Beginning teachers' professional development in Germany, Singapore, China, and Kazakhstan

Oxana Kereyeva[1], Almazhai Yegenissova[1], Adem Bayar[2], Kairat Tleuov[3], Nurbike Bisaliyeva[4], Karylgash Kudarova[4], Shynar Iskakova[4]

[1]Department of Educational Science, Faculty of Education, Caspian State University of Technologies and Engineering named after Sh. Yesenov, Aktau, Kazakhstan
[2]Department of Educational Science, College of Education, Harran University, Sanli Urfa, Turkey
[3]The National Center for Professional Development "Orleu" JSC, Aktau, Kazakhstan
[4]Center for Language Development, Zhangir Khan West Kazakhstan University, Uralsk, Kazakhstan

Article Info

ABSTRACT

This study explores the challenges faced by beginning teachers in Kazakhstan due to inadequate professional development (PD) support, leading to high attrition rates and adaptation difficulties. A comparative analysis of PD programs in Germany, Singapore, China, and Kazakhstan identifies best practices that enhance teacher retention, professional growth, and teaching quality. Employing Bereday's four-phase comparative methodology, this study systematically reviews approximately 20 policy documents and research articles from the selected countries. The findings indicate that effective PD programs incorporate structured mentoring, professional learning communities (PLCs), and action research. In contrast, Kazakhstan's limited PD framework, characterized by brief mentoring periods and heavy teacher workloads hinders continuous professional growth. This study recommends extending the mentoring program to two years, reducing workloads, and integrating structured PD activities such as peer observations, subject-specific discussions, and collaborative workshops. Additionally, fostering professional communities and administrative support can ease the adaptation process, ultimately improving teacher retention and education quality. These recommendations provide a foundation for enhancing Kazakhstan's PD system, aligning it with international best practices to establish a sustainable support structure for beginning teachers.

Corresponding Author:

Almazhai Yegenissova
Department of Educational Science, Faculty of Education
Caspian State University of Technologies and Engineering named after Sh. Yesenov
Microdistrict 32, Aktau, 130000, Kazakhstan
Email: almazhai66@mail.ru

1. INTRODUCTION

Teacher professional development (PD) is a cornerstone of global educational reform, pivotal for enhancing teaching quality, improving retention, and elevating student achievement [1]. The United Nations Educational, Scientific and Cultural Organization (UNESCO) projects that by 2030, approximately 44 million additional primary and secondary teachers will be required to achieve sustainable development goal 4 on inclusive and equitable quality education [2]. This shortage is not only numerical but also qualitative, driven by high attrition, insufficient preparation, and limited early career support. During their initial years, beginning teachers face significant challenges, as early professional experiences strongly shape their long-term commitment, instructional efficacy, and career retention [3]. In high-performing education

systems – PD for beginning teachers – those in their first few years of service, focuses on bridging the gap between initial training and practical classroom demands, fostering reflective practice, and building resilience against burnout [4]. For instance, countries such as Germany, Singapore, and China have achieved teacher retention rates of approximately 95%, 97-98%, and 95.7%, respectively [5], [6], according to recent Organisation for Economic Co-operation and Development (OECD) data, through structured multi-phase programs integrating mentorship, collaborative inquiry, and workload management [7]. Germany's *Referendariat* provides a two-year induction phase combining reduced teaching requirements with sustained pedagogical training delivered through *Studienseminare*, concluding with the second state examination. This configuration strengthens professional competencies and lowers early attrition [8], [9]. Similarly, Singapore's nationally coordinated beginning teachers' program (BTP), led by the Ministry of Education (MOE) and the National Institute of Education (NIE), provides a one-year induction with personalized mentoring from senior teachers, focusing on alignment with the Singapore teaching practice framework, which emphasizes core competencies such as student-centered instruction and reflective dialogue. Recent research from 2025 on vocational teacher training paths in Singapore underscores the role of professional learning communities (PLCs) in this program, where beginning teachers collaborate on action research and lesson analysis, leading to sustained professional growth and retention rates that exceed the global averages [10]. In China, PD is embedded in a culture of collective responsibility, with beginning teachers engaging in ongoing learning through teacher research groups (TRGs) and mentorship from day one, as detailed in a 2025 systematic review of continuous PD in rural China, which notes that despite cultural barriers to formal oversight, these initiatives, particularly in Shanghai, blend formal seminars with informal peer observations to accelerate adaptation and build networks [11]. These examples reveal a common thread in global PD research: successful systems prioritize evidence-based, context-sensitive PD that goes beyond initial training to support long-term efficacy and job satisfaction, often incorporating observational learning, seminars, and competency assessments to achieve this.

