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# Interdisciplinary Thematic Instruction in Physical Education and Health Curriculum: Practical Requirements and Design Strategies

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## ABSTRACT

**Research Background:** This study addresses the practical demands of interdisciplinary thematic teaching in physical and health education against the backdrop of deepening reforms in basic education curriculum.

**Research Purpose:** It aims to resolve real-world challenges such as the weakening of disciplinary identity and the fragmentation of teaching-assessment mechanisms through theoretical construction and model innovation, systematically exploring discipline-specific instructional implementation pathways.

**Research Methods:** Employing documentary analysis and logical deduction, this research deconstructs the student-centered, teacher-guided, and core literacy-oriented conceptual framework of interdisciplinary teaching, crystallizing three-dimensional practical requirements: reinforcing disciplinary essence, deepening goal orientation, and optimizing evaluative feasibility.

**Research Results:** By introducing and adapting the "C-POTE" model, a five-dimensional operational framework is established, comprising conceptual clusters anchoring cognitive foundations, problem chains driving learning progression, objective layers integrating instructional direction, task clusters decomposing practical phases, and evidence sets evaluating pedagogical outcomes.
**Research Conclusions:** The study demonstrates that the model achieves profound integration between interdisciplinary pedagogy and the ontological nature of physical education through structured design, with its "teacher-guided, student-centered" dual-agent mechanism effectively synergizing three-dimensional goals: physical health enhancement, sports spirit cultivation, and core literacy development.
**Research Value:** The findings exhibit dual theoretical and practical significance, offering a unified theoretical paradigm ("disciplinary logic-cognitive principles-practical strategies") for interdisciplinary physical education while empowering teacher professional development through transferable pedagogical models and case systems, thereby substantially advancing the iterative improvement of physical education quality.

**Keyword:** "C-POTE" Model; Physical and Health Education Curriculum; Interdisciplinary Thematic Instruction; Instructional Design

## Introduction

Interdisciplinary thematic learning constitutes a pedagogical approach where students engage in self-directed exploration under teacher guidance. To optimize student learning outcomes, the prerequisite lies in teachers' instructional competence. Interdisciplinary thematic instruction, predominantly teacher-designed, emphasizes curriculum development through multi-disciplinary knowledge integration around a central theme. This paradigm transcends single-subject constraints, employing holistic thinking to achieve overarching educational objectives, thereby significantly advancing core competency cultivation. It has emerged as an innovative educational framework for holistic student development in contemporary schooling. Guo Hua contends that interdisciplinary thematic learning not only originates from disciplinary curriculum foundations but also embodies the comprehensive and practical orientation of compulsory education reform [1]. This innovative curricular design approach has become an indispensable component of physical education reform [2]. Despite this promising trajectory, scholars like Yu Sumei [3]. identify persistent challenges since the conceptualization of interdisciplinary thematic learning, particularly regarding its theoretical comprehension and practical implementation in physical education and health curriculum.

Consequently, this study investigates interdisciplinary thematic instruction models in physical education and health curriculum, focusing on the "C-POTE" model as a pivotal framework. It systematically examines implementation challenges encountered by frontline physical educators and proposes evidence-based solutions, ultimately aiming to enhance instructional quality and facilitate comprehensive student development.

## 1. Connotation of Interdisciplinary Thematic Instruction in Physical Education and Health Curriculum

Against the backdrop of national prioritization of youth physical health in the new era, the integration of "Physical Education" and "Health Education" into the "Physical Education and Health Curriculum" reflects the epochal and comprehensive nature of educational reform [4].

First, interdisciplinary thematic instruction in physical education and health curriculum prioritizes student physical well-being as its fundamental requirement. This approach constitutes not merely a distinctive pedagogical activity but also an optimized strategy for enhancing instructional quality and cultivating core competencies, characterized by practicality, comprehensiveness, and inquiry-based characteristics .Second, physical educators must curate disciplinary content that demonstrates academic value and educational significance when implementing interdisciplinary thematic instruction, thereby nurturing well-rounded talents [5]. Third, while inheriting traditional pedagogical principles, this instructional paradigm innovatively integrates advanced educational philosophies, encompassing methodological innovation, learning attitude cultivation, and activity design. It embodies profound reflections on pedagogical choices and holistic comprehension of teaching-learning dynamics and knowledge value. Notably, a critical distinction exists between interdisciplinary thematic learning and instruction within this context. Interdisciplinary thematic learning in physical education and health curriculum should target core competency development, emphasizing students' capacity to synthesize multi-disciplinary knowledge and skills for real-world problem-solving [6]. Although subtle conceptual differences exist between learning and instruction paradigms, both share the ultimate goal of fostering holistic student development and competency cultivation.

