagogy by contemporary educational environments.

The co-word occurrences indicate that integrated PE has transitioned from a peripheral invention. It is developing into a revolutionary method of instruction. Theoretical frameworks, including constructivism, embodied cognition, and contextual learning, guide practice, while broader imperatives such as public health promotion, digital transformation, and educational justice also influence the discipline. An essential result is that integrated PE must be deliberately included in the school curriculum as a comprehensive and multidisciplinary approach to developing academic and life skills. Nonetheless, the domain encounters persistent obstacles. The absence of terminological agreement about interchangeable terminology, such as cross-curricular, interdisciplinary, and hybrid pedagogy, generates uncertainty and hinders the accrual of knowledge. Subsequent studies must elucidate these principles, build common frameworks, and create transferable models across other educational systems. Furthermore, a majority of research is aimed at doing more cross-cultural and longitudinal investigations to comprehend the operation of integrated PE within diverse social, economic, and cultural contexts.

Practical Implications

This study provides significant insights into the philosophy, practice, and policy of integrated learning in PE. Identifying four principal theme clusters—teacher education and inclusiveness, health and motivation, cognitive-physical integration, and digital integrated learning innovation—underscores

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the complex function of PE in furthering modern educational objectives. These results highlight the need to reconceptualize PE as an integrated framework for fostering cognitive, physical, emotional, and social development.

The study underscores the need to equip educators with pedagogical adaptability and digital proficiency to deploy integrated PE approaches effectively. Programs such as TGfU, SE, and CLIL need both subject matter expertise and proficiency in reflective practice, inclusive pedagogy, and adaptive assessment. Institutions must provide resources for professional development and teacher education programs emphasizing integrated learning and student-centered teaching. Furthermore, incorporating digital tools like AI-driven feedback, wearable devices, and gamification needs continuous support for infrastructure and fair access to technology across various educational environments.

The findings indicate that PE should be more deliberately integrated with objectives related to public health, language acquisition, and digital literacy. By incorporating it into comprehensive integrated learning frameworks, schools may establish integrated PE as a fundamental element of holistic child development and 21st-century skills. Policymakers need to facilitate this transition via curriculum reform, resource distribution, and inclusive design principles catering to students' diverse cultural, linguistic, and ability backgrounds.

Future Directions

This research delineates numerous significant future trajectories. There is an urgent need for more conceptual clarity about terminology such as interdisciplinary, cross-curricular, and hybrid pedagogy, which are often used interchangeably but with unique meanings. Establishing cohesive theoretical frameworks will improve comparability across investigations and facilitate the accumulation of information. Secondly, future studies should investigate how integrated PE is conceptualized, modified, and implemented worldwide. Culturally responsive frameworks and longitudinal research are essential for evaluating sustained motivation, academic success, physical literacy, and socio-emotional well-being outcomes. Finally, more investigation is necessary to determine how digital innovations, such as AI-driven personalization and gamified learning environments, might be developed to improve inclusion, engagement, and educational results in PE contexts.

CONCLUSION

This research used scientific mapping methodologies, including bibliographic coupling and co-word analysis, to examine the conceptual framework and developing themes in integrated learning within PE. The research produced visual network maps and cluster analyses by examining citation connections and keyword co-occurrences during a decade of scholarship (2015–2024), providing a thorough perspective of the field's evolution.

The bibliographic connection identified five primary research clusters, including student-centered pedagogical methods and digital integrated learning advances, which underscore the increasing integration of physical, cognitive, and social-emotional development in PE. Co-word analysis further elucidated theme tendencies about teacher education, health promotion, motivating engagement, and using digital resources and language learning methodologies. These data indicate that integrated PE is developing into a dynamic and multifaceted pedagogical field. Science mapping offers a descriptive historical and contemporary research analysis and a strategic framework for identifying future pathways. This study advances PE pedagogy by systematically synthesizing the subject and enlightening educators, researchers, and policymakers, aiming to improve curricular integration and comprehensive student development.