Despite these global successes, Kazakhstan faces acute challenges in teacher PD that threaten educational equity and national development, with teacher shortages and high attrition rates persisting as major barriers to reform [12]. Recent international policy analyses highlight Kazakhstan's efforts to enhance the professional status of teachers through reforms targeting entry requirements, certification procedures, and early-career support mechanisms [13]. However, recent data from the OECD's 2023 report reveals that Kazakhstan's teaching workforce is strained by demographic shifts [7], projecting the need to replace a substantial portion, potentially thousands of educators, within the next decade, exacerbated by a 35% attrition rate, as many beginning teachers leave due to insufficient support [14]. These issues are compounded by rural-urban disparities, with over half of rural schools facing limited access to PD resources and qualified teachers, and gender inequities, where women dominate the profession yet encounter biases in recruitment and compensation, undermining retention and perpetuating socioeconomic divides [15]. As Ingersoll *et al.* [16] metaphorically describe, teacher retention operates as a "leaky bucket," in which recruitment initiatives fail to stabilize the workforce unless systemic deficiencies in PD and induction support are addressed.

To address these challenges, this study employs Bereday's four-phase comparative methodology to analyze PD systems in Germany, Singapore, China, and Kazakhstan, identifying transferable and adaptable best practices for strengthening Kazakhstan's teacher induction and retention policies. The novelty of this research lies in its prescriptive, policy-oriented comparative design, which transcends description by generating context specific recommendations for integrating international PD models into Kazakhstan's framework, such as extending mentoring durations to two years, reducing workloads to OECD standards, and incorporating structured peer collaboration, in contrast to prior descriptive comparative studies [17] and broad OECD reviews that stop short of offering actionable, localized adaptations for emerging economies such as Kazakhstan [18]. This methodology involves a descriptive phase to profile each country's PD structures, an interpretative phase to analyze contextual factors, a juxtapositional phase to highlight similarities and differences, and a comparative phase to synthesize recommendations, ensuring a rigorous, evidence-based framework as outlined in Bereday's updated applications in comparative education literature [19].

The precise objective of this study is to answer the question: which effective international practices in beginner teachers' PD can be adapted to Kazakhstan's educational context? These contributions address a gap in the literature where high-retention models are rarely operationalized for post-Soviet contexts. This study advances comparative research on PD for beginning-teachers in two ways. First, it moves beyond descriptive cross-national summaries by applying Bereday's four-phase comparative method to produce prescriptive, context-sensitive recommendations specifically tailored to Kazakhstan's institutional constraints (workload, regional imbalances, and mentor shortages). Second, it translates international design features (structured mentoring, protected time, PLCs, and action research) into concrete, feasible policy options, including cost-sensitive steps and short- and medium-term policy levers, thereby bridging global evidence and local feasibility.

2. METHOD

2.1. Research method and application

This study employed a qualitative comparative analysis to examine PD programs for beginning teachers in Germany, Singapore, China, and Kazakhstan. These countries were selected based on their well-established PD frameworks and relevance to the study's objective. This research utilized Bereday's four-phase comparative methodology, a structured framework widely used in comparative education for its systematic, context-sensitive analysis of educational systems across diverse national settings [20]. The methodology comprises four interconnected phases. In the descriptive phase, data from official documents, educational reports, and academic literature were collected to outline each country's PD structure, including employment conditions, program duration, mentoring, and training formats. This process flows into the interpretative phase, where each country's PD program is analyzed individually, delving into its unique features, contextual factors, and educational philosophies; for instance, Germany's structured induction phase and China's focus on continuous learning are interpreted within their national frameworks, ensuring depth and sensitivity to context [21]. Data were triangulated across multiple sources to ensure the reliability of these interpretations, and discrepancies, such as variations in mentoring approaches, were resolved by examining their contextual origins [22]. The juxtapositional phase compared countries based on common criteria, such as mentoring practices and observation procedures. The final comparative phase synthesized similarities and differences, identifying each model's strengths, limitations, and distinctive characteristics. The resulting insights inform recommendations for enhancing Kazakhstan's PD framework [23].

