Teacher professionalism development model as a pillar of elementary education quality

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Keywords:	Abstract
development model; teacher professionalism; quality of education; elementary education	*Teacher professionalism is a key factor in ensuring the quality of elementary education, particularly amid technological disruption and evolving global learning paradigms. This study explores an effective model for developing teacher professionalism to enhance basic education in Indonesia. Using a qualitative library research method, the study analyzes academic literature, policy documents, and recent research through data reduction, coding, comparison, and synthesis. Five existing models of teacher professional development were identified: conventional training-based, mentoring-based, practitioner community-based, digital technology-based, and integrated holistic models. Based on these, the study proposes the Continuous Integrative Teacher Professionalism Development Model (MPGIB), which integrates five essential components: development of pedagogical content knowledge (PCK) through practitioner communities, tiered mentoring, digital platforms, collaborative action research, and portfolio-based recognition. MPGIB offers a transformative approach, positioning teachers as reflective professionals with the autonomy for contextual self-development. Its implementation has implications for reforming teacher working groups (KKG/MGMP), optimizing professional development funds, strengthening evidence-based quality assurance, and redefining teachers as agents of educational change—ultimately contributing to improved teaching practices and the quality of basic education in Indonesia.*

INTRODUCTION

Research Background

Teacher professionalism is a crucial component in determining the quality of elementary education, which is currently facing complex challenges in the era of technological disruption and changes in the global learning paradigm. The problem of the low quality of elementary education, which is reflected in the literacy and numeracy achievements of Indonesian students in the PISA and TIMSS surveys, shows the urgency of increasing teacher competence as the spearhead of learning (Darling-Hammond & Hyler, 2020). Even though the teacher certification program has been running for more than a decade, the gap between the ideals of teacher professionalism and the reality on the ground is still a serious obstacle to the realization of equitable quality education. The theory of continuous professional development (Continuing Professional Development) put forward by Day (2002) emphasizes that teachers need to develop capacity throughout their careers to adapt to changes in curriculum, educational technology, and dynamic student needs (Nugraheni & Jailani, 2020).

The Problem of the Study

This research problem focuses on how an effective teacher professional development model can be designed, implemented, and evaluated as a pillar of improving the quality of elementary education. Specifically, this research seeks to identify the essential components of a teacher professional development model that is adaptive to the elementary education context in Indonesia, explore the model implementation process involving various educational stakeholders, and analyze the extent of the impact of implementing the model on improving learning practices and student learning outcomes. This problem is important considering that there is no comprehensive model specifically designed for the Indonesian educational context by considering socio-cultural diversity and existing infrastructure gaps.

Research's State of the Art

Various research on the development of teacher professionalism has been carried out extensively, but most of it is still focused on aspects of conventional training and pays little attention to the integration of digital technology in developing teacher competence (Amelia, 2023). Existing models of teacher professional development tend to be top-down, relying on centralized training that is often less relevant to the context and specific needs of teachers in various regions with different characteristics. Darling-Hammond argues that effective teacher professional development must be contextual, collaborative, and ongoing, not simply sporadic training activities disconnected from real classroom practice and school-specific needs. The majority of previous research tends to adopt models from developed

countries without adequate modification according to the local context or focuses only on certain aspects of teacher professionalism, such as mastery of subject content or pedagogical skills, without integrating them into a holistic system (Gunadi & Sumarni, 2023).

Novelty, Research Gaps, & Goals

In contrast to previous research, which generally emphasizes a single approach to developing teacher professionalism, this research offers an integrative development model that combines a community-of-practice approach, technology-based learning, and continuous coaching. The proposed model emphasizes collaboration between teachers in a professional learning community, which is strengthened by the use of digital technology and supported by a tiered mentoring system (Dedi, 2022). This approach allows teacher professional development that is more adaptive to local needs but remains oriented towards national standards and best global practices.

The research gap found lies in the lack of studies that explore models of teacher professionalism development that are comprehensive, sustainable, and adaptive to Indonesia's diverse socio-cultural context. Apart from that, there are not many studies that systematically analyze the impact of teacher professionalism development models on improving student learning outcomes as the main indicator of the quality of elementary education.