REFERENCES

Beni, S., Fletcher, T., & Chróinín, D. N. (2019). Using features of meaningful experiences to guide primary physical education practice. *European Physical Education Review*, *25*(3), 599–615. https://doi.org/10.1177/1356336X18755050

Bodsworth, H. (2017). Barriers and facilitators to using digital technologies in the Cooperative Learning model in physical education. *Physical Education and Sport Pedagogy*, *22*(6), 563–579. https://doi.org/10.1080/17408989.2017.1294672

ISSN 0216-1699 (print) | 2581-2300 (online)

Budler, M., Župič, I., & Trkman, P. (2021). The development of business model research: A bibliometric review. *Journal of Business Research*, *135*, 480–495. https://doi.org/https://doi.org/10.1016/j.jbusres.2021.06.045

Cairney, J., Dudley, D., Kwan, M., Bulten, R., & Kriellaars, D. (2019). Physical Literacy, Physical Activity and Health: Toward an Evidence-Informed Conceptual Model. In *Sports Medicine*. https://doi.org/10.1007/s40279-019-01063-3

Calderón, A., Meroño, L., & MacPhail, A. (2020). A student-centred digital technology approach: The relationship between intrinsic motivation, learning climate and academic achievement of physical education pre-service teachers. *European Physical Education Review*, *26*(1), 241–262. https://doi.org/10.1177/1356336X19850852

Cecchini, J. A., & Carriedo, A. (2020). Effects of an interdisciplinary approach integrating mathematics and physical education on mathematical learning and physical activity levels. *Journal of Teaching in Physical Education*, *39*(1), 121–125. https://doi.org/10.1123/JTPE.2018-0274

Coral, J., & Lleixà, T. (2016). Physical education in content and language integrated learning: Successful interaction between physical education and English as a foreign language. *International Journal of Bilingual Education and Bilingualism*, *19*(1), 108–126. https://doi.org/10.1080/13670050.2014.977766

Coral, J., Urbiola, M., Sabaté, E., Bofill, J., Lleixà, T., & Baños, R. V. (2020). Does the teaching of physical education in a foreign language jeopardise children's physical activity time? A pilot study. *International Journal of Bilingual Education and Bilingualism*, *23*(8), 839–854. https://doi.org/10.1080/13670050.2017.1407289 WE - Social Science Citation Index (SSCI) WE - Arts & Humanities Citation Index (A&HCI)

Correia, V. (2019). Principles of nonlinear pedagogy in sport practice. *Physical Education and Sport Pedagogy*, *24*(2), 117–132. https://doi.org/10.1080/17408989.2018.1552673

Cronin, L. D., Allen, J., Mulvenna, C., & Russell, P. (2018). An investigation of the relationships between the teaching climate, students' perceived life skills development and well-being within physical education. *Physical Education and Sport Pedagogy*, *23*(2), 181–196. https://doi.org/10.1080/17408989.2017.1371684

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, *133*, 285–296. https://doi.org/https://doi.org/10.1016/j.jbusres.2021.04.070

Evans, P. (2015). Self-determination theory: An approach to motivation in music education. *MUSICAE SCIENTIAE*, *19*(1), 65–83. https://doi.org/10.1177/1029864914568044 WE - Social Science Citation Index (SSCI) WE - Arts & Humanities Citation Index (A&HCI)

Fauzi, M. A. (2023). Consumer purchase of halal certified product: a quantitative systematic literature review. *Journal of Islamic Marketing*, *14*(6), 1397–1416. https://doi.org/10.1108/JIMA-09-2021-0299

Gashaj, V., Moeller, K., & Trninic, D. (2024). How Our Bodily Experiences Shape Our Thinking. *Front. Young Minds*, *12:1400609*. https://doi.org/10.3389/frym.2024.1400609