2.2. Data collection

Data were collected through a systematic document analysis, focusing on official national documents, legal acts, educational reports, and scholarly articles related to teachers' PD. A purposive sampling strategy ensured the relevance, authority, recency, and comprehensiveness of the selected materials, as shown in Figure 1. An initial search identified 110 academic articles and 24 official documents, filtered based on relevance to PD, authority, recency, and comprehensiveness of beginning teachers. This process shortlisted 24 articles and eight official sources, selected for their detailed insights into PD programs across Germany [5], [8], [9], Singapore [10], [24], [25], China [26], [27], and Kazakhstan [12]–[15], [28]. Relevance was determined by a direct focus on induction, mentoring, and retention, as reflected in studies on self-determination theory by Kaplan [29] and induction, self-efficacy and retention by Han [30]. Authority was ensured through publications in high-impact journals such as Teaching and Teacher Education (h-index=170) and Journal of Teacher Education (h=117), alongside reports from the OECD [7], [13], [14]. Recency was prioritized, with most sources within the last decade [5], [16]. Comprehensiveness was achieved by analyzing PD structures, including program duration, mentoring practices, and employment conditions. The OECD's Teaching and Learning International Survey (TALIS) 2025 results [7] provide quantitative data on induction participation and program lengths, while case studies by Paine *et al.* [11] on Shanghai's induction and those by MOE Singapore [24] on mentoring offer qualitative insights. Comparative studies [1], [22] link mentorship and PLCs to teacher development and retention. Additional sources, including Chen [27] on China's communities and Ingersoll *et al.* [16] on teacher shortages, enrich global and contextual perspectives. This rigorous selection ensures a robust foundation for analyzing PD systems and proposing evidence-based recommendations for Kazakhstan's reforms.
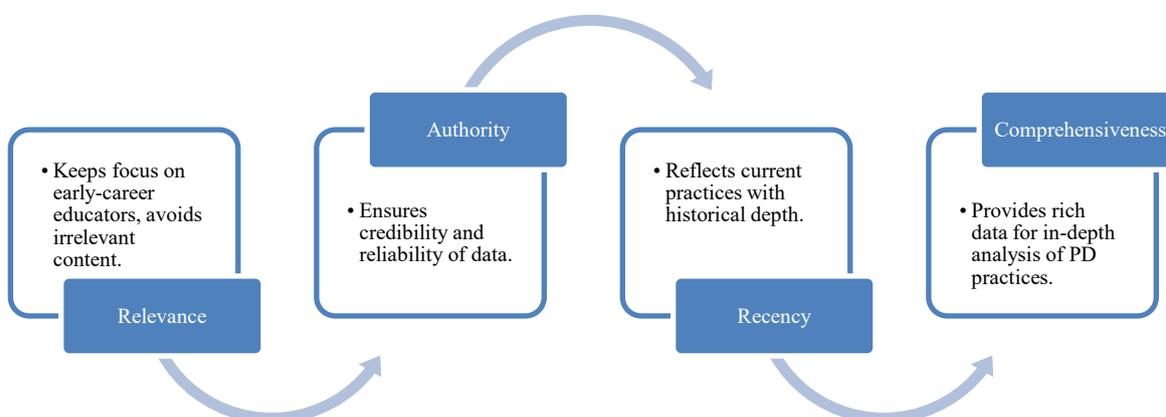

