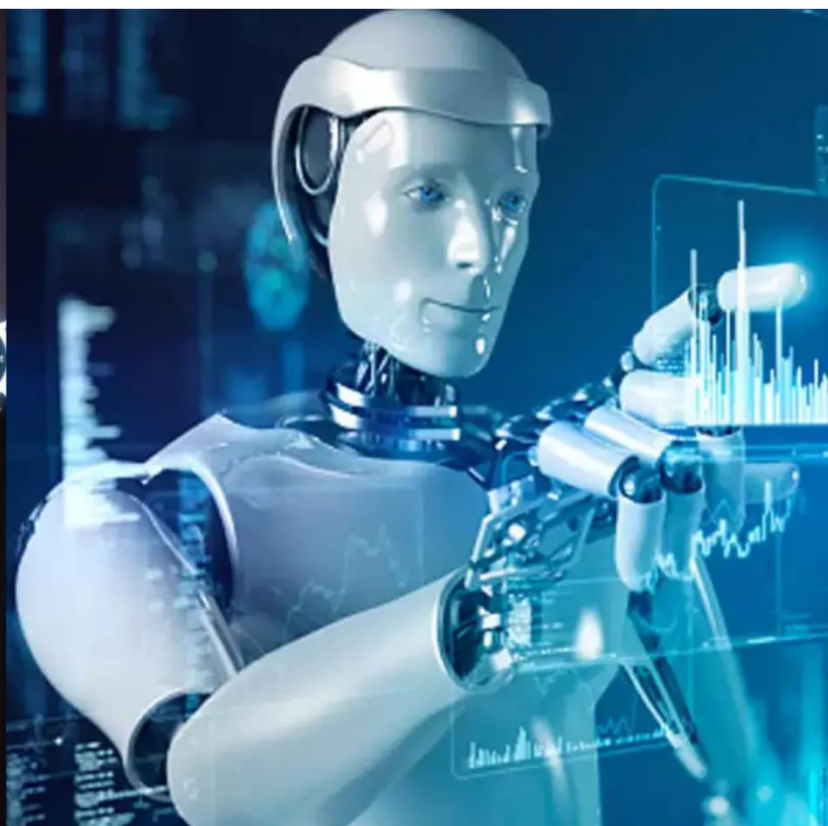




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Self-Organizing Logic of Teacher Professional Learning Community and Its Realization

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ABSTRACT: The professional learning community demonstrates a comprehensive understanding of the value and professional connotation of the teaching profession, as well as the interpretation of common values shared by the group, diverse and multiplicity of values, and embodied interactive values. As an ecological self-organizing system, it reflects the self-determining, self-identical, self-catalytic and other self-organizing logic generated. From the perspective of self-organizing philosophical thinking, it can effectively explore the internal occurrence mechanism and evolution picture of the teacher professional learning community, and overcome the constraints of the self-organizing logic of the teacher professional learning community in the real environment that hinders its development.

KEYWORDS: Teacher professional learning community, Self-organizing, Emergency

I. SELF-ORGANIZING LOGIC CORRELATION OF TEACHER PROFESSIONAL LEARNING COMMUNITY

1.1 Conception

Self-organization is the fundamental behavior of complex adaptive systems. It depicts a natural evolution picture of the system spontaneously moving from a lower level to a higher level, from simplicity to complexity, and from disorder to order. The term "spontaneous" refers to the fact that during the evolution of a system, it does not require external forces to forcibly drive it, but instead relies on the nonlinear interactions among its internal subsystems in terms of space, time or function, to organize itself, generate itself, evolve itself, and autonomously progress from disorder and chaos to order and coordination. Self-organization is characterized by openness, dynamic non-equilibrium, non-linearity, fluctuations, mutations, and collaboration. It has the essential features of self-determination, self-sustenance, self-adaptation, and self-catalysis, and its ultimate pursuit is the emergence of the overall system in a self-directed state.

A teacher professional learning community refers to a learning group composed of a group of like-minded teachers who share common beliefs, values, goals or visions, and are dedicated to promoting their own professional development, achieving better learning outcomes for students, and conducting educational research and innovation in the school through cooperative efforts [1]. Unlike ordinary learning communities, a professional learning community focuses on "professional" development as its core and has a specific professional orientation. That is, the members of a professional learning community specifically refer to specialized teachers, the problems they face are professional issues, the expected goals are to seek professional solutions and consensus, and ultimately achieve teacher professional development [2].