Despite prolific academic discourse in this domain, persistent conceptual ambiguities-particularly the conflation of "learning" with "instruction"-have resulted in theoretical-practical disconnections for frontline practitioners. While scholars have explicated the connotation of interdisciplinary thematic instruction from multiple perspectives, academic consensus remains elusive. this study defines interdisciplinary thematic instruction in physical education and health curriculum as a student-centered approach initiated through teacher-facilitated cross-disciplinary engagement, aiming to enhance physical health, and advance core competencies.[7] This investigation specifically addresses practical challenges encountered by physical educators, such as instructional goal deviation due to the absence of standardized implementation frameworks in interdisciplinary thematic teaching practices.

## 2. Reality Requirements for Interdisciplinary Thematic Instruction in Physical Education and Health Curriculum

Amidst evolving educational landscapes in the 21st century, implementing interdisciplinary thematic instruction in physical education and health curriculum entails three operational imperatives: (1) clarifying disciplinary identity in physical education while

intensifying teachers' problem awareness; (2) deepening learning objective orientation to elevate task design quality; and (3) optimizing assessment operability to advance the integration of teaching.

### 2.1 Clarifying Disciplinary Identity in Physical Education and Enhancing Teachers' Problem Awareness

The core of school physical education resides in the Physical Education and Health Curriculum[7], which aims to cultivate students' core competencies by addressing practical challenges within pedagogical practice[8]. Instructional content must prioritize discipline-specific issues, ensuring fidelity to physical education's disciplinary identity rather than overemphasizing peripheral subjects. As organizers and practitioners of interdisciplinary thematic instruction, physical educators' cognitive frameworks and operational decisions directly determine instructional efficacy[9]. The paradigm emphasizes identifying authentic problems within real-world contexts, necessitating heightened problem awareness through multifaceted professional development. Educators must formulate logically rigorous, hierarchically structured, and pedagogically accessible problems rooted in physical education's disciplinary characteristics to foster students' practical problem-solving capacities. Aligned with WHO's competency-based education framework, this approach requires tailoring challenges to students' developmental stages, enabling authentic knowledge application in socio-physical contexts. Thus, reinforcing physical education's disciplinary centrality and cultivating teachers' problem awareness constitute prerequisites for precise instructional targeting.

### 2.2 Deepening Learning Objective Orientation and Elevating Task Design Quality

Interdisciplinary thematic learning, defined as competency-anchored pedagogical activities, mandates designing explicit discipline-concept-aligned learning objectives to advance core competencies [10]. Effective objective formulation demands educators' dual comprehension of interdisciplinary principles and physical education's disciplinary essence, coupled with students' mastery of cross-domain knowledge/skills. Objectives must avoid vagueness and evaluative ambiguity, instead emerging from authentic life scenarios to guide systematic knowledge integration and practical capability cultivation. Corresponding learning tasks should embody "performance-based assessment tasks" featuring five constitutive elements: contextualization, challenge specification, role assignment, product creation, and audience engagement. While encompassing moral education, intellectual development, and innovation cultivation, the central task remains implementing holistic education policies through competency-oriented instruction for all learners [11]. Hierarchically structured tasks progressively enhance students' autonomous problem-solving abilities, underscoring the imperative of optimizing task design quality throughout instructional planning.

### 2.3 Optimizing Assessment Operability and Promoting Teaching – Learning - Evaluation Integration

Interdisciplinary thematic learning in physical education and health curriculum aims to cultivate students' cross-disciplinary literacy rather than discipline-bound competencies, generating both process-oriented outcomes (e.g., skill development trajectories) and summative outcomes (e.g., performance-based achievements) during the learning process [12].

The 2022 New Curriculum Standards emphasize diversified assessment modalities and multi-stakeholder evaluative engagement, yet the operational complexities of such frameworks often overwhelm frontline physical educators, particularly when implementing non-observable metrics. When assessment tools lack operability, dual pedagogical dilemmas emerge: teachers cannot effectively evaluate student performance, while students remain deprived of constructive feedback, ultimately perpetuating learning stagnation. This necessitates operationalizable assessment frameworks that reconcile three critical dimensions: (1) methodological appropriateness for cross-disciplinary contexts; (2) alignment with teachers' professional literacy; and (3) bidirectional evaluative focus on both instructional efficacy and learning outcomes.

