

An Analysis of the Intrinsic Mechanisms of Knowledge Hiding Behavior among Physical Education Teachers in Workshop-Based Professional Learning Communities

Tang Jingen^{1,a,*}, Yi Yongdan^{1,b}, Wu Xiaoting^{1,c}, Wang Rui^{1,d}

¹School of Physical Education, Hunan Institute of Science and Technology, Yueyang, 414006, China

^a12002007@hmist.edu.cn, ^b110647105@qq.com, ^c1748992523@qq.com, ^d1269969615@qq.com

*Corresponding author

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Abstract: As a core vehicle for professional development of primary and secondary physical education (PE) teachers, workshops have become a critical modality for implementing the National Training Program. However, knowledge hiding behaviors—deliberate concealment of expertise, experiential retention, and perfunctory interaction—occur frequently among participants, severely impeding knowledge flow and collaborative professional growth within learning communities. This study reveals that knowledge hiding among PE teacher workshop participants is not merely an individual choice, but a complex social behavior shaped by professional power dynamics, interest competition, identity construction, and community culture. Its intrinsic generative mechanism is rooted in the fear of loss amid status competition, cognitive conflicts over professional territoriality, identity-based circle stratification between insiders and outsiders, and group antagonism in professional relationships. Under the combined effects of knowledge disparity, cost-benefit gaming, free-rider effects, and social learning transmission, knowledge hiding manifests through stratified triggering, rational choice, and group diffusion mechanisms. Targeted interventions are proposed across five dimensions: reconstructing benefit expectations, intensifying task engagement, reshaping workshop culture, consolidating shared vision, and improving knowledge absorption mechanisms, aiming to dissolve this persistent issue and empower high-quality development of professional learning communities.

1. Introduction

In the information age, teacher knowledge sharing has become the core driving force for promoting the professionalization and balanced development of basic education faculty. Relying on an integrated online-offline professional development model, PE teacher workshops bring together urban and rural primary and secondary school PE teachers within a region, establishing a professional platform for teaching discussion, experience exchange, lesson polishing, and skill enhancement. These workshops serve as a crucial vehicle for implementing the Rural Teacher

Support Program and advancing balanced development of urban-rural physical education. Years of operational practice under the National Training Program's Advanced Workshop for Outstanding Rural Primary and Secondary School PE Teachers reveal that persistent problems exist, including sparse workshop network structures, low levels of member interaction, excessive proportions of ineffective discussion, and severe deficiencies in deep knowledge sharing. Knowledge hiding behavior constitutes the underlying cause of these dilemmas.

Knowledge hiding was formally defined by Connelly et al. (2012) as extra-role behavior in which organizational members intentionally withhold, conceal, or disguise professional knowledge and experience when faced with colleagues' knowledge requests^[1]. Distinct from passive knowledge sharing deficiency, it possesses three core characteristics: subjective intentionality, situational interactivity, and interest relevance (Connelly et al., 2012). Existing knowledge hiding research has predominantly focused on enterprise employees, university research teams, and general subject teachers (Jiang & He, 2013; Wu et al., 2018), with specialized studies targeting PE teacher workshop learning communities remaining relatively scarce^[2] ^[3]. Wang (2020) deconstructed the generative mechanism and remediation pathways of knowledge hiding from an individual teacher perspective, laying a theoretical foundation for subsequent research. However, PE teachers possess distinctive attributes including specialized skill exclusivity, tangible professional competition, and stratified workshop community structures^[4]. As an institutionalized professional learning community, the intrinsic logic and operational patterns of knowledge hiding among workshop members differ fundamentally from those of individual teachers in general contexts.

Based on this, the present study takes the intrinsic generative mechanism and functional mechanism of knowledge hiding behavior among PE teacher workshop participants as its research object, with members of Hunan Province's National Training Program PE teacher workshops as the investigation subjects. Employing literature research and logical analysis methods, and drawing upon social exchange theory, psychological ownership theory, and social learning theory, this study explores the intrinsic generative mechanism of knowledge hiding among PE teacher workshop participants, conducts an in-depth analysis of the functional mechanisms underlying behavioral transmission and evolution, and proposes multi-dimensional remediation pathways. The aim is to enrich the theoretical system of teacher knowledge management and provide theoretical reference and practical guidance for improving the quality and efficiency of PE teacher workshop professional development.