1.2 Self-organizing Logic Mapping of Teacher Professional Learning Community

Any theory that can exert an influence on a certain practical action is based on the inherent deep-level logical connection between the subject and the object. The same is true for the teacher professional learning community and the self-organization. Their connection is based on the alignment of internal interests and the consistency of internal structures. In short, the teacher professional learning community reflects a distinct self-organization logic.

(1) Generated Self-determination

Since it is the process where the system breaks the balance and spontaneously undergoes self-reorganization, self-coordination, self-ordering, and ultimately forms a new structure, it is the process representation that characterizes the formation of a self-organizing system. The teacher professional learning community is precisely generated based on the self-determination of the system structure and function. The teacher professional learning community meets the initial conditions of self-determination of the system, such as openness, deviation from balance, and nonlinear interactions on the reaction chain. The teacher professional learning community is an open system. It not only opens up to the outside world, engaging in exchanges of materials, personnel, teaching concepts, and teaching resources with the external educational environment and social environment, but also is internally open. Under the guidance of the common development vision, the community members, in a cooperative cultural atmosphere, break away from isolation and closure, communicate and interact with each other, exchange teaching resources and experiences [3]. Furthermore, the teacher professional learning community is composed of various individual teachers, who exhibit significant differences in terms of age, teaching experience, knowledge structure, teaching experience and teaching style. It is precisely the existence of these differences that enables teachers within the non-equilibrium system to collide, communicate, integrate and complement each other, presenting a nonlinear mechanism of action, that is, achieving a synergistic gain effect where the whole is greater than the sum of its parts.

(2) Evolutionary Self-isomorphism

In self-organizing systems, subsystems with similar structures and functions, as well as the environment, are interwoven and reorganized at all levels, thereby achieving the characteristic of co-evolution of the system and the environment. This is called evolutionary self-isomorphism. The community of teacher professional learning always welcomes the addition of new individuals, keeping the community in a state of continuous dynamic update; at the same time, the teachers within the community collaborate through their own rules, autonomous behaviors, and competition with others, observing each other's behaviors and consciously adjusting and updating their own behaviors as they continuously learn and evolve as living entities. Therefore, the teacher professional learning community is a self-sustaining system that undergoes structural and functional updates and development. Without specific external intervention, the system will naturally undergo changes that are beneficial to its own survival and development, which is called adaptation.

In the teacher professional learning community, all teachers are in a common environment, but each one adapts independently and in parallel according to the local habitats around it for adaptive learning and evolution [4]. Teachers, for their own development, continuously adjust their learning methods or teaching behaviors during the process of collaborating with other teachers, actively participate in curriculum reform, in order to autonomously adapt to the needs of changes in internal and external environments, and truly become the main body of professional development.

(3) Emergent Self-catalysis

Emergence refers to the macroscopic ordered characteristics that only the entire system possesses but not individual parts. It is a transcendence achieved through self-catalysis. Self-catalysis introduces the self-organizing system into the super-cyclic level, enabling the system to expand from a single self-renewal to a series of self-emergency. The realization of self-catalysis relies on the generation of system fluctuations. The teacher professional learning community breeds the inducing factors for fluctuations. The community, through forms such as democratic participation, collaborative interaction, reflective dialogue, and experience sharing, prompts teachers to generate order parameters based on cooperation and competition, that is, to reach the critical point or bifurcation point where the system moves towards fluctuations [5]. The teacher professional learning community utilizes random and minor disturbances from both within and outside the system, such as a sudden teaching incident or a special seminar, to transcend the order parameters, thereby evolving into a system with significant fluctuations, triggering a transition from an unstable state to a new ordered state. Through the realization of these fluctuations, teachers gain better professional development opportunities and conditions within the new ordered structure. At the same time, the teacher professional learning community, as a group, gathers the advanced ideas, experiences, methods, and material resources of all individual teachers, and effectively integrates them, providing a broader development space for the teacher group and enabling the emergence of overall qualities within the teacher professional learning community.