As Zhu Dequan elucidates, educators must enhance interdisciplinary literacy across three dimensions-pedagogical philosophy, instructional methodology, and cognitive flexibility-to achieve "assessment-driven teaching" without overreliance on external technologies[13]. The bilateral nature of teaching-learning processes mandates dual evaluation pathways: teacher-focused appraisal (e.g., objective evaluation of instructional competency and curriculum design rigor) and student-centered assessment (e.g., multidimensional metrics for core competencies, including explicit evaluation of decision-making capacity and critical thinking through process-oriented and summative assessments). Therefore, establishing competency-oriented, pragmatically operable evaluation systems that holistically address both actors' classroom performance is imperative for advancing teaching-learning-evaluation integration.

## 3. Implementation Strategies for Interdisciplinary Instruction in Physical Education and Health Curriculum

Effective implementation of pedagogical processes necessitates innovative instructional strategies and conceptual frameworks. Given the operational imperatives of interdisciplinary thematic instruction in physical education-spanning conceptual grounding, problem orientation, objective alignment, task design, and evaluative integration (hereafter termed the "C-POTE" pedagogical model)-this study proposes a discipline-specific adaptation framework[14]. Through synthesizing the C-POTE model's structural logic with the unique characteristics of physical education's interdisciplinary thematic instruction, the research embarks on exploring novel pedagogical paradigms. Specifically, it investigates the model's curricular compatibility through evidence-based validation, while delineating practical pathways for developing interdisciplinary thematic case prototypes. Furthermore, the study identifies critical research trajectories, including the operationalization of competency-

oriented assessment mechanisms under the C-POTE framework, which will be systematically examined in subsequent investigations.

### 3.1 The C-POTE Pedagogical Model: Architecture and Theoretical Positioning

In 2022, Zhan developed a core competency-oriented pedagogical framework grounded in macro-concept theory, formally termed the "C-POTE" model-an acronym denoting Concept Clusters (C), Problem Chains (P), Objective Tier (O), Task Modules (T), and Evidence Portfolio (E).

The "C-POTE" model proposed in this study is rooted in the macro-concept theory, a well-established pedagogical framework with extensive scholarly exploration in China. Notable precedents include Liu Hui's (2020) tripartite instructional framework-"Preparation, Design, Application"-for macro-concept operationalization [15]. Distinguished by its disciplinary specificity, the C-POTE model demonstrates superior practical applicability and operational feasibility in classroom settings, achieved through synergistic alignment with core instructional elements and empirical accommodation of teachers' contextual needs. Its implementation enables educators to precisely target pedagogical priorities, thereby catalyzing students' holistic development.

