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Curriculum Alignment and Physical Literacy Development in International K-12 Physical Education

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Abstract: Against the backdrop of international basic education curricula increasingly emphasising students' holistic development, physical education has gradually shifted from the mere transmission of motor skills towards the comprehensive cultivation of physical literacy. Curriculum alignment, as a crucial approach to coordinating curriculum objectives, instructional content, organisational implementation, and learning assessment, is of significant importance for enhancing the quality of K-12 physical education curriculum construction. Drawing on international physical education curriculum standards and the concept of physical literacy, this paper analyses the internal relationships among vertical articulation, horizontal integration, and goal coherence in primary and secondary physical education. It proposes construction ideas centred on the planning of distinctive physical education curricula, instructional organisation, resource coordination, and operational management, and explores implementation pathways to promote students' physical literacy development from the perspectives of multidimensional assessment, process documentation, sustained participation, and curriculum improvement, with the aim of providing reference for international K-12 physical education curriculum construction and school physical education management.

Keywords: International K-12; K-12 physical education; curriculum alignment; physical literacy

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1. Introduction

In 2020, the General Office of the Central Committee of the Communist Party of China and the General Office of the State Council issued the Opinions on Comprehensively Strengthening and Improving School Physical Education in the New Era, which explicitly proposed strengthening the development of physical education curricula and teaching materials, emphasising curriculum articulation across different educational stages, focusing on the development of students' core competencies, and improving the school physical education teaching, training, and competition systems. This policy requirement reflects the developmental direction of school physical education shifting from curriculum provision to curriculum quality improvement,

and also provides a practical basis for analysing international K-12 physical education curriculum construction. K-12 education generally refers to the basic education stage from kindergarten through to the twelfth grade of high school, and its physical education curriculum is characterised by a long learning cycle, significant developmental differences, and diverse forms of curriculum organisation. International curricula are not a unified teaching model; different countries and curriculum organisations differ in their goal setting, content arrangements, and assessment standards, but they generally attach importance to motor competence, health knowledge, cooperation awareness, and the willingness to engage in sustained physical activity[1].

2. The Alignment Logic of International Physical Education Curricula

2.1. Vertical Articulation of Curriculum Objectives

Curriculum alignment emphasises the consistency among intended learning outcomes, instructional activities, and assessment evidence.For K-12 physical education spanning multiple stages, curriculum objectives need not only to reflect the teaching requirements within a single grade but also to form a sequence of objectives with developmental continuity. If different stages lack a shared curriculum plan, problems such as repetition of fundamental motor skill training, discontinuities in specialised skill learning, and the separation of health knowledge from motor practice are likely to arise[1]. A representative approach in international physical education curricula is to determine stage-specific objectives according to students' physical developmental characteristics and motor learning patterns. SHAPE America's physical education standards set learning performance indicators for different grade spans, emphasising students' development in motor skills, knowledge and understanding, and personal and social competence. The Australian Health and Physical Education Curriculum organises learning content according to the Foundation year and subsequent two-year bands, providing a continuous curriculum basis for motor competence development.

2.2. Horizontal Matching of Instructional Content

The horizontal alignment of physical education curricula is primarily manifested in the mutual matching of learning objectives, instructional content, activity tasks, and assessment requirements. Curriculum construction cannot determine teaching arrangements solely based on the popularity of sports; rather, it should examine whether the selected activities can effectively carry the established learning objectives. The International Baccalaureate Middle Years Programme (MYP) physical and health education emphasises learning through physical activity while helping students understand the relationship between physical activity and health. Its curriculum content may involve individual sports, team sports, aesthetic movement, and adventure activities, and allows schools to select appropriate content according to their circumstances. This arrangement reflects the role of sports as curricular vehicles rather than treating the number of activities as the primary indicator of curriculum quality. In the construction of distinctive physical education curricula, the same sport can undertake different learning tasks. Taking basketball as an example, lower grades can develop movement coordination through passing, catching, and movement games; middle grades can learn spatial judgement and cooperative coordination through small-sided games; and upper grades can engage in comprehensive learning centred on game strategies, regulation of exercise load, and team organisation[2].

2.3. Value Integration of Physical Literacy

Physical literacy is an important concept for understanding the developmental goals of international physical education. The International Physical Literacy Association defines it as the motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for engagement in physical activities for life. This concept emphasises the connections among physical, cognitive, and affective factors and cannot be simply equated with fitness levels or single-sport performance. From the perspective of school curriculum construction, physical literacy provides a shared value orientation for different stages and different sports. Motor skills are an important foundation for participation in physical activity, but students with better skills do not necessarily have a sustained willingness to exercise; students who have acquired health knowledge may not necessarily be able to translate that knowledge into stable exercise behaviour[3]. Therefore, curriculum construction must attend to whether students are willing to be active, whether they can reasonably select activities, and whether they can apply acquired abilities in different environments.