Gil-Arias, A. (2020). Autonomy support, motivational climate, enjoyment and perceived competence in physical education: Impact of a hybrid teaching games for understanding/sport education unit. *European Physical Education Review*, *26*(1), 36–53. https://doi.org/10.1177/1356336X18816997

Gil-Arias, A., Harvey, S., García-Herreros, F., González-Víllora, S., Práxedes, A., & Moreno, A. (2021). Effect of a hybrid teaching games for understanding/sport education unit on elementary students' self-determined motivation in physical education. *European Physical Education Review*, *27*(2), 366–383. https://doi.org/10.1177/1356336X20950174

Gil-López, V., González-Víllora, S., & Hortigüela-Alcalá, D. (2021). Learning foreign languages through content and language integrated learning in physical education: A systematic review. *PORTA LINGUARUM*, *35*, 165–182. https://doi.org/10.30827/portalin.v0i35.15785 WE - Social Science Citation Index (SSCI) WE - Arts & Humanities Citation Index (A&HCI)

ISSN 0216-1699 (print) | 2581-2300 (online)

Griffo, J. M., Hodges-Kulinna, P., Marttinen, R. H. J., & Battistella, S. (2020). A systematic review of integrative practices in physical education (2009–2018). *International Journal of Educational Research*, *104*, 101689. https://doi.org/https://doi.org/10.1016/j.ijer.2020.101689

Haerens, L., Aelterman, N., Vansteenkiste, M., Soenens, B., & Van Petegem, S. (2015). Do perceived autonomy-supportive and controlling teaching relate to physical education students' motivational experiences through unique pathways? Distinguishing between the bright and dark side of motivation. *Psychology of Sport and Exercise*, *16*(P3), 26–36. https://doi.org/10.1016/j.psychsport.2014.08.013

Harvey, S., Cushion, C., & Sammon, P. (2015). Dilemmas faced by pre-service teachers when learning about and implementing a game-centred approach. *European Physical Education Review*, *21*(2), 238–256. https://doi.org/10.1177/1356336X14560773

Hassankhani Dolatabadi, S., & Budinska, I. (2021). Systematic Literature Review Predictive Maintenance Solutions for SMEs from the Last Decade. In *Machines* (Vol. 9, Issue 9). https://doi.org/10.3390/machines9090191

Hemphill, M. A., Templin, T. J., & Wright, P. M. (2015). Implementation and outcomes of a responsibility-based continuing professional development protocol in physical education. *Sport, Education and Society*, *20*(3), 398–419. https://doi.org/10.1080/13573322.2012.761966

Kim, S.-Y. (2024). Physical Education Teachers' Meaning Construction and Practice of Learner-centered Physical Education. *Journal of Industrial Convergence*, *22*(1), 95–103. https://doi.org/https://doi.org/10.22678/JIC.2024.22.1.095

King, R. B., & McInerney, D. M. (2019). Family-support goals drive engagement and achievement in a collectivist context: Integrating etic and emic approaches in goal research. *CONTEMPORARY EDUCATIONAL PSYCHOLOGY*, *58*, 338–353. https://doi.org/10.1016/j.cedpsych.2019.04.003 WE - Social Science Citation Index (SSCI)

Kirk, D. (2013). Educational Value and Models-Based Practice in Physical Education. *Educational Philosophy and Theory*, *45*(9), 973–986. https://doi.org/10.1080/00131857.2013.785352

Kolbe, L. J. (2019). School health as a strategy to improve both public health and education. In J. E. Fielding (Ed.), *Annual Review of Public Health, Vol 40* (Vol. 40, pp. 443–463). https://doi.org/10.1146/annurev-publhealth-040218-043727 WE - Book Citation Index – Social Sciences & Humanities (BKCI-SSH) WE - Book Citation Index – Science (BKCI-S) WE - Science Citation Index Expanded (SCI-EXPANDED) WE - Social Science Citation Index (SSCI)