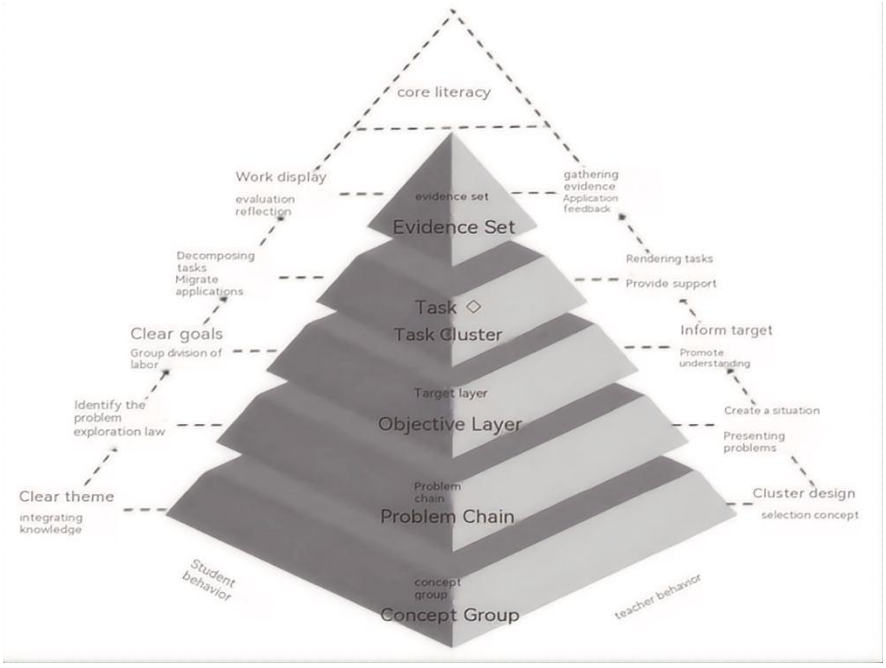


**Figure 1:** "C-POTE" model

As illustrated in Figure 1 [14], the model's ultimate objective resides in cultivating students' all-around moral-intellectual-physical-aesthetic-labor development and core competencies. Comprehension of its architecture requires deconstructing the underlying logic through five hierarchically interconnected yet reciprocally influential dimensions: (1) Concept Clusters: Serving as the epistemological foundation for interdisciplinary content integration, these encompass dual behavioral matrices-teacher-led disciplinary knowledge categorization and macro-concept selection, coupled with student-driven thematic clarification and knowledge systematization. (2) Problem Chains: Generated from curated macro-concepts, these provide contextualized inquiry vectors, manifested through educators' situated problem design and learners' problem pattern recognition. (3) Objective Tier: Operationalizing core competencies into tangible benchmarks via teacher-mediated goal articulation and student-centered collaborative goal internalization. (4)

Task Modules: Functioning as praxis-oriented vehicles for scaffolded knowledge transfer, where instructors provide structural frameworks while learners execute task decomposition and theoretical-practical bridging. (5) Evidence Portfolio: Constituting the evaluative nucleus through multimodal data analytics (teacher-collected processual evidence) and metacognitive reflection (student-generated summative artifacts).

Contrary to linear progression assumptions, the model embodies a cyclical pedagogical pathway (see Figure 2). The Task Modules phase dynamically informs Concept Clusters refinement through positive feedback mechanisms, creating an iterative optimization loop. This non-hierarchical interactivity ensures continuous enhancement across all model components, thereby actualizing its self-regulatory pedagogical ecosystem.

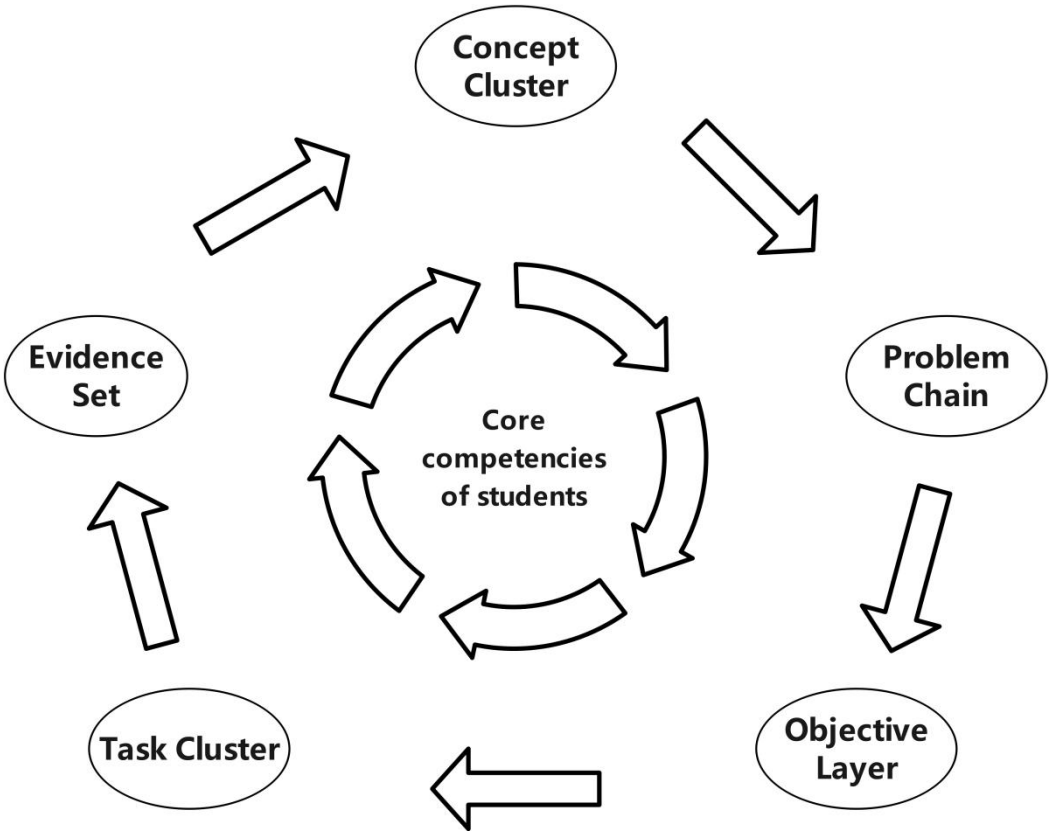


**Figure 2.** Schematic Pathway of the C-POTE Pedagogical Model

Interdisciplinary thematic instruction in physical education and health curricula faces critical operational challenges, including how to effectively implement cross-disciplinary pedagogical interventions and how to establish valid assessment metrics for instructional efficacy. Frontline physical educators require innovative pedagogical frameworks to streamline content curation, optimize instructional modalities, and diversify evaluative frameworks, thereby enhancing the operational feasibility of interdisciplinary thematic instruction.

