

Reconceptualizing the Adaptive Teacher Training Model Based on Open Communities of Practice in Facing Global Disruption

Muhammad Ali Ridwan

Department of Madrasah Ibtidaiyah Teacher Education, Muhammadiyah University of Bima, Bima, Indonesia

**Corresponding author email: ali.ridwan12@gmail.com*

Article Info

Article history:

Received May 12, 2026

Approved June 19, 2026

ABSTRACT

This study aims to reconceptualize teacher training models through the development of an Adaptive Teacher Training Model Based on Open Communities of Practice as a strategy for professional development in response to global disruption. The rapid advancement of digital technology, artificial intelligence, social change, and global uncertainty requires teachers to possess adaptive capacity that enables them to continuously learn, innovate, and respond effectively to change. However, prevailing teacher training models remain largely formal, centralized, and episodic, and are therefore insufficient to support sustainable professional learning. This research employs a qualitative approach based on a literature study using the systematic literature review method. Data were obtained from various scientific articles, academic books, reports from international organizations, and policy documents relevant to teacher professional development, communities of practice, and adaptive capacity. Data analysis was conducted through processes of identification, selection, evaluation, and thematic synthesis to generate a comprehensive conceptual framework of the model. The findings indicate that the developed model consists of four main components: open communities of practice, digital collaboration, continuous professional reflection, and teachers' adaptive capacity. The model is operationalized through five stages, namely knowledge sharing, collaborative inquiry, co-creation of innovation, reflective practice, and adaptive transformation. The results suggest that open communities of practice have the potential to strengthen teachers' adaptability, collaboration, innovation, and lifelong learning capacity. This model can serve as a strategic alternative for more participatory, flexible, and sustainable teacher professional development in addressing the challenges of twenty-first-century education.

Keywords: Open Communities, Adaptive Capacity, Teacher Development, Global Disruption, Collaboration

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How to cite: Ridwan, M. A. (2026). Reconceptualizing the Adaptive Teacher Training Model Based on Open Communities of Practice in Facing Global Disruption. *Journal of Educational Innovation and Transformation Global*, 2(1), 100–108. <https://doi.org/10.55681/jeitg.v2i1.198>

INTRODUCTION

Twenty-first-century education is situated within the vortex of global disruptions characterized by the rapid advancement of digital technologies, artificial intelligence, automation, social transformation, and increasingly complex economic uncertainties. These developments have created an educational environment that is highly dynamic and difficult to predict, often described through the concept of Volatility, Uncertainty, Complexity, and Ambiguity (VUCA). In such circumstances, educational institutions are required to respond to change rapidly and continuously in order to remain relevant to the evolving needs of society and the future workforce (Schleicher, 2018; OECD, 2023; Fullan, 2020). Digital technological advancements have not only transformed how students access information but have also reshaped learning characteristics, communication patterns, and expectations regarding more flexible, collaborative, and technology-enhanced learning processes (Selwyn, 2022; Williamson et al., 2020; Alruthaya et al., 2021). Consequently, teachers can no longer rely solely on conventional pedagogical competencies; instead, they must develop adaptive capacities that enable them to continuously learn, innovate, and transform in response to ongoing changes (Darling-Hammond et al., 2017; Caena & Redecker, 2019).

A direct consequence of these transformations is the emergence of new expectations regarding teacher professionalism. Teachers are no longer positioned merely as transmitters of information but as learning facilitators, learning experience designers, mentors, collaborators, and change agents capable of preparing students for future challenges (Schleicher, 2018; Darling-Hammond et al., 2020). Numerous studies have identified adaptability, digital literacy, pedagogical creativity, and lifelong learning as essential components of teacher professionalism in the era of digital transformation (Caena & Redecker, 2019). In this context, teacher professional development can no longer be viewed as a one-time activity; rather, it must be understood as a continuous process that enables teachers to build the capacity to respond to change effectively and reflectively (Day & Sachs, 2004; Avalos, 2011).

Despite the growing need for adaptive teachers, prevailing teacher training models continue to exhibit significant limitations. Most professional development programs still employ top-down approaches focused on knowledge transfer through formal training sessions, seminars, or short-term workshops (Avalos, 2011; Darling-Hammond et al., 2017). Such approaches tend to position teachers as passive recipients of information while paying insufficient attention to the contextual challenges they encounter in daily instructional practice (Desimone & Garet, 2015; Opfer & Pedder, 2011). As a result, many training programs fail to generate sustainable changes in teaching practices because they lack mechanisms for reflection, collaboration, and ongoing support after the completion of formal training activities.