2. An Examination of the Real-World Complexity of Knowledge Hiding Behavior among PE Teacher Workshop Participants

2.1 Behavioral Manifestations of Knowledge Hiding

Referencing the complete knowledge flow process and integrating the context of PE teacher workshop professional development, members' knowledge hiding behaviors permeate four practical nodes: knowledge information sources, acquisition processes, outcome accumulation, and application strategies, manifesting in diverse forms. First, concealment of knowledge information sources. Physical education teaching resources, specialized training methods, competition coaching techniques, and school-based PE curriculum development plans possess scarcity and uniqueness. Some workshop members deliberately conceal information sources such as professional knowledge retrieval channels, high-quality teaching resource platforms, and PE research literature databases. They refuse to share access pathways to core materials such as specialized training programs and large-break exercise routine designs, intentionally obstructing the mutual sharing of public knowledge sources. Second, obscuring of knowledge acquisition processes. During workshop activities including lesson study seminars, lesson-polishing salons, and online Q&A sessions,

members deliberately obscure the logical processes underlying the refinement of PE teaching experience, the decomposition of motor skills, and the diagnosis of classroom problems. When faced with colleagues' inquiries, they adopt attitudes of procrastination, perfunctoriness, and evasion of crucial points, concealing core methods of knowledge transformation and experience sublimation, thereby impeding the workshop community's deep internalization of professional knowledge. Third, deliberate retention of knowledge outcomes. Workshop members are only willing to share universal, superficial PE teaching theories while deliberately hiding higher-order tacit knowledge such as personally accumulated school-based research achievements, practical sports team training experience, and differentiated PE instructional designs. They filter information regarding their own research papers, project outcomes, and award-winning teaching cases, disclosing only foundational content while concealing core innovative elements. Fourth, remaining tacit regarding knowledge application strategies. In practical domains including PE teaching implementation, sports injury prevention, and student physical fitness intervention, members deliberately hide personalized teaching tricks, practical training operational steps, and emergency response strategies for problems. They only provide standardized generic solutions while avoiding in-depth exchanges of practical experience, causing workshop professional development to remain at a superficial theoretical level lacking symbiotic mutual learning of practical experience (Liu & Tang, 2021)^[5].

2.2 The Face Dimension from an Indigenous Cultural Perspective

Influenced by traditional culture and the professional characteristics of teaching, face consciousness has become an indigenous endogenous cause of knowledge hiding among PE teacher workshop members. PE teachers' professional knowledge reserves, specialized skill levels, research output quantity, and competition coaching achievements collectively constitute their professional face and identity prestige. Against the backdrop of competition for limited professional resources such as professional title promotion, backbone teacher selection, and teaching expert competitions, workshop members regard professional knowledge as core capital for maintaining personal face and consolidating professional status. When perceiving that knowledge sharing may weaken their own competitive advantage and damage their professional reputation, individuals develop self-centered tendencies and deliberately conceal core knowledge to protect face and interests (Zhang, 2022)^[6].

Meanwhile, the "performative" nature of the teaching profession is particularly pronounced in workshop professional development, as members habitually adopt "mask-like" participation to cope with community interactions, adhering to the workplace survival logic of "knowing but not speaking, concealing but not revealing" to avoid becoming entangled in professional face disputes through candid sharing. Under the influence of a utilitarian professional development atmosphere, the norm of selfless dedication to knowledge sharing has gradually weakened, with perfunctory surface-level exchanges becoming the norm while deep knowledge sharing is regarded as "workplace deviance," further solidifying the behavioral habitus of knowledge hiding.