The C-POTE model addresses these imperatives through three strategic dimensions: 1) Disciplinary Anchoring: Educators must adopt this model as a guiding paradigm, synergizing its architecture with the kinesthetic specificity of physical education to amplify curricular strengths.

2) Praxis-Theory Mediation: Serving as a transformative vector, the model enables cultivation of multifaceted learning competencies while pioneering adaptive pedagogical approaches. Its implementation reconciles theoretical prescriptions with classroom realities, resolving chronic issues such as superficial conceptual internalization, deficient problem-based pedagogy, ambiguous competency targeting, and non-systematic assessment protocols. 3) Curricular Evolution: Though representing an incipient phase in disciplinary integration, the C-POTE model constitutes an imperative transitional phase for addressing extant gaps in interdisciplinary instruction. Its disciplinary adaptation, while modest in scope, establishes critical infrastructure for transdisciplinary pedagogical convergence.

This tripartite implementation pathway (Figure 2) demonstrates how the model's cyclical feedback mechanisms (Concept Clusters ↔ Task Modules) foster continuous optimization, positioning it as both a diagnostic toolkit for pedagogical refinement and a scalable prototype for competency-oriented curriculum reform.

### 3.2 Interdisciplinary Thematic Instructional Design in Physical Education: A C-POTE Case Study

Despite the C-POTE model's inherent interdisciplinary compatibility and theoretical alignment with kinesthetic pedagogy, its empirical application in physical education remains underexplored. This epistemic gap necessitates rigorous methodological interventions through case study research and logical-analytical frameworks to operationalize its pedagogical scaffolding. Our design protocol adheres to two axiomatic principles: (1) Standards-Driven Curricular Alignment: The instructional blueprint rigorously references the Compulsory Education Physical and Health Curriculum Standards (2022 Edition), ensuring fidelity to mandated competency benchmarks while innovating within interdisciplinary parameters[16]. (2) Authentic Contextualization: Grounded in the August 2022 Beibei District Mountain Fire Emergency Response in Chongqing, this case leverages historically situated problematics to enhance students' socio-ecological consciousness through crisis management kinematics.

As delineated in Figure 3, the implementation roadmap unfolds through five C - POTE - anchored phases.