Furthermore, conventional training models often struggle to keep pace with the rapid changes occurring within the educational landscape. Knowledge and skills acquired through formal professional development can quickly become obsolete when confronted with emerging technologies and continuously evolving student needs (Fullan, 2020; Selwyn, 2022). Research consistently demonstrates that the effectiveness of teacher professional development is strongly influenced by the existence of learning environments that facilitate collaboration, experience sharing, and continuous learning among teachers (Darling-Hammond et al., 2017; Desimone & Garet, 2015). Therefore, more flexible, participatory, and responsive professional development models are required to address the authentic needs of teachers in practice.

One approach that has received increasing attention in teacher professional development is the concept of Communities of Practice. Introduced by Wenger (1998), this concept emphasizes that professional learning occurs most effectively through sustained social interaction among individuals who share common interests, goals, and practices. Within communities of practice, knowledge is not transmitted unidirectionally but is collectively constructed through experience sharing, reflection, collaboration, and collaborative problem-

solving processes (Wenger, 1998; Wenger et al., 2002). This approach enables teachers to engage in contextual learning grounded in the authentic experiences they encounter in their everyday teaching practices.

The development of digital technologies has subsequently given rise to a new form of community of practice that is more open and unconstrained by geographical boundaries or formal bureaucratic structures. Through digital platforms, professional social media networks, webinars, open learning networks, and various online collaborative spaces, teachers can interact with fellow practitioners from different regions and even across national borders to share knowledge and co-create educational innovations (Trust et al., 2016; Carpenter & Krutka, 2014; Kelly & Antonio, 2016). Open communities of practice facilitate rapid knowledge exchange, collaborative learning, and professional capacity development that is more adaptive to global changes than the episodic nature of formal training programs (Talaftian et al., 2023; Hur & Brush, 2009).

Although communities of practice have been widely discussed in educational literature, most studies continue to focus on local, institutional, or restricted teacher communities. Research specifically examining open communities of practice as an adaptive teacher training model for addressing global disruptions remains relatively limited (Trust et al., 2016; Kelly & Antonio, 2016). Moreover, previous studies have largely emphasized the benefits of communities of practice for enhancing teachers' professional competencies without developing a conceptual framework that explicitly links open communities of practice with the formation of teachers' adaptive capacities in rapidly changing educational environments (Avalos, 2011; Wenger et al., 2002).

Another significant research gap lies in the scarcity of conceptual models that integrate the dynamics of digital communities of practice, continuous professional learning, and the development of teachers' adaptive competencies within a unified framework. Yet adaptability has emerged as one of the key competencies determining teachers' success in responding to technological disruptions, curriculum changes, and the demands of twenty-first-century education (Caena & Redecker, 2019; Fullan, 2020; OECD, 2023). Consequently, a reconceptualization of teacher training models is required, moving beyond competency transfer toward the creation of collaborative, open, and sustainable professional learning ecosystems.

Based on this background, the present article aims to reconceptualize teacher training through the development of an Adaptive Teacher Training Model Based on Open Communities of Practice for addressing global disruptions. The study focuses on identifying the core components of the model, the operational architecture of open communities of practice, and the mechanisms through which teachers' adaptive capacities can be developed through collaborative and network-based learning processes. Theoretically, this study is expected to enrich the literature on teacher professional development by proposing a training model that is more participatory, decentralized, and aligned with the characteristics of the digital era. Practically, the proposed model may serve as a reference for governments, educational institutions, professional organizations, and teacher communities in designing professional development systems that are more sustainable, adaptive, and relevant to future educational challenges (Darling-Hammond et al., 2017; Wenger et al., 2002; OECD, 2023).

METHODS

This study employed a qualitative approach using the Systematic Literature Review (SLR) method to reconceptualize an Adaptive Teacher Training Model Based on Open Communities of Practice in responding to global disruptions. This approach was selected because it enables a systematic synthesis of theories, concepts, and empirical findings related

to teacher professional development, Communities of Practice, continuous professional learning, teachers' adaptive capacity, and educational transformation in the digital era (Snyder, 2019; Xiao & Watson, 2019).

The review process was conducted through several stages guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework. The first stage involved the identification of relevant literature through a comprehensive search of scholarly articles, academic books, reports from international organizations, and policy documents using databases such as Scopus, Web of Science, ERIC, SpringerLink, ScienceDirect, Taylor & Francis Online, and Google Scholar (Page et al., 2021). The search employed keywords including *teacher professional development*, *adaptive teacher*, *communities of practice*, *open learning networks*, *teacher learning*, *professional learning communities*, and *educational disruption*. The selected literature consisted of English- and Indonesian-language publications, primarily published between 2010 and 2025, with direct relevance to the focus of the study.