Based on this gap, the research question asked is: How can an effective teacher professional development model be designed, implemented, and evaluated as a pillar of improving the quality of elementary education? Specifically, this research seeks to answer: (1) What are the essential components of a teacher professionalism development model that is adaptive to the context of elementary education in Indonesia? (2) What is the process of implementing the teacher professionalism development model that involves various educational stakeholders? (3) To what extent does the impact of implementing the teacher professional development model improve learning practices and student learning outcomes? Through a comprehensive library research approach, this research is expected to produce a conceptual model of teacher professionalism development that is applicable and contributes to improving the quality of elementary education in Indonesia.

METHOD

Type and Designs

This research employs a qualitative method with a library research approach conducted through the collection, identification, analysis, and synthesis of data from various relevant literature sources on teacher professional development and its relation to the quality of elementary education. The qualitative approach was chosen to enable an in-depth exploration of existing concepts, theories, and models of teacher professional development, as well as to formulate a new conceptual model that is comprehensive and contextual.

Data and Data Sources

The literature sources examined include nationally and internationally reputable scientific journal articles, reference books, research reports, education policy documents, and publications from leading educational organizations published within the last ten years (2021-2025). The selection of sources is based on relevance to the topic of teacher professional development and quality of elementary education, as well as the credibility of these publication sources in the field of education.

Data Collection Techniques

Data collection techniques were carried out through electronic database searches such as Scopus, ERIC, Google Scholar, and Portal Garuda using keywords: "teacher professionalism", "teacher competency development", "quality of elementary education", "professional learning community", and "continuing professional development". The collected literature was then sorted based on inclusion and exclusion criteria to ensure compatibility with the research focus and the novelty of the information presented.

Data Analysis

The collected data was analyzed through several stages including (1) data reduction by selecting literature based on relevance and source credibility; (2) codification and categorization to identify main themes related to teacher professional development models; (3) comparison of various existing models; and (4) synthesis to formulate a new conceptual model that is comprehensive and contextual with elementary education in Indonesia. Research validity is ensured through source triangulation by ensuring the diversity and credibility of the literature reviewed, as well as peer review by education experts to verify the coherence and applicability of the proposed model.

RESULTS

Typology of Teacher Professionalism Development Models in Indonesia

Based on an analysis of various literature, five main typologies of teacher professionalism development models have been identified as implemented in Indonesia. Conventional training-based models still dominate teacher development programs in Indonesia, characterized by a top-down approach through workshops, seminars, and short training, which are generally sporadic and less sustainable. Findings indicate that this model has limitations in terms of knowledge transfer to classroom practice, with effectiveness declining after three months post-training without further mentoring. Mentoring and coaching-based models have begun to develop in the last decade, especially through programs such as USAID PRIORITAS and the Tanoto Foundation, which have shown more positive results in changing teacher learning practices than conventional training. This approach places experienced teachers or education experts as companions who provide ongoing guidance and constructive feedback based on classroom observations.

The community of practice-based model was developed through Teacher Working Groups (KKG), Subject Teacher Deliberations (MGMP), and Lesson Study, which prioritize collaboration between teachers in solving learning problems. Findings show this model is successful in building a collaborative and reflective culture among teachers, although its effectiveness varies depending on leadership, school support, and the availability of skilled facilitators. Digital technology-based models emerged in response to digital transformation and accelerated by the COVID-19 pandemic, characterized by online learning platforms, learning videos, and virtual communities that allow teachers to access professional development materials without geographic restrictions. Even though it offers flexibility and broad reach, this model faces challenges with technology infrastructure and teacher digital readiness, which vary between regions in Indonesia.

Holistic, integrated models that combine multiple approaches are emerging as the latest trend, with programs such as the Mobilizing Teacher Program and Mobilizing Schools combining training, mentoring, communities of practitioners, and digital platforms. Findings suggest that this integrative model has greater potential in facilitating the transformation of teachers' instructional practices because it provides multi-dimensional and ongoing support. However, its implementation requires complex coordination between various stakeholders and substantial resources, so it cannot yet be implemented evenly throughout Indonesia.

Characteristics of Effective Teacher Professionalism Development Programs

Analysis of the literature identified nine main characteristics of effective teacher professional development programs.