II. RESTRICTON OF THE SELF-ORGANIZING LOGIC OF TEACHER PROFESSIONAL LEARNING

The ideal state of a teacher professional learning community is actually a self-organizing structure existing within human collective actions. However, in the real world, the self-organizing logic of teacher professional learning communities is in a state of being suppressed and displaced. These issues not only hinder the construction of professional learning communities but also make the demand for self-organizing operation of teacher professional learning communities more urgent and necessary.

2.1 Other-organizing Restricts Teachers' Autonomy in Their Development

Other-organization is the opposite of self-organization. It is not a spontaneous or autonomous process of the matter itself, but rather an organizational process or result driven by external forces. Currently, teacher professional learning communities are usually established by educational administrative departments or school leaders through administrative orders and other means to support the implementation of the new curriculum reform [6]. They still represent an "heuristic organization" behavior rather than a self-organized behavior by teachers. Starting from this "heuristic organization", the composition of personnel, organizational form, activity methods, resource allocation forms, etc. of the teacher professional learning community are all determined by school leaders and are supervised and implemented by them. The teacher professional learning community is completely regarded as a passive object under the control of others. This undoubtedly neglects the self-organizing nature of the community, as well as the subjective status of the teachers as community members. It undermines the positive and proactive nature of teachers' participation in community learning. The operation mode of other-organization fails to stimulate the individual participation willingness and subjectivity of teachers. There is a lack of interaction among internal subjects, and even less self-creation and self-development among teachers themselves. As a result, teacher professional development fails to reach the autonomous development level of consciously and actively improving and perfecting oneself.

2.2 Competition and Cooperation Are Concentrated on One End

Collaboration, as the fundamental concept of self-organization theory, encompasses both cooperation and competition. However, in the current construction of teacher professional learning communities, there is a situation of neglecting one aspect while favoring the other. The problem lies in the cooperation aspect. The reason for this, from the surface, is that people fail to recognize the relationship between competition and cooperation within the teacher learning community; while from the deeper level, it is because they fail to deeply understand the self-organization characteristics of the teacher professional learning community. Although with the advancement of the new curriculum reform, the traditional individualistic teacher culture emphasizing competition has been criticized, at the same time, the cooperative teacher culture has gradually become the mainstream. But this does not mean denying the inevitable existence and rationality of teacher competition. In fact, competition cannot disappear.

Although the teacher professional learning community is established based on cooperation, only through competition among teachers can the community deviate from the equilibrium state. And only when it deviates from the equilibrium state can the nonlinear factors within the system be fully released, thereby promoting the nonlinear effect of collaborative cooperation among teachers, and ultimately enabling the community to exert a collaborative effect and achieve synergy. However, currently, only focusing on cooperation alone will inevitably prevent the community from deviating from the equilibrium state and moving towards a coordinated and orderly evolutionary path. Moreover, there is no way to talk about the realization of the collaborative effect. In this way, the teacher professional learning community fundamentally deviates from self-organization.

2.3 Confusing Sharing With Homogeneity

The teacher professional learning community emphasizes consensus and sharing, which is the foundation for its existence as a community. Without shared interests, common values, similar understanding, and certain consensus, a community is difficult to sustain. However, emphasizing sharing does not mean pursuing homogeneity. As independent individuals, teachers possess autonomy and initiative, which determines that teachers cannot be uniformly consistent in terms of cognition, emotions, skills, etc. Differences are the inherent ontological attribute of teachers. Therefore, sharing must be based on the heterogeneity among community members. On the basis of nurturing the uniqueness of teachers, the enhancement of group wisdom can be achieved.

However, in the current construction of the teacher learning community, there exists a misunderstanding that confuses sharing with homogeneity. It wrongly believes that pursuing teacher sharing means eliminating differences, erasing the uniqueness of teachers, and achieving the homogenization of teachers' development. Specifically, this is manifested in the uniformity of goals and models, the standardization of teaching methods and approaches, the convergence of teachers' qualities, etc. Without a doubt, these series of practices clearly violate the true meaning of sharing that the teacher professional learning community strives for, and will undoubtedly hinder the development of teachers' uniqueness. Eventually, it will undermine the self-organizing evolution picture of the teacher professional learning community.