Kyriakides, E., Tsangaridou, N., Charalambous, C., & Kyriakides, L. (2018). Integrating generic and content-specific teaching practices in exploring teaching quality in primary physical education. *European Physical Education Review*, *24*(4), 418–448. https://doi.org/10.1177/1356336X16685009 WE - Social Science Citation Index (SSCI)

Landi, D., Fitzpatrick, K., & McGlashan, H. (2016). Models based practices in physical education: A sociocritical reflection. *Journal of Teaching in Physical Education*, *35*(4), 400–411. https://doi.org/10.1123/jtpe.2016-0117

Leirhaug, P. E., & MacPhail, A. (2015). 'It's the other assessment that is the key': three Norwegian physical education teachers' engagement (or not) with assessment for learning. *Sport, Education and Society*, *20*(5), 624–640. https://doi.org/10.1080/13573322.2014.975113

Lenzen, B., Buyck, Y., & Bouvier, A. (2023). Teaching Life Skills in Physical Education within Different Teaching Traditions: A Narrative Review. *EDUCATION SCIENCES*, *13*(6). https://doi.org/10.3390/educsci13060605 WE - Emerging Sources Citation Index (ESCI)

Lim, W. M., Kumar, S., & Donthu, N. (2024). How to combine and clean bibliometric data and use bibliometric tools synergistically: Guidelines using metaverse research. *Journal of Business Research*, *182*, 114760. https://doi.org/https://doi.org/10.1016/j.jbusres.2024.114760

Lin, Y. N., Hsia, L. H., & Hwang, G. J. (2021). Promoting pre-class guidance and in-class reflection: A SQIRC-based mobile flipped learning approach to promoting students' billiards skills, strategies, motivation and self-efficacy. *Computers & Education*, *160*. https://doi.org/10.1016/j.compedu.2020.104035 WE - Science Citation Index Expanded (SCI-

ISSN 0216-1699 (print) | 2581-2300 (online)

EXPANDED) WE - Social Science Citation Index (SSCI)

Lorås, H. (2020). The effects of physical education on motor competence in children and adolescents: a systematic review and meta-analysis. *Sports*, *8*(6), 88. https://doi.org/10.3390/sports8060088

Lubans, D. R., Lonsdale, C., Cohen, K., Eather, N., Beauchamp, M. R., Morgan, P. J., Sylvester, B. D., & Smith, J. J. (2017). Framework for the design and delivery of organized physical activity sessions for children and adolescents: rationale and description of the "SAAFE" teaching principles. *International Journal of Behavioral Nutrition and Physical Activity*, *14*. https://doi.org/10.1186/s12966-017-0479-x WE - Science Citation Index Expanded (SCI-EXPANDED) WE - Social Science Citation Index (SSCI)

Macovei, R. A., & Popescu, V. (2022). Conceptual Approaches Regarding the Added Value of Physical Education in the Integrated Teaching Process. *Revista Romaneasca Pentru Educatie Multidimensionala*, *14*(3), 486–501. https://doi.org/10.18662/rrem/14.3/621 WE - Emerging Sources Citation Index (ESCI)

Marron, S., & Coulter, M. (2021). Initial teacher educators' integrating iPads into their physical education teaching. *Irish Educational Studies*, *40*(4), 611–626. https://doi.org/10.1080/03323315.2021.1971103

Martinez, L., Gimenes, M., & Lambert, E. (2022). Entertainment Video Games for Academic Learning: A Systematic Review. *Journal of Educational Computing Research*, *60*(5), 1083–1109. https://doi.org/10.1177/07356331211053848

Marttinen, R., Banville, D., Holincheck, N., Lindsay, V. J. F., & Stehle, S. (2024). Learning to Integrate STEM Into Physical Education Through Asynchronous Professional Development Modules. *Journal of Teaching in Physical Education*, *43*(4), 654–663. https://doi.org/10.1123/jtpe.2023-0137