2.3 The Negative Derivative Effects of Knowledge Hiding

The proliferation of knowledge hiding behavior among PE teacher workshop members triggers multiple negative effects, severely undermining the value of professional learning communities. First, professional truth alienation: knowledge hiding causes the workshop community to fall into information barriers, preventing members from constructing professional cognitive consensus through mutual trust and exchange. High-quality teaching experience and training techniques fail to become widespread, causing professional practice to sink into a predicament of encapsulation. Second, shallow self-affirmation: hidiers confine themselves within individual knowledge circles,

alienating themselves from the professional networks of the learning community and forming isolated, enclosed knowledge structures that hinder the iterative upgrading of professional vision and research capabilities. Third, intensified knowledge involution: under a pattern of limited professional resources, members maintain their comparative advantages through knowledge monopolization, fostering a vicious competitive ecology of "the law of the jungle" that leads to declining overall enthusiasm for knowledge-seeking and stagnated professional development within the workshop community (Wang & Xue, 2023) [7].

3. The Intrinsic Motivating Factors of Knowledge Hiding Behavior among PE Teacher Workshop Members

The essence of knowledge hiding among PE teacher workshop members is a product of the interweaving of professional power division, interest conflict, identity differentiation, and interpersonal antagonism. Its intrinsic motivating factors can be summarized into four core dimensions: professional status competition, professional territoriality mindset, professional identity stratification, and professional interpersonal antagonism, as shown in Figure 1.

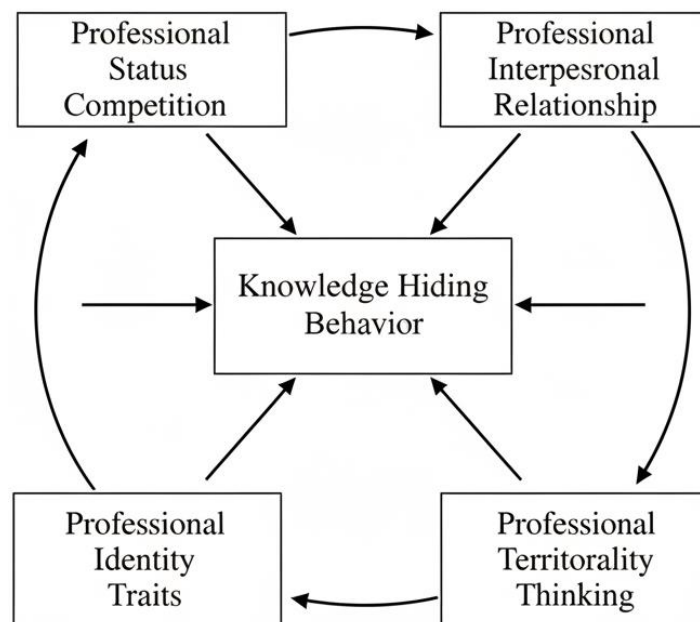


Fig. 1 Intrinsic Motivating Factors of Knowledge Hiding Behavior

3.1 Professional Status Competition: Deep-Seated Anxiety over the Risk of Professional "Loss"

PE teacher workshops bring together primary and secondary school PE teachers from urban and rural areas, different grade levels, and varying seniority. Professional resources such as professional title promotion, excellence awards, backbone teacher recognition, and project applications possess scarcity and exclusivity, forming a typical zero-sum game structure. Members' core knowledge—including specialized teaching techniques, sports team training experience, and school-based curriculum development capabilities—constitutes key intellectual capital for maintaining professional status and acquiring scarce resources. Members commonly harbor anxiety over "knowledge spillover leading to the loss of personal advantages," fearing that unrestrained sharing of core professional knowledge may provide growth shortcuts for peer competitors and weaken their discursive power and competitiveness in regional PE teaching research (Bourdieu,

2019)^[8].

Additionally, PE teachers' professional capabilities are characterized by strong practicality and high distinctiveness. Once core experience is shared, it becomes highly susceptible to imitation and replication, thereby diluting one's professional comparative advantage. To mitigate the risks of passive erosion of professional status and damage to core interests, workshop members proactively engage in knowledge hiding behavior, maintaining competitive barriers through exclusive control of professional knowledge and achieving defensive protection of their professional standing.