3. Construction and Management of Distinctive Physical Education Curricula

3.1. Coordinating Curriculum Planning Across Stages

Distinctive physical education curriculum planning needs to address the relationship between national or regional curriculum requirements, international curriculum frameworks, and school-specific development. Different international curricula have their own scopes of application and implementation requirements; schools cannot directly treat the activity arrangements of a particular curriculum organisation as universal standards, nor should they piece together content from different curricula without justification of objectives. Schools can designate a curriculum leader to organise physical education teachers, stage coordinators, and relevant support personnel to jointly conduct a curriculum needs analysis. The analysis covers students' movement foundations, curriculum interests, facility conditions, staffing structure, and local sports resources, with a focus on identifying content gaps and articulation problems in the existing curriculum. On this basis, an overall school physical education curriculum plan is formed, clarifying the relationship between foundational learning content and distinctive extension content. The curriculum structure can adopt an organisation combining foundational courses, specialised extensions, and comprehensive practice. Foundational courses undertake the tasks of developing fundamental motor skills, health knowledge, and physical activity competence, ensuring that students gain broad movement experiences; specialised extensions establish modules such as ball games, swimming, athletics, gymnastics, or outdoor activities according to school characteristics; and comprehensive practice promotes the application of knowledge and skills through school events, sports demonstrations, and appropriate competition contexts[1].

3.2. Optimising Unit Organisation and Implementation

Curriculum planning can only have a practical effect on students' physical literacy development when it is translated into continuous teaching units. Distinctive physical education curricula should avoid treating unit teaching as a simple combination of isolated technical movements; instead, learning activities should be organised around complete movement contexts so that students understand the relationship between movement techniques, rules, and practical application. When designing units, teachers need to clarify the specific abilities students should possess upon completion of learning, and then arrange skill practice, contextual tasks, and assessment activities. For example, a football unit can set the learning task of "using space rationally in small-sided games", integrating passing and receiving, off-the-ball movement, observation

and decision-making, and cooperative communication throughout the unit. Students not only need to complete prescribed movements but also need to understand the conditions under which movements are used in game situations. The IB MYP physical and health education emphasises the connections among knowledge and understanding, planning for performance, applying and performing, and reflecting and improving performance[4]. This approach can provide a reference for the unit organisation of distinctive curricula. Teachers can ascertain students' existing abilities at the beginning of the unit, gradually increase task complexity during teaching, and judge goal attainment through observation of movement performance and learning reflection.

3.3. Coordinating Multiple Teaching Resources

The implementation of physical education curricula is greatly affected by factors such as facilities, equipment, staffing, and time, and distinctive curricula particularly require schools to carry out cross-departmental resource coordination. Activities such as swimming, ice and snow sports, and outdoor adventure often involve specialised facilities and safety requirements, and it is difficult to complete all safeguarding work relying solely on the regular physical education teaching and research group. Schools should establish a curriculum resource inventory, incorporating existing venues, sports equipment, teacher expertise, available time slots, and external cooperation conditions into unified management. Resource allocation needs to be comprehensively judged according to curriculum objectives and student numbers, rather than being distributed solely according to the influence of activities or competition results. For basic teaching venues with high usage frequency, priority should be given to ensuring the needs of regular physical education classes; distinctive activities can improve resource utilisation through staggered scheduling, venue zoning, and module rotation. Teacher coordination is an important part of curriculum resource management. Different teachers have different strengths in sports specialisations, teaching methods, and student development assessment, and schools can establish cross-stage teaching and research teams to conduct curriculum standard study, collaborative lesson planning, and teaching observation[2].

3.4. Improving Curriculum Operation Safeguards

Distinctive physical education curricula are characterised by multiple participating parties, complex implementation environments, and long construction cycles, requiring the establishment of corresponding operational management systems. If curriculum responsibilities are unclear, problems such as conflicts between teaching arrangements and venue use, inconsistent assessment standards, and inadequate implementation of safety responsibilities are likely to arise. Schools can establish a curriculum coordination mechanism involving teaching administrators, physical education subject leaders, and relevant support departments, clarifying responsibilities for curriculum review, teaching execution, resource support, and quality inspection. The physical education teaching and research group is responsible for the professional design of curriculum content and teaching assessment; the school teaching management department is responsible for scheduling and implementation supervision; and logistics and relevant departments undertake facility maintenance and environmental support. During curriculum implementation, a routine operation inspection system should be established, focusing on the execution of curriculum plans, students' actual participation, equipment provision, teachers' teaching load, and safety management. Inspection results should serve curriculum adjustment, and the completeness of documentation should not be used as the primary basis

for judging teaching quality[5].