Figure 1. Nine Main Characteristics of Eeffective Teacher Professional Development Programs

First, effective programs focus on specific pedagogical content (pedagogical content knowledge) that is relevant to the subject and grade level that the teacher teaches, not just general theory or generic skills. Second, the program prioritizes active learning that involves teachers in direct practice, reflection, and feedback, not as passive recipients of information. Third, there is coherence with the curriculum, learning standards, and applicable educational policies, so that teachers do not experience confusion due to conflicting messages.

The fourth characteristic is adequate duration and intensity, with programs lasting at least one semester and involving a minimum of 20 hours of meetings, showing more significant results than short training. Fifth, collaborative learning allows teachers to interact and learn from colleagues through discussions, class observations, and joint analysis of student learning practices and outcomes. Sixth, there is modeling of effective practice through demonstrations, learning videos, or observations of expert teachers who provide concrete examples of implementing learning strategies.

The seventh characteristic is expert coaching and mentoring, which provides ongoing guidance, feedback, and support to help teachers apply new knowledge and

skills in their classrooms. Eighth, reflection and feedback encourage teachers to analyze their practice, identify areas of improvement, and evaluate the impact of changes in practice on student learning. Ninth, continuity and follow-up support ensure professional development does not stop after the formal program ends, but is integrated into daily practice and school culture.

Essential Components in Teacher Professionalism Development

Based on the literature synthesis, five essential components need to be developed in the teacher professionalism development model. The pedagogical and content knowledge component (Pedagogical Content Knowledge) includes mastery of teaching materials, understanding of how students learn certain concepts, general difficulties students face, and effective learning strategies for specific concepts. Analysis shows that teachers with strong PCK can present complex concepts in a way that is easy to understand, anticipate student misconceptions, and adapt learning to the needs of diverse students.

The components of digital skills and technological literacy are becoming increasingly important in the era of digital transformation of education, including the ability to integrate technology as a learning tool, design digital-based learning, and facilitate learning experiences that utilize technology appropriately. Findings show a significant digital divide among Indonesian teachers, with some teachers demonstrating advanced technology skills while others are still at the basic digital literacy stage, emphasizing the need for a tiered approach in digital competency development.

The components of reflection and practical research (action research) play an important role in developing teachers as reflective practitioners who can analyze their own practice, identify learning problems, and test innovative solutions through the action research cycle. Studies show that teachers who engage in classroom action research consistently demonstrate improvements in teaching practices, adaptability, and problem-solving orientation compared to teachers who rely solely on formal training.

The collaboration and professional learning community components create an environment that supports the exchange of ideas, best practices, and collective learning among teachers. The analysis shows that schools with active professional learning communities succeed in building a collaborative culture, increasing teacher motivation, and accelerating the diffusion of learning innovations. The educational leadership and advocacy component develops teachers' capacity not only as

educators but also as agents of change who influence policy, school culture, and broader educational practices. Programs such as Teacher Mobilization show the potential for developing teacher leadership capacity in facilitating change at the classroom, school, and even community levels.

The Relationship between Teacher Professionalism and the Quality of Elementary education

Literature analysis reveals a strong and consistent relationship between teacher professionalism and the quality of elementary education through several channels of influence. Longitudinal studies show a significant positive correlation between teacher quality and student academic achievement, with the cumulative effect of a series of high-quality teachers increasing student achievement by up to 50 percentiles compared to low-quality teachers. Analysis in Indonesia confirms a similar pattern, with schools that have a high proportion of qualified and competent teachers consistently showing better student learning outcomes in national and international assessments.

Teacher professionalism contributes to the quality of education not only through academic achievement but also the development of students' non-cognitive skills. Teachers who implement innovative and student-centered learning practices are proven to be more effective in developing students' critical thinking, creativity, communication, and collaboration skills than teachers using conventional methods. Ethnographic studies in Indonesian elementary schools show that teachers with high professionalism create learning environments that are more inclusive and supportive, and foster students' intrinsic motivation.

The influence of teacher professionalism on the quality of education is moderated by contextual factors such as school leadership, infrastructure support, and academic climate. Schools with strong instructional leadership, a collaborative culture, and adequate support for professional development are able to maximize the impact of teacher professionalism on student learning. In contrast, high-quality teachers in unsupportive environments experience significant barriers in implementing their best practices, demonstrating the importance of systemic approaches in improving educational quality.