3.2 Professional Territoriality Mindset: The Cognitive Conflict between "Non-Self" and "Self-Owned"

Professional territoriality mindset originates from individuals' perception of psychological ownership. Workshop members regard their personal PE teaching experience, specialized training methods, and research innovation achievements as exclusive "knowledge territories," generating strong possessiveness and exclusivity. Under the dominance of this mindset, members deliberately distinguish between "self-owned" exclusive knowledge and "non-self" public knowledge, refusing to allow others to freely borrow from or replicate their professional accumulation, and viewing knowledge sharing as an encroachment upon personal territory.

The tacit knowledge of PE teachers, rooted in long-term teaching practice and competition experience, demands substantial investment of time and effort, fostering strong psychological ownership and identity attachment among members (Polanyi, 2000)^[9]. To preserve the integrity of their professional territory, members engage in dual strategies: on one hand, deliberately elaborating their own knowledge systems to assert professional discursive power; on the other hand, reinforcing territorial heterogeneity through concealment and monopolization of core knowledge, thereby rejecting communal knowledge sharing within the workshop community. This ultimately engenders a closed knowledge structure characterized by "self-encapsulation and refusal of mutual exchange."

3.3 Professional Identity Traits: The Circle Stratification between "Insiders" and "Outsiders"

Over the course of long-term professional development interactions, PE teacher workshops naturally give rise to informal subgroups such as the backbone master teacher circle, the urban teacher circle, the rural teacher circle, and the novice young teacher circle, each forming its own differential mode of association and identity recognition. Members within the same circle share similar professional philosophies and teaching styles, engaging in close knowledge exchange and frequent resource sharing that create closed knowledge loops. Conversely, cognitive barriers, resource divides, and exclusionary mentalities exist between different circles, making knowledge interoperability difficult to achieve.

Based on self-categorization theory, workshop members develop high belongingness and trust toward "insiders," making them willing to engage in deep knowledge sharing; whereas teachers outside their circle are categorized as "outsiders," prompting deliberate knowledge hiding behaviors driven by identity barriers and cognitive biases. The identity differentiation fostered by circle culture confines knowledge flow within small circles during workshop professional development, obstructing cross-circle knowledge transmission and thereby facilitating the proliferation of group-level knowledge hiding behaviors.

3.4 Professional Interpersonal Relationships: The Group Antagonism between "Us" and "Them"

Disparities in urban-rural educational resources, variations in teaching tasks across grade levels,

and gaps in seniority and experience lead PE teacher workshop members to form a binary interpersonal cognition of "us versus them." Between urban and rural teachers, veteran and young teachers, as well as backbone master teachers and ordinary teachers, issues such as widening psychological distance, divergent professional philosophies, and differing interest demands emerge, fostering an implicit antagonistic mentality among them.

Members take the interests of the "us" group as the core, deliberately constructing group knowledge boundaries and refusing to share core teaching experience and training techniques with the "them" group, guarding against the other's learning and growth that might seize professional resources. Such interpersonal antagonism further weakens the collaborative consciousness of the professional learning community, reducing trust among members and diminishing willingness to communicate. Lacking emotional and trust foundations for knowledge sharing, knowledge hiding becomes an inevitable behavioral choice arising from group interpersonal antagonism.

4. The Functional Mechanisms of Knowledge Hiding Behavior among PE Teacher Workshop Members

Drawing upon knowledge position theory and cost-benefit trade-off logic, and integrating the characteristics of PE teacher workshop learning communities, knowledge hiding behavior forms four functional mechanisms: stratified triggering by positional disparity, rational gaming of cost-benefit, chain induction of free-rider behavior, and circle diffusion through social learning. These mechanisms collectively drive the evolution from individual hiding behavior to group behavior, Its evolution mechanism is shown in Figure 2.