4. Assessment Support for Physical Literacy Development

4.1. Constructing Multidimensional Assessment Indicators

Physical education curriculum assessment needs to be consistent with curriculum development goals. If schools concentrate assessment on speed, strength, or specialised technical performance, important aspects of physical literacy such as motivation, confidence, cognition, and autonomous participation are easily neglected. Establishing multidimensional assessment indicators is an important step in promoting the implementation of curriculum objectives. The IB MYP physical and health education sets four assessment criteria—knowing and understanding, planning for performance, applying and performing, and reflecting and improving performance—reflecting the characteristic that assessment content goes beyond single-sport performance[4]. Schools can draw on this approach of matching objectives with evidence to establish interrelated assessment dimensions such as motor competence, health cognition, participation attitudes, and social adaptation. Motor competence assessment should focus on the quality of fundamental movements, the application of specialised skills, and judgement in movement contexts, rather than being limited to single test results; health cognition assessment can examine students' understanding of exercise safety, load regulation, and health behaviours; participation attitude assessment should value autonomous practice willingness, task engagement, and sustained participation; and social adaptation assessment can combine observation of cooperation, communication, and rule compliance in authentic activities[5].

4.2. Strengthening Process Evidence Collection

The development of students' physical literacy is continuous and contextual, and it is difficult to judge changes in students' movement confidence, autonomous participation, and practical application solely through end-of-semester examinations. Schools need to embed assessment in daily teaching and present students' developmental processes through multiple forms of evidence. Teachers can design concise observation records according to unit objectives, focusing on students' movement completion, learning strategies, and participation performance. For ball game units, teachers can record students' passing choices, movement awareness, and teamwork performance under different oppositional conditions; for fitness units, teachers can observe whether students can reasonably adjust exercise intensity and explain the basic arrangements in an exercise plan. Student self-assessment and peer assessment also have value, but assessment tasks must be specific, avoiding vague statements such as "good attitude" or "active performance". Teachers can ask students to reflect on a real practice session, explaining the difficulties they encountered, the adjustments they made, and their subsequent improvement goals, so that reflection is grounded in specific learning experiences. Curriculum assessment can also appropriately use exercise videos, learning portfolios, and digital recording tools, but technology use should not replace teachers' professional judgement.

4.3. Promoting Sustained Student Participation

An important manifestation of physical literacy development is that students remain willing and able to participate in physical activities suited to them after leaving the specific classroom environment. Therefore, physical education curricula need not only to focus on in-class skill acquisition but also to help students

develop the ability to select activities and a sense of autonomous participation[3]. Schools can improve students' participation experiences by enriching curriculum offerings and providing moderate choice. Different students have different interests in competitive sports, rhythmic activities, outdoor sports, and individual fitness activities, and the diversity of curriculum content can increase opportunities for students to find suitable forms of exercise. Distinctive physical education curricula should not be developed solely around a school's advantageous competitive sports but should take into account the needs of students with different motor abilities, physical conditions, and cultural backgrounds. In teaching, teachers should value students' perceptions of success and competence improvement. For students with weaker foundations, participation barriers can be reduced through tiered tasks, individual progress feedback, and cooperative practice; for students with stronger abilities, tasks such as tactical decision-making, activity organisation, and autonomous training can be added. Such arrangements help students form a positive self-perception of movement and reduce the phenomenon of avoiding physical activity due to repeated failure.

4.4. Establishing a Curriculum Improvement Loop

Curriculum alignment is not a one-off task completed before curriculum implementation but should run through the entire process of planning, teaching, assessment, and revision. Schools need to continuously collect curriculum implementation information, examine whether intended learning objectives have been achieved, and adjust curriculum content and management approaches accordingly. Curriculum quality analysis can be conducted from aspects such as goal attainment, teaching implementation, resource allocation, and student experience. Goal attainment mainly examines whether students have acquired the motor skills and health knowledge expected by the curriculum; teaching implementation focuses on whether activity tasks are appropriate and whether actual practice is sufficient; resource allocation reflects whether curriculum arrangements match school conditions; and student experience can help schools identify participation barriers and insufficient curriculum attractiveness. In terms of stage articulation, schools should establish a cross-grade curriculum communication system. Teachers at different stages can analyse whether the articulation of fundamental skills, activity difficulty, and assessment requirements is reasonable based on students' learning performance. For example, when junior secondary students generally lack a certain fundamental movement ability, it is necessary to trace back to the teaching opportunities and learning requirements for the relevant content at the primary stage, rather than simply attributing the problem to individual student ability deficits[1].

5. Conclusion

The curriculum construction of international K-12 physical education involves not only the selection of sports and the arrangement of instructional content but also the continuity of learning objectives across stages, the appropriateness of curriculum resources, and the sustained development of students' physical literacy. Curriculum alignment provides a clear approach for coordinating these elements, and its key lies in enabling curriculum objectives to be implemented in specific instructional activities and in verifying learning outcomes through appropriate assessment evidence. From the perspective of school physical education curriculum construction and management, distinctive physical education curricula should adhere to the combination of foundational and selective content, ensuring that all students obtain necessary movement learning experiences while also providing space for individualised motor development. Schools need to coordinate stage planning, instructional organisation, staffing, facility use, and curriculum assessment

to reduce disconnections between different components. Physical literacy assessment should go beyond single fitness or skill scores and value the joint development of students' motor competence, participation motivation, health cognition, and autonomous behaviour.

Disclosure statement

The author declares no conflict of interest.

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