Figure 1. Data selection criteria

2.3. Data analysis

This study utilized the Bereday's model to evaluate PD programs for beginning teachers in Germany, Singapore, China, and Kazakhstan, focusing on assignment, duration, opportunities, support quality, and evaluation. The model comprises four phases: the model includes descriptive, interpretative, juxtapositional, and comparative [20]. The descriptive phase provided an overview of the induction models and examined their scope, duration, opportunities, and evaluation. We consulted official documents from the MOE, various national and international sources, comparative research, and relevant sections from specific books. In the interpretation phase, the induction process of each country was evaluated individually. The developmental opportunities offered by induction programs, their influence on the professional growth of beginning teachers, and the challenges encountered were examined and discussed across the four countries in the juxtapositional phase. Finally, the comparative phase produced a simultaneous comparison. Figure 2 provides an overview of the process of comparing PD programs across four countries.
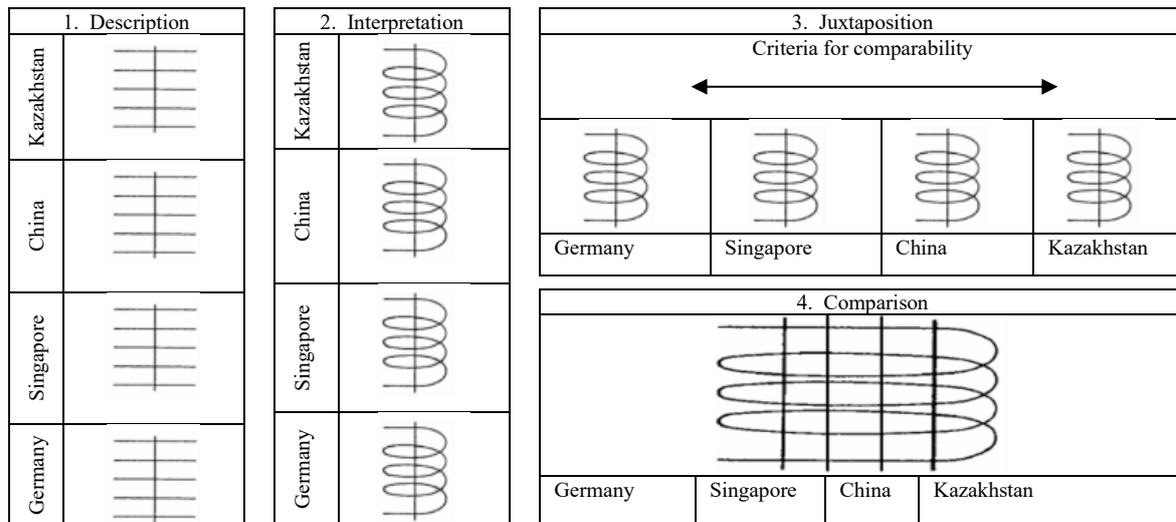

Figure 2. Bereday's comparative model for analyzing PD programs for beginning teachers in Germany, Singapore, China, and Kazakhstan

3. RESULTS AND DISCUSSION

This comparison aims to provide insight into how the current PD program in Kazakhstan could be improved. This study examined the employment conditions and the duration of PD programs in four countries, the types of opportunities provided to beginning teachers during the induction period, and how these opportunities affected their quality, and overall PD. This study compares PD systems for beginning teachers in Germany, Singapore, China, and Kazakhstan using criteria encompassing the full process, from employment to induction, as shown in Table 1.

Table 1. Comparison of PD programs for beginning teachers

Measure	
1. Recruitment	
2. PD duration and workload	
3. Opportunities afforded by the PD program	PLCs
	Mentoring
	Action research
4. The quality of assistance provided during induction and PD	

3.1. Recruitment

The recruitment of beginning teachers is essential for building a high-quality teaching workforce, which directly impacts educational outcomes and teacher retention [3]. Singapore's teacher recruitment, overseen by the MOE, targets candidates from the top one-third of their age cohort, prioritizing academic excellence and teaching aptitude without requiring a national examination, in contrast to the exam-based

systems of Germany, Kazakhstan, and China [9], [25]. Candidates undergo curriculum vitae (CV) screening to assess qualifications and interest in education, followed by interviews with experienced principals evaluating communication skills, passion, and potential as role models [27], [28]. A school-based stint as an untrained contract teacher, typically lasting several months to a year, includes a School Assessment Exercise to confirm suitability. Successful candidates enroll in the NIE for formal training, with ongoing evaluations ensuring that only those with appropriate aptitude and personality proceed [18]. In contrast, Germany's recruitment is decentralized and legally defined by each federal state. Entry requires completion of the first state examination, followed by the *Vorbereitungsdienst* (1–2 years of practical training) and the second state examination [9]. Kazakhstan employs a more standardized, exam-driven system. Pedagogical graduates must pass a national qualification exam, consisting of 50 multiple-choice questions with a minimum score of 25/50, to earn a "teacher-trainee" certificate, followed by a competitive school-based selection process [28]. In China, recruitment combines centralized and local selections. Candidates must pass the national teacher qualification exam and a subsequent local government or school exam, which may involve written tests, interviews, or teaching demonstrations [27]. Table 2 summarizes these recruitment processes and employment conditions, which illustrate the varying rigor and incentives that shape teacher entry and retention. Overall, Singapore and Germany rely on professional selection and structured evaluation, emphasizing pedagogical readiness and status, whereas Kazakhstan and China maintain exam-centered entry routes with less focus on personality fit or pre-service mentoring [31], [32]. In Kazakhstan, introducing preservice school placements and multi-stage interviews could balance rigor with developmental support.