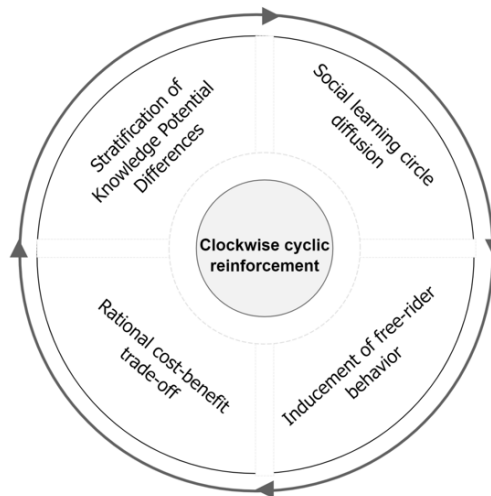


Fig. 2 Functional Mechanisms of Knowledge Hiding Behavior

4.1 Knowledge Positional Disparity: Triggering Stratified Knowledge Hiding

Knowledge positional disparity refers to the professional position that workshop members occupy within the community due to differences in knowledge reserves, specialized skills, and research capabilities. It can be categorized into three types: high-position veteran master teachers, mid-position backbone teachers, and low-position rural young teachers. Disparities in knowledge position directly trigger differentiated hiding behaviors: high-position teachers deliberately conceal advanced research achievements and exclusive training techniques to maintain professional authority and comparative advantage, preventing the dilution of their knowledge superiority; mid-position teachers adopt a middle-of-the-road mentality, selectively hiding core experience to

both avoid advantage loss and maintain interpersonal harmony within the community; low-position rural teachers, with evident knowledge shortcomings and insufficient professional discursive power, fear that the process of seeking advice may expose their competency deficiencies, thereby choosing passive knowledge hiding and avoiding in-depth exchange and discussion (Wu et al., 2018)^[10]. The hierarchical differentiation of knowledge position ultimately forms a stratified hiding pattern characterized by "high-position guarding against dilution, mid-position seeking self-preservation, and low-position avoiding exposure of shortcomings."

4.2 Cost-Benefit Gaming: Driving Rationalized Knowledge Hiding

The knowledge behavior of PE teacher workshop members consistently follows the logic of rational cost-benefit trade-offs. Knowledge sharing requires investment of time and energy costs, opportunity costs, and competitive risk costs, while the obtainable benefits—such as professional recognition, workshop credits, and honor awards—remain limited, accompanied by a sense of relative deprivation that "others benefit more while oneself gains less than deserved." In contrast, knowledge hiding entails only minimal interpersonal reputation costs, allowing members to avoid sharing costs, preserve professional advantages, and freely benefit from others' shared knowledge outcomes, thereby achieving "low cost, high return." When workshop members perceive that the net benefit of knowledge hiding substantially exceeds that of knowledge sharing, they will actively choose knowledge hiding—a necessary behavioral tendency under individual rational decision-making.

4.3 Free-Rider Effect: Inducing Group-Level Knowledge Hiding

The workshop professional development lacks a sound knowledge sharing incentive and constraint mechanism. Some members adopt a free-rider mentality of "only taking, not giving," freely absorbing others' shared teaching experience and professional knowledge while deliberately concealing their own achievements and refusing to contribute. Over time, members who actively share discover severe imbalance between their contributions and returns, while free-riders obtain greater professional benefits, generating strong feelings of unfairness and being exploited. Based on negative reciprocity psychology, sharers gradually reduce their knowledge output and instead emulate free-riders by choosing knowledge hiding. This ultimately engenders a group-level hiding dilemma of "everyone free-riding, everyone hiding knowledge," thoroughly undermining the reciprocal sharing ecology of the professional learning community.