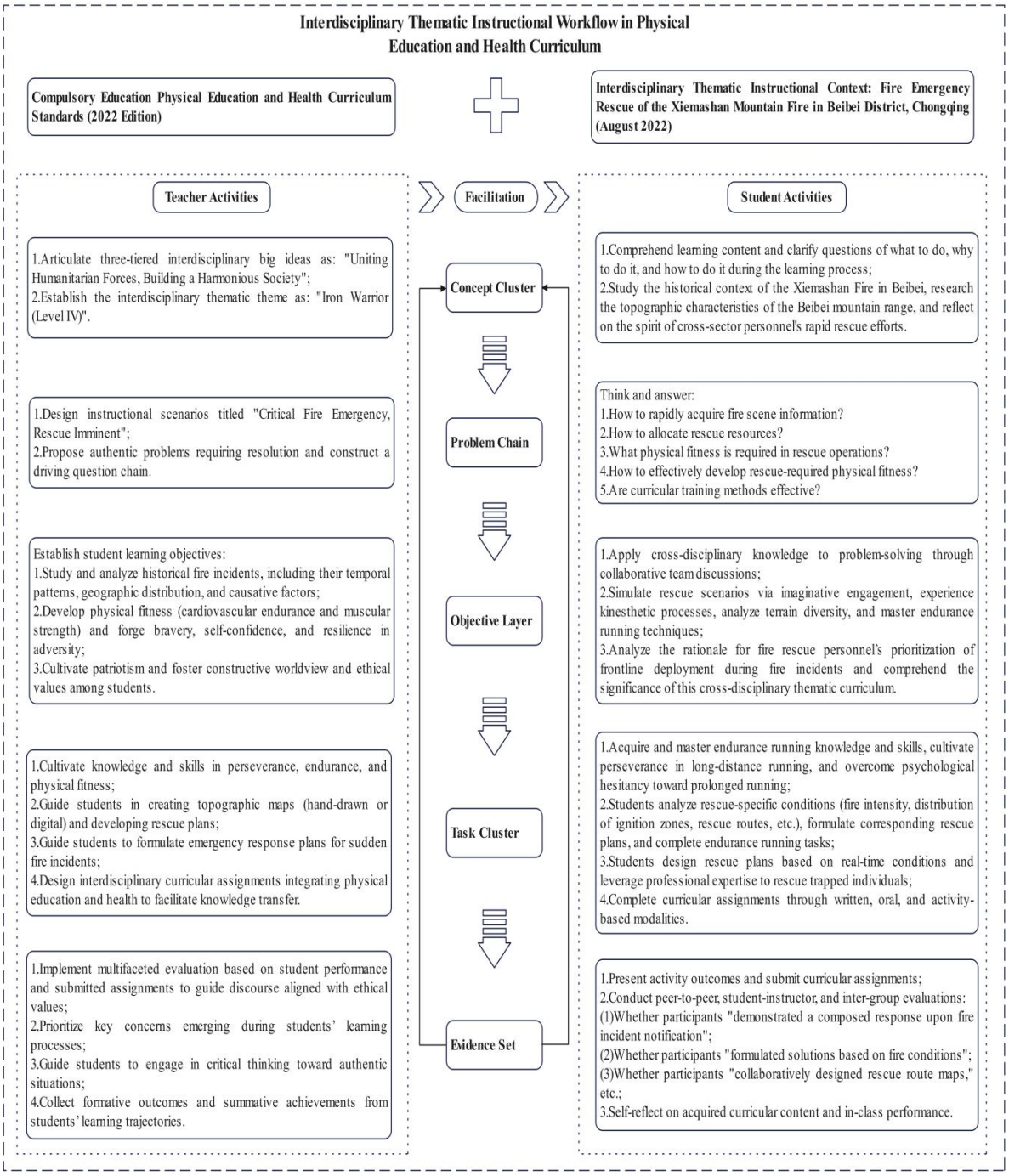


**Figure 3.** Flowchart of Interdisciplinary Thematic Instruction in Physical Education and Health

### 3.2.1 Refining Macro-Concepts and Establishing Interdisciplinary Themes

Concept Clusters occupy a central role in integrating interdisciplinary content, functioning as the epistemological backbone throughout the instructional process to coordinate heterogeneous knowledge integration [17]. They are manifested not only through teacher-student interactions but also in educators' systematic classification of disciplinary knowledge, meticulous curricular design, and strategic conceptual selection. Under professional guidance, students progressively clarify thematic foci, synthesize fragmented knowledge, and construct coherent learning frameworks.

In interdisciplinary thematic instruction for physical education and health, the discipline itself remains the central axis. All integrated subjects must align with this core, as the cultivation of core competencies through physical education fundamentally addresses practical challenges in school sports contexts[7]. Macro-concept refinement must therefore originate from physical education's disciplinary foundation to explore interdisciplinary connections and synergies. educators should ground instruction in physical education's macro-concepts, adopt evidence-based approaches, prioritize core competency development, and identify intrinsic disciplinary logics to guide students in constructing kinesthetic-cognitive networks through knowledge and skill integration. Through pedagogical scaffolding, students comprehend the holistic scope of interdisciplinary content, clarifying the "what," "why," and "how" of their learning trajectory [18].

Guided by core competencies, physical education teachers design instructional themes that intersect primary macro-concepts from National Defense Education, History, Geography, Biology, and Health. These themes evolve into interdisciplinary macro-concepts through logical interconnections between physical education and other disciplines. For instance, in addressing complex content organization, the "Iron Warrior (Level 4)" thematic unit exemplifies this approach by integrating physical education with National Defense Education. Educators synthesize primary macro-concepts from History, and Biology, guiding students to investigate the historical context of the Beibei Xiema Mountain Fire and geographical characteristics of the Jinyun Mountain Range through digital research. This process constructs secondary macro-concepts, ultimately culminating in tertiary interdisciplinary macro-concepts under primary-level frameworks [19]. The thematic design centered on "Consolidating Humanitarian Forces for Social Harmony" exemplifies this three-tiered conceptual architecture.

### 3.2.2 Constructing Logical Problem Chains Based on Instructional Themes

The formation of Problem Chains centers on meticulously selected core concepts, establishing goal-oriented frameworks for holistic learning. Pedagogically, this manifests through educators' strategic design of contextualized scenarios to scaffold students' exploratory inquiry. Learners progressively identify problematics under guidance, trace their developmental trajectories, and achieve deep knowledge application. Effective integration of

interdisciplinary resources optimizes instructional efficacy through disciplinary complementarity [20].