Table 2. Recruitment processes and employment conditions for beginning teachers

Country	Recruitment process
Singapore	MOE-led; top 1/3 cohort; CV screening, principal interviews, school stint, NIE evaluation; no exam
Germany	State exam-i or master's; 3-5-year university training, 1-2-year *Vorbereitungsdienst*, second state exam
Kazakhstan	National exam; portfolio, school selection
China	Degree, national teacher qualification exam; local exam (written, interviews, or teaching demo)

3.2. Professional development duration and workload

The comparative data reveal that while all four systems aim to support beginning teachers through induction and mentoring, they differ significantly in terms of duration, structure, and workload, which shape teacher retention and professional growth [33]. Figure 3 illustrates these differences by comparing the approximate weekly teaching workload (in hours) and the duration of formal mentoring support (in months) across the four systems. Singapore has one of the most structured systems; beginning teachers benefit from a significantly reduced teaching load of approximately 10 hours per week, allowing time for professional development, while mentoring remains comprehensive over a 24-month period. Germany's system also maintains a balanced ratio, where trainee teachers teach for 12–15 hours weekly during a 12 to 24-month induction phase [34]. In contrast, Figure 3 highlights a striking disparity in the systems of China and Kazakhstan. In China, the induction phase is complemented by structured mentoring for up to three years (36 months). While beginning teachers in China manage a workload of approximately 15 hours per week, they actively participate in TRGs, which serve as professional learning communities [27], [33]. Kazakhstan's system, however, remains shorter and more intensive. As illustrated in Figure 3, the one-year induction phase often involves a nearly full workload of 16-18 hours weekly (compared to only 10 hours in Singapore). According to Ayubayeva [35], such a high teaching load, combined with staffing shortages, creates significant time constraints that hinder the quality of mentoring. Consequently, the lack of workload differentiation and limited institutional support in Kazakhstan restrict deep engagement in professional learning and prevent the effective integration of new teachers into the school community.

The comparative analysis demonstrates that the duration and pacing of induction play critical roles in determining how effectively teachers internalize pedagogical competence. Systems that extend induction beyond a single year create opportunities for deeper professional socialization. Moreover, the balance between autonomy and accountability appears central: excessive centralization may inhibit teacher agency, while complete decentralization risks inconsistency [36]. Kazakhstan's evolving framework could benefit from maintaining national quality standards while empowering schools to adapt mentoring and professional learning practices to their specific contexts. Another emerging theme was the importance of protected time for reflective practice. Lower teaching loads in Singapore, Germany, and China enable beginning teachers to participate meaningfully in mentoring sessions, lesson studies, and PLCs. Kazakhstan's heavier teaching schedules reduce this capacity, thereby constraining collaboration and research-based reflections. Thus, a more flexible workload structure could enhance teachers' ability to engage in self-directed learning and innovation.
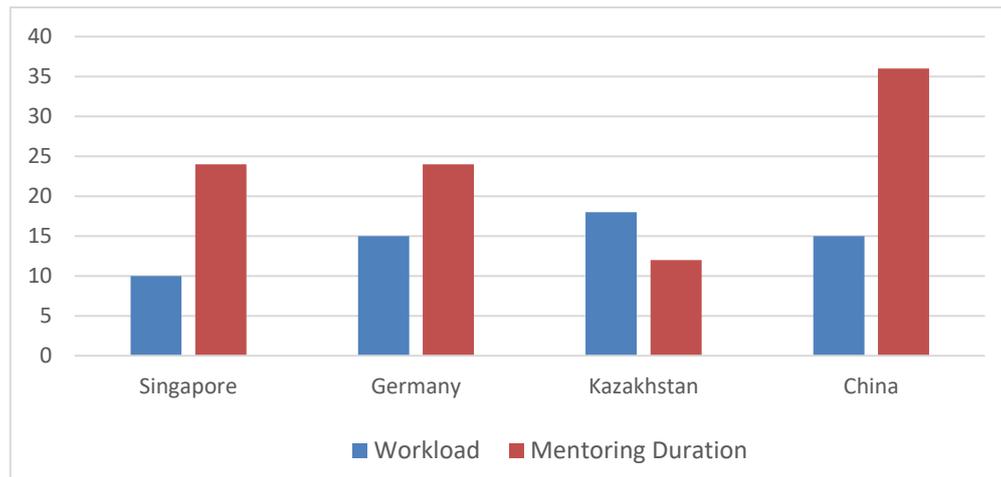
Figure 3. Weekly teaching workload and mentoring duration for beginning teachers (monthly)