The second stage involved the selection and quality assessment of the identified sources. Literature meeting the inclusion criteria was evaluated based on conceptual relevance, theoretical contribution, methodological rigor, and its relationship to the development of adaptive teacher training models. Duplicate records, irrelevant publications, and sources lacking sufficient academic credibility were excluded from the review process (Snyder, 2019; Page et al., 2021).

The collected data were subsequently analyzed using content analysis and thematic synthesis techniques. The analysis aimed to identify key themes, conceptual relationships, and recurring patterns within the literature concerning open communities of practice and the development of teachers' adaptive capacities (Krippendorff, 2018; Thomas & Harden, 2008). The synthesis findings were then utilized to construct a new conceptual framework integrating the dimensions of open communities of practice, continuous professional learning, digital collaboration, and adaptive teacher competencies in the context of global disruptions.

Through this approach, the study produced a conceptual model grounded not only in a comprehensive theoretical review but also in a wide range of empirically validated findings within the field of teacher professional development in the era of digital transformation. Consequently, the proposed model is expected to possess strong conceptual validity and practical relevance for informing future educational policies and teacher training programs.

RESULT AND DISCUSSION

Reconceptualizing the Adaptive Teacher Training Model Based on Open Communities of Practice

The literature synthesis indicates that the changing characteristics of twenty-first-century education require a fundamental transformation of teacher professional development paradigms. Numerous studies emphasize that conventional training models characterized by centralized, episodic, and knowledge-transfer-oriented approaches are no longer sufficient to develop teachers' capacity to respond to rapid and continuous changes (Avalos, 2011; Darling-Hammond et al., 2017; Fullan, 2020). In the context of global disruption, teachers require professional learning systems that enable them to continuously learn, adapt, and innovate through sustained interaction with fellow practitioners (Schleicher, 2018; OECD, 2023).

Based on the analysis, this study reconceptualizes teacher training from a formal training approach toward a professional learning ecosystem approach. The proposed model positions Open Communities of Practice as the core mechanism for teacher capacity development. Within this model, professional learning no longer occurs linearly from instructors to trainees but emerges through collaborative processes that allow teachers to act simultaneously as learners

and knowledge creators (Wenger, 1998; Wenger et al., 2002). This approach aligns with social learning theory, which emphasizes that professional knowledge develops through active participation in communities and authentic practice rather than through formal information delivery alone (Lave & Wenger, 1991; Trust et al., 2016).

The conceptual model developed in this study consists of four interconnected components: open communities of practice, digital collaboration, continuous professional reflection, and teachers' adaptive capacity. Open communities of practice function as collective learning spaces that facilitate the exchange of experiences and knowledge horizontally among participants. Digital collaboration serves as the medium that expands access and participation beyond geographical boundaries and organizational structures. Continuous professional reflection acts as a learning mechanism through which teachers evaluate and improve their instructional practices. Meanwhile, adaptive capacity represents the primary outcome emerging from the interaction among these components (Caena & Redecker, 2019; Talafian et al., 2023).

Architecture of the Adaptive Teacher Training Model

The findings suggest that the effectiveness of open communities of practice largely depends on learning architectures that support collaboration, active participation, and knowledge exchange. Based on the synthesis of relevant theories and previous studies, the proposed model comprises five cyclical and continuous stages.

The first stage is knowledge sharing, which involves exchanging experiences, best practices, learning resources, and solutions to instructional challenges encountered by teachers. At this stage, digital platforms function as interactive spaces that facilitate rapid and open information exchange among community members (Trust et al., 2016; Carpenter & Krutka, 2014).

The second stage is collaborative inquiry, in which teachers collectively explore and solve instructional problems. Teachers not only share experiences but also engage in critical analysis of the challenges they face. This process promotes the emergence of new knowledge that is more relevant to practical needs than generic and standardized solutions (Wenger et al., 2002; Kelly & Antonio, 2016).

The third stage is co-creation of innovation, involving the collaborative design, development, and testing of instructional innovations. During this stage, teachers act as learning designers who collectively generate new strategies, media, and approaches suited to evolving educational contexts (Darling-Hammond et al., 2020; Fullan, 2020).

The fourth stage is reflective practice, which focuses on reflecting upon the implementation of innovations. Reflection enables teachers to evaluate the effectiveness of their actions while identifying opportunities for improvement in subsequent cycles (Schön, 1983; Day & Sachs, 2004).

The fifth stage is adaptive transformation, which refers to the internalization of learning experiences that result in changes in teachers' mindsets, professional behaviors, and adaptability to educational changes. At this stage, professional learning contributes not only to technical competence development but also to the formation of a more flexible, resilient, and innovative professional identity (Caena & Redecker, 2019; OECD, 2023).