4.4 Social Learning Transmission: Promoting Circle-Based Behavioral Diffusion

According to social learning theory, individual behaviors are acquired and solidified through observational imitation and environmental influence. The professional development atmosphere of PE teacher workshops possesses strong demonstration effects. If backbone members or workshop administrators take the lead in engaging in knowledge hiding behavior, they create negative behavioral exemplars; other members, through observational imitation, gradually weaken their willingness to share knowledge and adopt and emulate hiding behaviors. Concurrently, behavioral consensus within circles reinforces the perceived rationality of knowledge hiding, forming a community subculture where "hiding is the norm, sharing is the exception." This subculture diffuses rapidly within circles and gradually spreads to the entire workshop professional development community, achieving intergenerational transmission and habitual solidification of knowledge hiding behavior (Zhai & Shu, 2019)^[11].

5. Multidimensional Correction Pathways for Knowledge Hiding Behavior Among Members of Physical Education Teacher Workshops

To eliminate knowledge hiding behavior in physical education teacher workshops, we must deconstruct its internal mechanisms and block the formation of such behavioral pathways. New elements should be incorporated in five dimensions — perceived benefits, task engagement, workshop culture, shared vision and knowledge transmission mechanisms — to reconstruct a community-based knowledge sharing ecosystem, as illustrated in Figure 3.

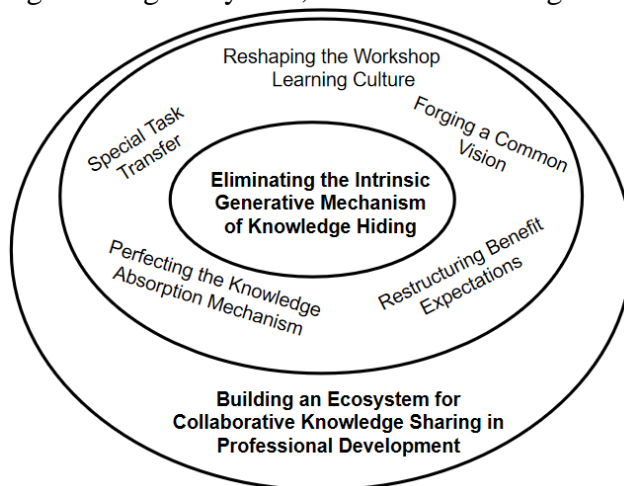


Fig. 3: Multi-dimensional Correction Path for Knowledge Hiding Behavior

5.1 Restructuring Anticipated Benefits to Curb Free-riding Behavior

We should develop a workshop participation evaluation system linked to knowledge contributions. Knowledge sharing, experience input and active discussion shall be incorporated into assessment indicators and merit evaluation standards. Accordingly, those who share knowledge can receive tangible benefits such as honorary recognition, workshop credits and award priority, realizing a reasonable match between effort and reward.

To reduce the practical costs of knowledge sharing, we can launch a lightweight online sharing platform and simplify the processes of experience exchange and resource uploading. Meanwhile, it is necessary to define knowledge contributors' rights concerning the use and authorship of collective teaching and research outcomes, so as to protect their legitimate professional interests.

A constraint mechanism should also be put in place to curb free riding. Members who persistently benefit from others' outputs without contributing will receive reminders or face lower assessment ratings. This can break the undesirable cycle where knowledge sharing leads to losses while knowledge hiding brings gains, and effectively increase the opportunity cost of knowledge hiding.

5.2 Shifting Toward Task Involvement to Mitigate Excessive Status Competition

Workshop organizers should guide participants to transition from ego-oriented involvement to task-oriented engagement, so as to mitigate their excessive preoccupation with professional status and personal interests and refocus their efforts on core workshop priorities. These core tasks include optimizing physical education teaching practices, developing school-based curricula, and promoting the improvement of students' physical fitness. To facilitate in-depth interpersonal collaboration among participants and eliminate zero-sum competitive mindsets, collaborative tasks such as

collective research projects, cross-school joint lesson design, and co-curricular competition guidance should be systematically designed based on shared workshop goals. Furthermore, it is essential to foster participants' sense of community identity within the workshop. Through tailored instructional guidance, role-based empowerment, and targeted growth support mechanisms, the workshop can effectively strengthen the sense of belonging and self-worth among rural and early-career physical education teachers, which ultimately alleviates defensive knowledge hiding behaviors induced by intra-group status competition.