The impact of teacher professionalism is long-term and has a multiplier effect. Students taught by high-quality teachers not only show improved short-term learning outcomes but are also more likely to progress to higher levels of education, have successful careers, and contribute positively to society. A cohort study in Indonesia

found that investments in teacher professional development generated substantial social and economic returns by improving the quality of human resources and national productivity in the long term.

DISCUSSIONS

Conceptual Model of Teacher Professionalism Development for Elementary education

Based on the results of the analysis of the various teacher professional development models that have been identified, an integrative conceptual model can be formulated that combines the essential elements of the five model typologies that have been discussed. This model is named the "Continuous Integrative Teacher Professionalism Development Model" (MPGIB), which is built on the principles of sustainability, contextuality, and adaptability. MPGIB consists of five components that are mutually integrated and sustainable.

The first component is the development of Pedagogical Content Knowledge (PCK) through a practitioner community that is facilitated online and offline (Abidin et al., 2023). PCK development is no longer designed as a one-way dissemination of information (Silviana Lianvani et al., 2023), but rather as a collaborative process in which teachers jointly explore specific pedagogical content that is relevant to the context and needs of their students (Siprianus Jewarut et al., 2024). Different from the conventional model, this approach positions teachers as knowledge producers, not just consumers. The second component is tiered mentoring, which combines coaching by external experts with internal peer-coaching. This system creates a mentoring pyramid structure where expert teachers guide groups of teachers who then become mentors for other colleagues. This approach allows for continuity and expansion of the reach of mentoring without excessive dependence on external facilitators while building teacher leadership capacity.

The third component is an integrated digital platform that not only functions as a learning resource repository but also as a virtual collaboration space, professional development management system, and learning data analytics tool. The platform allows personalization of development paths according to the specific needs of each teacher based on an analysis of their competency gaps. The fourth component is collaborative action research in which teachers identify learning problems in their classrooms, design evidence-based interventions, implement solutions, and evaluate the results in a cycle of continuous improvement (D. Hidayati et al., 2023). In contrast

to conventional classroom action research, which is often carried out individually, this model emphasizes collaboration between teachers in a community of practitioners.

The fifth component is a career recognition and development system that links professional development activities with teacher career paths. The system uses digital portfolios to document evidence of improved learning practices and their impact on student learning outcomes, which then becomes the basis for professional recognition and career advancement.

Comparative Analysis of the Proposed Model with Previous Models

MPGIB has several comparative advantages over previous models. First, this model overcomes the main limitations of conventional training-based models by ensuring sustainability through the integration of various long-term support mechanisms such as practitioner communities, tiered mentoring, and digital platforms. In contrast to sporadic training, whose effects tend to decline after a few months MPGIB creates a sustainable development ecosystem that becomes part of everyday professional practice.

Second, compared to conventional mentoring-based models, MPGIB expands reach and sustainability through a pyramid mentoring structure and technology integration. This approach overcomes the limited number of expert mentors and geographic reach, which are obstacles in traditional mentoring programs (Tripambudi & Suparno, 2022). Third, this model strengthens and expands the concept of a community of practitioners by combining face-to-face meetings with virtual collaboration, enabling more intensive and extensive interaction compared to conventional KKG/MGMP, which is limited to periodic meetings (Nofiaturrahmah, 2022).

Fourth, compared to existing technology-based models, MPGIB does not position technology only as a medium for delivering content, but as an enabler for collaboration, reflection, data analysis, and personalization of professional development. Fifth, this model is more comprehensive than existing holistic models by adding a collaborative action research dimension and a portfolio-based recognition system that links professional development to teachers' career paths.

Fundamentally, MPGIB shifts the paradigm of teacher professional development from a deficit model that assumes that teachers have deficiencies that need to be "corrected" through external intervention, towards a transformative model that views teachers as reflective professionals with the agency and capacity to direct their development in the context of a collaborative community. This approach

is in line with the findings of Darling-Hammond et al. (2023), who identified a global shift towards more adaptive, contextual, and school-based models of professional development

Theoretical and Practical Implications

The proposed model has several theoretical implications. First, MPGIB expands the theoretical understanding of teacher professional development by integrating social learning theory, social constructivism theory (Vygotsky), and practice transformation theory (Mezirow). This model combines the concepts of zone of proximal development from Vygotsky with scaffolding practice through tiered mentoring (Swastika & Utami, 2025), the concept of communities of practice from Wenger through teacher collaboration (Qulsum & Hermanto, 2022), and principles of transformative learning from Mezirow through critical reflection and action research (Sinaga, 2023).