McNamara, S. W. T., & Haegele, J. A. (2021). Undergraduate students' experiences with educational podcasts to learn about inclusive and integrated physical education. *European Physical Education Review*, *27*(1), 185–202. https://doi.org/10.1177/1356336X20932598

Mejia, C., Wu, M., Zhang, Y., & Kajikawa, Y. (2021). Exploring Topics in Bibliometric Research Through Citation Networks and Semantic Analysis. *Frontiers in Research Metrics and Analytics*, *6*. https://www.frontiersin.org/journals/research-metrics-and-analytics/articles/10.3389/frma.2021.742311

Mónaco, E., Goldman, R. N., & Montoya-Castilla, I. (2022). "The scientific flourishing of Emotion-Focused Therapy": a bibliometric analysis of EFT articles in Web of Science databases. *Person-Centered & Experiential Psychotherapies*, *21*(3), 269–292. https://doi.org/10.1080/14779757.2022.2096105

Mulet-Forteza, C., Genovart-Balaguer, J., & Horrach-Rosselló, P. (2022). Bibliometric Studies in the Hospitality and Tourism Field: A Guide for Researchers. In F. Okumus, S. M. Rasoolimanesh, & S. Jahani (Eds.), *Contemporary Research Methods in Hospitality and Tourism* (pp. 55–76). Emerald Publishing Limited. https://doi.org/10.1108/978-1-80117-546-320221005

Muñoz-Llerena, A., Hernández-Hernández, E., García-de-Alcaraz, A., & Caballero-Blanco, P. (2021). Personal and Social Responsibility Development in a Volleyball Hybrid Positive Youth Development Program: A Mixed Methods Approach. *Frontiers in Psychology*, *12*. https://doi.org/10.3389/fpsyg.2021.675532

Myer, G. D., Faigenbaum, A. D., Edwards, N. M., Clark, J. F., Best, T. M., & Sallis, R. E. (2015). Sixty minutes of what? A developing brain perspective for activating children with an integrative exercise approach. *British Journal of Sports Medicine*, *49*(23), 1510–1516. https://doi.org/10.1136/bjsports-2014-093661 WE - Science Citation Index Expanded (SCI-EXPANDED) WE - Social Science Citation Index (SSCI)

Paul, J., & Barari, M. (2022). Meta-analysis and traditional systematic literature reviews—What, why, when, where, and how? *Psychology & Marketing*, *39*(6), 1099–1115. https://doi.org/https://doi.org/10.1002/mar.21657

Richards, K. A. R. (2015). Role socialization theory: The sociopolitical realities of teaching physical

ISSN 0216-1699 (print) | 2581-2300 (online)

education. *European Physical Education Review*, *21*(3), 379–393. https://doi.org/10.1177/1356336X15574367 WE - Social Science Citation Index (SSCI)

Rudd, J. R. (2021). An ecological dynamics conceptualisation of physical 'education': Where we have been and where we could go next. *Physical Education and Sport Pedagogy*, *26*(3), 293–306. https://doi.org/10.1080/17408989.2021.1886271

Säfvenbom, R., Haugen, T., & Bulie, M. (2015). Attitudes toward and motivation for PE. Who collects the benefits of the subject? *Physical Education and Sport Pedagogy*, *20*(6), 629–646. https://doi.org/10.1080/17408989.2014.892063

Saini, G. K., Lievens, F., & Srivastava, M. (2022). Employer and internal branding research: a bibliometric analysis of 25 years. *Journal of Product & Brand Management*, *31*(8), 1196–1221. https://doi.org/10.1108/JPBM-06-2021-3526

Salvador-Garcia, C., Chiva-Bartoll, O., & Hortigüela-Alcalá, D. (2024). Finding the place of content and language integrated learning in physical education within the models-based practice framework. *European Physical Education Review*, *30*(1), 3–18. https://doi.org/10.1177/1356336X231172488