Physical educators must anchor problem-chain design in conceptual clarity, decomposing complex issues into logically sequenced sub-problems within authentic contexts. The logical robustness of Problem Chains correlates positively with scenario complexity, with heightened logical coherence amplifying competency transferability - thereby driving core competency development through problem-driven pedagogy [21]. This approach systematically cultivates creativity and practical problem-solving capacities.

Interdisciplinary thematic instruction in physical education necessitates discipline-specific adaptation. The "Iron Warrior (Level 4)" unit exemplifies this by simulating the August 2022 Beibei Xiema Mountain Fire emergency, constructing an authentic "Critical Fire Rescue" scenario. Students assume rescue team roles, confronting urgent problem chains that drive collaborative action: (1) "How to rapidly obtain fireground intelligence?" (e.g., fire spread dynamics, ignition loci) - developing information-gathering and field reconnaissance skills; (2) "How to allocate rescue resources?" - addressing resource scarcity through optimization strategies; (3) "What physical fitness is required for rescue operations?" - linking practical demands to biomechanical adaptation and mutual protection protocols; (4) "How to develop rescue-specific physical fitness?" - designing training regimens with rhythm modulation and emergency response techniques; (5) "How to evaluate training efficacy?" - implementing tripartite assessment (instructor feedback, self-evaluation, peer review) to ensure methodological rigor .

These driving questions exhibit strong interdisciplinary connectivity and logical interdependence, constraining response parameters while enabling open-ended critical engagement. The instructional sequence maintains thematic fidelity, synergizing practical competency development with ethical-civic education through scenario-based cognition.

### 3.2.3 Establishing Objective Layers for Problem Chains

The Objective Layer serves as a critical nexus for operationalizing core competencies, manifested through educators' explicit articulation of learning goals and their scaffolding of students' conceptual internalization[22]. Learners must cognitively align with these objectives to guide collaborative inquiry, thereby achieving knowledge profundity and skill refinement. Instructional objective design constitutes pedagogical research, which - coupled with teacher training - forms a vital mechanism for enhancing interdisciplinary teaching quality [23]. Such research must align with Ministry of Education guidelines to prevent mismatches between instructional content and learner receptivity, or the superficial compilation of materials divorced from interdisciplinary principles.

This case study strictly adheres to the Compulsory Education Physical Education and Health Curriculum Standards (2022 Edition), targeting Level 4 learners. Given the expanded

knowledge-skill spectrum in interdisciplinary learning compared to conventional classrooms, the Objective Layer mitigates cognitive overload by deepening disciplinary understanding and fostering higher-order thinking.

Exemplified in the "Critical Fire Rescue" scenario, three-tiered objectives emerge: (1) Cognitive Integration: Analyze historical fire incidents (temporal/spatial/causal dimensions) through multidisciplinary lenses, cultivating collaborative problem-solving in low-stress environments; (2) Kinesthetic-Affective Development: Simulate rescue operations through terrain navigation and endurance running, enhancing cardiorespiratory fitness while nurturing resilience and self-efficacy ; (3) Ethical-Civic Cultivation: Decode firefighters' frontline ethos through sociohistorical contextualization, embedding patriotic ethos and shaping life perspectives and value systems [24].

Well-structured instructional objectives facilitate holistic development through stratified value actualization. Assessing goal attainment requires process-oriented evaluation, prioritizing learners' experiential engagement and metacognitive responses over standardized metrics, given the performance-based nature of interdisciplinary learning outcomes.

**3.2.4 Designing Task Clusters Aligned with Objective Layers**

Task Clusters, as the operational core of interdisciplinary pedagogy, materialize through educators' structured task frameworks. Learners deconstruct these frameworks into actionable components, enabling theoretical-to-practical knowledge transfer for competency enhancement[25]. Constructing interdisciplinary thematic guidance frameworks proves critical for physical educators, particularly novices in cross-disciplinary instruction. Teachers must prioritize core competency orientation, segmenting multidisciplinary learning objectives into graduated task clusters with explicit difficulty hierarchies and humanistic dimensions to scaffold knowledge systematization. Differentiated task allocation based on learners' physical fitness levels and prior knowledge ensures adaptive scaffolding, while scenario complexity governs teachers' strategic task distribution to facilitate structured learning progression.