Contribution of the Model to the Development of Teachers' Adaptive Capacity

The conceptual analysis demonstrates that the adaptive teacher training model based on open communities of practice significantly contributes to the development of teachers' adaptive capacity. In this study, adaptive capacity refers to an individual's ability to respond to change, manage uncertainty, and generate innovative solutions in dynamic situations (Fullan, 2020; OECD, 2023).

Through open collaborative mechanisms, teachers gain access to diverse perspectives, experiences, and instructional practices that broaden their professional insights. The diversity of experiences shared within the community encourages teachers to develop cognitive flexibility and decision-making skills in complex situations (Trust et al., 2016; Talafian et al., 2023). Furthermore, continuous interaction enables informal learning processes that are more responsive to actual needs than periodic formal training programs (Avalos, 2011; Wenger et al., 2002).

The model also strengthens teachers' reflective abilities through a culture of discussion and collective evaluation. Previous studies indicate that collaborative professional reflection enhances pedagogical awareness, problem-solving skills, and readiness to cope with changes in instructional practice (Schön, 1983; Darling-Hammond et al., 2017). Therefore, open communities of practice function not only as platforms for knowledge sharing but also as mechanisms for strengthening adaptive capacity, enabling teachers to continuously grow amid rapid change.

Implications for Policy Development and Teacher Training Practices

The findings provide important implications for future teacher professional development policies. First, the study highlights the need for a paradigm shift from centralized training models toward community-based and collaborative professional learning approaches. In this context, the success of teacher professional development should no longer be measured solely by the number of training programs attended but also by the level of participation, collaboration, and continuous learning occurring within professional communities (Darling-Hammond et al., 2017; OECD, 2023).

Second, governments and educational institutions need to provide digital infrastructures that support the establishment of inclusive and sustainable open communities of practice. Policy support should extend beyond technology provision to include the promotion of knowledge-sharing cultures, recognition of informal learning, and facilitation of cross-school and cross-regional collaboration (Trust et al., 2016; Selwyn, 2022).

Third, the model offers a foundation for developing teacher training systems that are more flexible and responsive to change. By integrating open communities of practice into professional development policies, teachers gain opportunities to engage in contextual, relevant, and continuous learning aligned with the challenges they encounter in everyday educational practice (Caena & Redecker, 2019; Fullan, 2020).

Implementation Challenges and Future Directions

Despite its potential advantages, implementing the adaptive teacher training model based on open communities of practice presents several challenges. One of the primary challenges is the persistent disparity in technology access and digital literacy across different regions, particularly in areas with limited educational infrastructure and internet connectivity (UNESCO, 2023; Selwyn, 2022). Such conditions may hinder teachers' participation in digital communities, which constitute the foundation of the proposed model.

Another challenge relates to professional cultures that remain largely individualistic and oriented toward administrative compliance. In certain educational contexts, knowledge sharing and professional collaboration have not yet become integral components of workplace culture, requiring paradigm shifts and sustained institutional support (Hargreaves & O'Connor, 2018; Fullan, 2020).

Furthermore, the success of the model depends heavily on the quality of community facilitation, the sustainability of member participation, and the effective use of digital technologies. Therefore, future research should focus on developing implementation

instruments, conducting empirical validation of the model, and testing its effectiveness across diverse educational settings. Through such efforts, the adaptive teacher training model based on open communities of practice can be further refined as a strategic alternative for fostering resilient, collaborative, and adaptive teacher professionalism in the face of global disruption.

CONCLUSION

The reconceptualization of the adaptive teacher training model based on open communities of practice demonstrates that teacher professional development in the era of global disruption requires a paradigm shift from formal, centralized, and episodic training toward a collaborative, flexible, and sustainable professional learning ecosystem. The proposed model positions open communities of practice as collective learning spaces that enable teachers to share knowledge, engage in professional reflection, develop instructional innovations, and build adaptive capacity through continuous interaction and collaboration.

The findings indicate that the integration of open communities of practice, digital collaboration, continuous reflection, and collective knowledge creation has the potential to strengthen teachers' ability to respond to technological change, curriculum demands, and the evolving challenges of twenty-first-century education. The model contributes not only to the enhancement of professional competencies but also to the development of teachers who are more adaptive, resilient, and innovative in navigating global uncertainty.

From a practical perspective, the model offers a strategic alternative for governments, educational institutions, professional organizations, and teacher communities in designing professional development systems that are more relevant to future educational needs. Therefore, policy support, strengthened digital infrastructure, and the cultivation of collaborative cultures are essential to ensure that open communities of practice can function effectively as sustainable platforms for teachers' professional learning and continuous development.

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