5.3 Reshaping Workshop Culture to Eliminate Professional Territorial Barriers

This study advocates abandoning the closed and exclusionary professional territorial culture and cultivating an open, mutually beneficial, and symbiotic community atmosphere within physical education teacher workshops. It upholds the workshop philosophy of “sharing practical experiences, complementing comparative advantages, and achieving collaborative growth.” By acknowledging outstanding knowledge contributors and disseminating exemplary practical experiences, a workshop climate that values knowledge sharing and recognizes substantive contributions can be effectively fostered. To break inherent group boundaries, heterogeneous discussion groups across urban–rural contexts, different school levels, and teacher seniority hierarchies should be established. Furthermore, implementing mentorship partnerships between expert teachers and rural or early-career teachers helps eliminate insider–outsider identity divides, thereby enabling unobstructed cross-group knowledge circulation and experiential exchange within the workshop community.

5.4 Uniting Around a Shared Vision to Resolve Professional Interpersonal Conflicts

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Workshop communities should anchor a shared developmental vision centered on improving regional physical education teaching quality and advancing urban–rural equity in physical education. Prioritizing collective interests over individual and subgroup parochial benefits can effectively consolidate participants' communal identity. To bridge conceptual discrepancies and interpersonal gaps between urban and rural teachers, as well as between senior and novice teachers, diversified communication platforms should be constructed, including offline intensive training workshops, online thematic salons, and inter-school visits and seminars. Additionally, it is crucial to foster a professional trust culture that takes open communication, mutual trust, and reciprocal assistance as core interpersonal norms. Such efforts help dismantle the confrontational “us-versus-them” group mentality, thereby laying a solid emotional and trust foundation for sustainable knowledge sharing within the workshop.

5.5 Improving Knowledge Absorption Mechanisms to Build a Long-term Sharing Ecosystem

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A full-process knowledge absorption mechanism covering knowledge collection, classification, sharing, and iteration should be established for physical education teacher workshops. High-quality teaching experiences, professional training techniques, and teaching and research outputs contributed by participants can be systematically organized and integrated to construct a standardized knowledge repository for physical education workshop communities. This mechanism guides teachers to effectively encode explicit knowledge and externalize tacit professional experience, consolidating collective collaborative outcomes through diversified carriers such as instructional lesson recordings, empirical research papers, and practical teaching micro-courses. Meanwhile, a dynamic knowledge elimination and updating system needs to be developed. Outdated teaching philosophies and conventional training approaches are phased out in a timely manner, while cutting-edge theories and innovative practical experiences in physical education are continuously incorporated. Such iterative optimization facilitates sustainable knowledge renewal, fundamentally breaks intra-community information silos, and eliminates the institutional conditions that foster knowledge hiding behaviors.

6. Research Conclusions

Knowledge hiding behavior among PE teacher workshop members is the result of the coupling of multiple factors including professional status competition, territoriality mindset, identity stratification, and interpersonal antagonism. Under the effects of knowledge positional disparity, cost-benefit gaming, free-rider effects, and social learning, it completes the evolutionary process from individual choice to group diffusion. Knowledge hiding not only impedes knowledge flow and professional symbiosis within professional learning communities, but also constrains the professional development of primary and secondary school PE teachers and the advancement of

balanced urban-rural physical education. Only by profoundly deconstructing its intrinsic generative mechanisms and functional mechanisms, and implementing targeted interventions from multiple dimensions—benefit reconstruction, task empowerment, cultural reshaping, vision consolidation, and mechanism improvement—can we dismantle knowledge concealment barriers, cultivate an open, sharing, and mutually supportive professional development ecology, and enable PE teacher workshops to truly become core platforms for teacher growth, experience inheritance, and research innovation. Future research may further employ empirical investigation, grounded theory, and other methods to quantitatively analyze the influence degree of each variable on knowledge hiding, providing more refined decision-making evidence for workshop management practice.

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