Schmidthaler, E., Schalk, M., Schmollmüller, M., Hinterplattner, S., Hörmann, C., Anđić, B., Rottenhofer, M., Lavicza, Z., & Sabitzer, B. (2023). The interdisciplinary implementation of poly-universe to promote computational thinking: Teaching examples from biological, physical, and digital education in Austrian secondary schools. *Frontiers in Psychology*, *14*. https://doi.org/10.3389/fpsyg.2023.1139884

Sinkovics, N. (2016). Enhancing the foundations for theorising through bibliometric mapping. *International Marketing Review*, *33*(3), 327–350. https://doi.org/10.1108/IMR-10-2014-0341

Starck, J. R., Richards, K. A. R., & O'Neil, K. (2018). A Conceptual Framework for Assessment Literacy: Opportunities for Physical Education Teacher Education. *Quest*, *70*(4), 519–535. https://doi.org/10.1080/00336297.2018.1465830

Stuart, D. B., & Petersen, D. (2022). Citation Analysis and Medical Reference: PubMed, Web of Science, and Scopus. *Journal of Electronic Resources in Medical Libraries*, *19*(4), 121–126. https://doi.org/10.1080/15424065.2022.2150352

Sun, Y., Shahzad, M., & Razzaq, A. (2022). Sustainable organizational performance through blockchain technology adoption and knowledge management in China. *Journal of Innovation & Knowledge*, *7*(4), 100247. https://doi.org/https://doi.org/10.1016/j.jik.2022.100247

Syaukani, A. A., Mohd Hashim, A. H., & Subekti, N. (2023). Conceptual Framework of Applied Holistic Education in Physical Education and Sports: A Systematic Review of Empirical Evidence. *Physical Education Theory and Methodology*, *23*(5 SE-Review Articles), 794–802. https://doi.org/10.17309/tmfv.2023.5.19

Syofyan, R. R., Kardjono, K., & Hidayah, N. (2022). Penerapan Metode Latihan Drill Shooting menggunakan Punggung Kaki dan Kaki Bagian Dalam terhadap Kecepatan dan Ketepatan Shooting Futsal. *Jurnal Kepelatihan Olahraga*, *14*(2), 112–116.

Tiberius, V., Rietz, M., & Bouncken, R. B. (2020). Performance Analysis and Science Mapping of Institutional Entrepreneurship Research. In *Administrative Sciences* (Vol. 10, Issue 3). https://doi.org/10.3390/admsci10030069

Vlcek, P., Svobodová, H., & Planinc, T. R. (2019). Integrating Physical Education and Geography in elementary education in the Czech Republic and the Republic of Slovenia. *Compare-A Journal of Comparative and International Education*, *49*(6), 868–887. https://doi.org/10.1080/03057925.2018.1466267 WE - Social Science Citation Index (SSCI)

Ward, P., Mitchell, M. F., van der Mars, H., & Lawson, H. A. (2021). Chapter 3: PK⇓12 school physical education: conditions, lessons learned, and future directions. *Journal of Teaching in Physical Education*, *40*(3), 363–371. https://doi.org/10.1123/JTPE.2020-0241

Zhang, J. L., Soh, K. G., Bai, X. R., Anuar, M. A. M., & Xiao, W. S. (2024). Optimizing learning outcomes in physical education: A comprehensive systematic review of hybrid pedagogical

ISSN 0216-1699 (print) | 2581-2300 (online)

models integrated with the Sport Education Model. *PLOS ONE*, *19*(12). https://doi.org/10.1371/journal.pone.0311957 WE - Science Citation Index Expanded (SCI-EXPANDED)

Zilz, W., & Pang, Y. H. (2021). Application of assistive technology in inclusive classrooms. *Disability and Rehabilitation-Assistive Technology*, *16*(7), 684–686. https://doi.org/10.1080/17483107.2019.1695963

ISSN 0216-1699 (print) | 2581-2300 (online)