Second, this model contextualizes professional development theories, which mostly originate from Western countries, into the Indonesian socio-cultural context with its collectivist characteristics (W. A. Hakim, 2021). Thus, MPGIB enriches the theoretical discourse on locality and universality in teacher professional development, showing how universal principles can be adapted to local contexts without losing their essence.

In terms of practical implications, the implementation of MPGIB has the potential to produce several significant changes in the education system. First, this model can reform the structure and function of the KKG/MGMP from just a periodic meeting forum to a dynamic community of practitioners with digital support and a clear results orientation. Second, MPGIB can optimize the use of professional development funds by shifting focus from short mass training towards investment in collaborative infrastructure and ongoing mentoring, which has proven to be more effective in changing learning practices.

Third, the implementation of this model can strengthen the relationship between professional development and the education quality assurance system, where data from collaborative action research and teacher portfolios become an evidence base for evaluating and improving education programs at the school and regional levels. Fourth, MPGIB encourages a shift in the role of teachers from passive implementers of educational policies to reflective professionals and agents of change who contribute to the development of educational practices and policies.

Model Implementation Strategy in the Indonesian Context

Implementation of MPGIB in Indonesia requires a gradual and contextual approach by taking into account the diversity of regional capacities and conditions (Ilyas, 2023).

Model Implementation Strategy in the Indonesian Context

- Pilot projects
- Capacity development
- Digital platform development
- Regulation harmonization
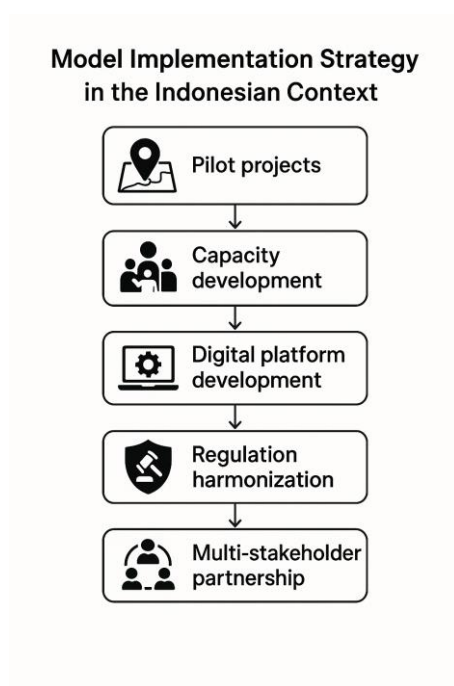- Multi-stakeholder partnership

Figure 1. Model Implementation Strategy in the Indonesian Contex

The first strategy is a pilot project in several districts/cities (Musfira et al., 2022), representing various geographic, socio-economic, and educational infrastructure contexts to identify contextual factors that influence implementation and develop variations of models that are adaptive to diverse conditions in Indonesia. The second strategy is developing the capacity of facilitators and coaches, which includes intensive training for selected teachers, school principals, and supervisors to become practitioner community facilitators and coaches for colleagues (Sari & Sunarya, 2023). Facilitator selection should not only consider formal criteria such as class and length of service, but also competence, motivation, and informal influence among colleagues.

The third strategy is the gradual development of an integrated digital platform, starting from basic features that are easy to access and use, and then progressively adding advanced analytical features and personalization (Hajri, 2023). This platform needs to consider infrastructure limitations in areas by providing offline use options and periodic synchronization for areas with limited connectivity.

The fourth strategy is the harmonization of regulations and supporting policies (Tanaamah et al., 2021), including the revision of the Minister of State PAN-RB

Regulation on teacher functional positions to recognize activities in the practitioner community and collaborative action research as part of the credit score. In addition, policies are needed that facilitate cross-school and inter-cluster collaboration as well as special time allocation for professional development activities within the structure of teachers' working hours.

The fifth strategy is to build a multi-stakeholder partnership involving the Ministry of Education and Culture, regional government, teacher training colleges, professional teacher organizations, educational NGOs, and the private sector These partnerships are critical to mobilizing the resources, expertise, and political support necessary for large-scale and sustainable implementation.