In the "Critical Fire Rescue" scenario, aligned with the Compulsory Education Physical Education and Health Curriculum Standards (2022 Edition) and Beibei Mountain Fire case studies, interdisciplinary tasks are designed as follows: (1) Perseverance & Endurance Cultivation: Address endurance running skill gaps through prolonged simulated fire scenarios, overcoming psychological barriers via incremental exposure to extended-duration locomotion ;(2)Tactical Cartography & Rescue Simulation: a) Create terrain maps (manual or digital cartography ) for rescue route planning; Design low-cost fire simulation zones (e.g., red-painted cardboard/foam) to replicate operational constraints; b) Execute time/distance-regulated endurance runs through scenario-embedded obstacles ; (3) Emergency Response Protocols: a) Zone campus-based fire containment areas for tactical planning ; b) Apply health

education knowledge to treat heatstroke casualties among simulated relief personnel ; (4) Metacognitive Documentation: Articulate physiological-psychological experiences during simulated rescues through multimodal reflection (textual/verbal), enhancing analytical problem-solving capacities [26].

This stratified task design promotes contextualized knowledge transfer while maintaining safety parameters, operational feasibility, and pedagogical intentionality.

### 3.2.5 Collecting Evidence Sets Throughout Instructional Practice

Evidence Sets constitute an indispensable component of interdisciplinary learning evaluation, serving dual roles as metrics for assessing knowledge assimilation and determinants of applied competency transfer. This process involves educators' systematic data collection from learning trajectories and learners' reflective articulation of outcomes. Centered on core competency development, the phase employs diversified assessment modalities to enhance collaborative capacity [27] Tripartite evaluation mechanisms - student self-assessment, peer assessment, and teacher-led multifaceted evaluation - guide value-aligned discourse, reinforcing the "collective solidarity in crisis" ethos intrinsic to the "Iron Warrior" thematic framework [28].Julie Stern's conceptual evaluation model, which prioritizes innovative praxis, underpins the "C-POTE" framework by categorizing evidence into three domains: assessment of learning, assessment as learning, and assessment for learning [29]. These paradigms synergistically support pedagogical refinement and learner growth. Physical educators can operationalize this triadic model in interdisciplinary contexts as follows:

Exemplar Evaluation in the "Critical Fire Rescue" Scenario (Iron Warrior: Level 4)

(1) Evaluation of student learning: a) Address pivotal learner inquiries (e.g., "Why conduct fire rescue?" "How do physical competencies aid firefighting?" b) through written discourse analysis; c) Apply validated rubrics to evaluate response quality and activity engagement.

(2) Evaluation of Students' Learning Styles: a) Facilitate authentic scenario simulations with structured peer/group evaluation protocols; b) Administer fitness tests aligned with interdisciplinary skill benchmarks to gauge physiological adaptation.

(3) Evaluation of Students' Learning Ability: a) Collect formative and summative evidence of behavioral-cognitive outcomes; b) Crisis composure under simulated emergencies; c) Rescue strategy formulation and collaborative cartography.

Align evaluations with the 2022 Curriculum Standards' tripartite core competency dimensions: motor proficiency, health literacy, and sports ethics. Educators must prioritize evidentiary rigor by holistically analyzing process-oriented behaviors and terminal competencies, thereby maximizing Evidence Sets' diagnostic utility for pedagogical optimization[30].

## 4 Conclusion

The "C-POTE" instructional model aligns with mainstream pedagogical frameworks, demonstrating synergistic integration with physical education (PE) and health curricula. This integration empowers frontline physical educators to implement interdisciplinary thematic instruction with enhanced efficacy, broadening pedagogical pathways while strengthening core competency cultivation in compulsory education. However, persistent challenges-including instructional complexity and inadequate referential resources-constrain practical implementation. Without theoretical grounding or empirical benchmarks, perfunctory compliance with policy mandates risks curriculum degradation and goal misalignment.

To address these limitations and elevate PE's educative capacity, cross-disciplinary assimilation of advanced instructional models into PE pedagogy is recommended. The "C-POTE"-embedded case design proposed herein provides actionable frameworks for frontline practitioners, mitigating pressure-induced improvisation and fostering high-quality interdisciplinary instruction.

optimizing interdisciplinary PE-health education necessitates collaborative strategizing among higher education researchers, institutional experts, and pedagogical specialists. Grounded in empirical understanding of frontline realities, such partnerships must deliver dual support: theoretical scaffolding and praxis-oriented guidance. This tripartite collaboration-advancing core competency development, refining school-based PE research, and propelling sports education innovation-constitutes a critical pathway for holistic educational advancement.

## Disclosure

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**Corresponding Author Liu Zheng:** Methodological guidance, research framework design, Liu Zheng is the supervisor of Xiao Xianghan.

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The research presented in this article has no direct conflicts of interest with any institutions or individuals.

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