III. METHODOLOGY THE SELF-ORGANIZING OPERATING MECHANISM OF TEACHER PROFESSIONAL LEARNING COMMUNITY

The teacher professional learning community is at a critical juncture of breaking through the "prisoner's dilemma". From the perspective of the generation logic of self-organization, the teacher professional learning community is a self-sustaining domain. Its boundaries are unclear, ambiguous and indistinct, with a fluid and informal structure. What it represents is not the existing order, but rather a questioning of the existing order, as well as the slow generation of a new order. Specifically, the teacher professional learning community is the comprehensive reflection of psychological, emotional, physical and ability aspects exhibited by the teacher group during the process of undertaking professional development tasks. Its most direct external factors are whether teachers possess a scientific and reasonable value system, a composite professional development ability structure and a good professional dependent field. Therefore, it is necessary to break through the conventional practice of ordinary professional development organizations relying on external interest control to maintain their operation, and establish a new order supported by self-generated values.

3.1 Establish a Knowledge-sharing and Transformation Platform

From the evolution diagram of the teacher professional learning community, it is self-organized and must be transformed from being organized by an individual into a self-organized system. To achieve this, we need to establish a creation mechanism for professional learning communities based on teacher professional self-awareness, to facilitate the self-organization transformation of the teacher professional learning community. Specifically: ① Construct an open system, with an open attitude, widely attract teachers from all sectors and introduce various resources to form an entropy exchange mechanism. ② Build a platform, based on voluntary participation, promote spontaneous communication, integration, and confrontation among teachers within the community, forming a non-linear effect situation far from equilibrium. ③ Empower and enhance capabilities, taking professional development as an opportunity, grant teachers the rights to independently build the community, independently formulate learning content, independently choose learning methods, and independently assess learning results, to activate the internal development momentum of teachers. ④ Build a psychological contract, based on the shared culture of the community members, break away from external constraints of power, and spontaneously generate internal regulations.

3.2 Create an Atmosphere of Collaborative Competition

The self-organizing operation of a teacher professional learning community requires that teachers compete with each other while also collaborating. This generates the driving force that governs the overall evolution of the community. Specifically, firstly, encourage competition. The teacher learning community should actively carry out various forms of competitive activities, such as lecture competitions and lesson plan evaluations, to enhance teachers' competitive awareness. Of course, this competition is not blind, disorderly, or extreme, where one side vanishes while the other survives, but rather a positive competition under certain rules aimed at achieving cooperation. Second, advocate cooperation. Teachers should actively integrate into the learning community, communicate and interact under a common development vision, share their teaching experiences and cognitive strategies, learn from each other, enhance understanding, and jointly seek development strategies. The community should also carry out various forms of communication activities, such as collective lesson planning, peer guidance, teaching observation, and cooperative research, so that individual teachers can construct their identities and relationships within the community, and form a sense of identity and belonging to the community.

3.3 Cultivate a Community Based on the Value of Harmony in Diversity

The practical effect of the teacher professional learning community is not only influenced by its own scientific nature, but more importantly, whether the interests of different value subjects have reached consensus, and whether there is a fundamental or consistent view and attitude towards the professional development of teachers. Specifically, it is necessary to establish a "harmonious but different" consensual value concept. While the teacher professional learning community pursues teacher consensus and sharing, it must not suppress the uniqueness and diversity of individual teachers. "Harmony but difference" implies profound self-organizing system operation rules. At the deepest level, it reflects the overall interconnection, and it seeks complementary, transformation, and generation in the dual interactive relationships of difference and unity, competition and collaboration, confrontation and cooperation, conflict and integration, thereby achieving orderly development and promoting the emergence of the system at the chaotic edge.

The teacher professional learning community should establish an ecological connection among teachers as a whole, enabling individual teachers to coexist on the same ecological chain and achieve adaptive survival and development, and generate collective wisdom. At the same time, in order to realize the emergence of the overall teacher professional learning community, the teacher professional learning community should not only seek commonalities among the group but also take into account both commonalities and individuality.

IV. CONCLUSION

The professional learning community demonstrates a comprehensive understanding of the value and professional connotation of the teaching profession, as well as the interpretation of common values shared by the group, diverse and multiplicity of values, and embodied interactive values. As an ecological self-organizing system, it reflects the self-determining, self-identical, self-catalytic and other self-organizing logic generated. From the perspective of self-organizing philosophical thinking, it can effectively explore the internal occurrence mechanism and evolution picture of the teacher professional learning community, and overcome the constraints of the self-organizing logic of the teacher professional learning community in the real environment that hinders its development.

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