Challenges and Limitations

MPGIB implementation faces several significant challenges and limitations. First, the digital divide and technological infrastructure are still obstacles in many areas, especially in remote, island, and border areas (3T) (Subroto et al., 2023). To overcome this, it is necessary to adapt the model with variants "low-tech" which are less dependent on connectivity and sophisticated devices, while gradually building digital capacity. Second, the hierarchical culture and top-down approach that is still dominant in the Indonesian education system can hinder the development of an egalitarian and collaborative community of practitioners (Y. Yusuf, 2024). This cultural transformation requires time and concrete examples from educational leaders who demonstrate a collaborative and empowering approach.

Third, funding sustainability is a challenge considering that this model requires long-term investment, not just short-term project. Evidence-based advocacy is needed to convince policymakers that investments in ongoing teacher professional development produce returns (return on investment) which is greater than conventional training approaches. Fourth, teachers' already high administrative workload can become a barrier to active participation in communities of practice and collaborative action research (Masduki et al., 2021). This requires rationalizing administrative burdens and integrating professional development activities into the regular work structure, rather than as additional tasks.

Fifth, limited capacity of quality facilitators and coaches, especially in areas that lack educational resources (N. Hidayati, 2023). Approach peer-coaching and gradual development of local facilitators could be a strategy to overcome these limitations, supported by remote mentoring from experienced facilitators.

Directions for Further Research Development

Based on the proposed conceptual model and the identified limitations, several further research directions can be recommended. First, study the implementation of the MPGIB pilot project in various contexts to identify contextual factors that influence the effectiveness of the model and develop adaptive variations that are responsive to the diversity of conditions in Indonesia. A design-based research approach involving an iterative cycle of design, implementation, evaluation, and redesign may be an appropriate methodology.

Second, longitudinal research that examines the long-term impact of MPGIB on teacher learning practices and student learning outcomes. This research needs to use an experimental or quasi-experimental design with a control group to identify the causal effects of the intervention and the mechanisms of change. Third, a comparative study of the relative effectiveness and cost efficiency of various MPGIB components to identify optimal combinations that provide maximum impact with minimum resources. This cost-effectiveness analysis is very important for policy advocacy and efficient resource allocation.

Fourth, the development and validation of instruments to measure changes in teacher practice and their impact on student learning as a result of participation in MPGIB. This instrument includes a learning observation rubric, portfolio assessment tool, and teacher reflection analysis protocol that can be used for program evaluation and research. Fifth, a study of the role of technology in facilitating and expanding the reach of communities of practice, including comparative analysis between face-to-face, hybrid, and fully virtual communities in the Indonesian socio-cultural context. This analysis will help optimize digital platform design and implementation strategies.

Sixth, research on teacher leadership development through MPGIB and its impact on overall school transformation. This includes an exploration of how teachers can become agents of change influencing school practices and culture beyond their classrooms. Seventh, research on the adaptation and contextualization of MPGIB for the specific needs of teachers in 3T areas, special education teachers, and teachers in schools with unique characteristics such as one-roof schools and integrated schools.

Through this continued research, MPGIB can continue to be developed and refined as a significant contribution to increasing teacher professionalism and the quality of elementary education in Indonesia.

CONCLUSION

This study has developed the *Sustainable Integrative Teacher Professionalism Development Model* (MPGIB), which addresses limitations in conventional teacher development approaches by integrating five key components: practitioner community-based PCK development, tiered mentoring, integrated digital platforms, collaborative action research, and portfolio-based recognition. MPGIB offers a transformative framework that positions teachers as reflective professionals with agency in their own development, aligned with global trends favoring adaptive and contextualized professional learning. The model's phased and context-sensitive implementation strategy acknowledges the diversity of educational settings in Indonesia, though challenges such as the digital divide, hierarchical organizational culture, and funding sustainability must be addressed through model adaptation and evidence-based advocacy.This research contributes to the contextualization of professional development theory within the realities of the Indonesian education system and proposes a comprehensive reform framework with the potential to enhance the quality of elementary education. Further research is recommended to pilot and evaluate the model across diverse contexts, assess its long-term impact on teaching practices and student outcomes, and develop flexible variations to meet the specific needs of teachers in varying educational environments.

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