3.3. Opportunities: professional learning communities, mentoring, and action research

This section examines three core components of the PD beginning teachers' – PLCs, mentoring, and action research – identified in the international literature as central mechanisms of early career professional learning [24]. Their effectiveness depends on the extent to which coherent structures are established in education systems while maintaining teacher agency. In Singapore, PLCs were institutionalized in 2009 within a nationwide teacher growth framework [37]. Grounded in DuFour [38] "three big ideas", they integrate reflective practice, collaborative inquiry, and data-driven instructional improvement through PLCs. Although this model ensures system-level coherence, its formalization may limit opportunities for teacher-initiated innovation [39]. In Shanghai, collaborative professional learning organically evolved through the enduring TRG system, which was institutionalized in the 1950s. TRGs are rooted in the Confucian ethos of collective learning and emphasize lesson study, peer observation, and small-scale experimentation. Supported by reduced workloads and district-level coordination, Shanghai teachers engage in practice-based and research-informed inquiry. Paine *et al.* [11] noted that this model exemplifies how strong systemic support and cultural fit can sustain continuous professional growth. In Germany, PLC-type collaboration remains decentralized and rooted in professional autonomy. Teachers primarily collaborate within subject departments and school-development projects, reflecting confidence in their self-directed learning capacity. However, the absence of national mandates has resulted in uneven implementation across states. As Vangrieken *et al.* [40] argued, autonomy-driven communities' foster innovation but rely heavily on intrinsic motivation and trust rather than structural support.

In contrast, PLCs in Kazakhstan remain in the early developmental stage. Professional learning is largely organized within centralized governance arrangements and coordinated through regional education authorities and professional development providers officially included in relevant national and regional registries. Although pilot initiatives linked to the Cambridge Education reform and the Nazarbayev Intellectual Schools introduced lesson study and peer coaching, these practices have yet to diffuse system-wide. Hierarchical organizational relationships, heavy teacher workloads, and limited school-level autonomy continue to constrain collaborative professionalism [41]. The cross-case comparison indicates that Singapore and Shanghai have system-embedded and policy-aligned collaborative structures; Germany reflects autonomy-driven but unevenly institutionalized collaboration; and Kazakhstan demonstrates fragmented and developing forms of collegial learning. Across cases, effective PLCs are consistently associated with leadership that protects time for reflection, coherent organizational arrangements, and supportive conditions for teacher agency, as seen in Table 3.

Mentoring structures vary in terms of scope, duration, and mentor qualifications [42]. Singapore's two-year induction program includes the Structured Mentoring Program, which pairs beginning teachers with certified senior, lead, or master teachers trained through the science, technology, engineering, and mathematics (STEM) framework [37]. Mentors provide instructional guidance, emotional support, and subject-aligned modelling to ensure professional coherence [43]. Germany assigns mentors with substantial subject expertise throughout the *Vorbereitungsdienst*, ensuring consistent pedagogical and content-specific support [9]. In Kazakhstan, mentors are required to hold the "teacher-researcher" or "teacher-master" qualification however, shortages often result in cross-disciplinary assignments, weakening subject-specific

mentorship [29]. China's mentoring extends over two to three years but it sometimes pairs beginning teachers with mentors from different grade levels, which can reduce contextual relevance [44]. The comparison shows that while Singapore and Germany demonstrate the strongest alignment between mentoring structure, duration, and subject specificity, Kazakhstan and China face challenges in ensuring depth and alignment. Kazakhstan's mentoring practices, in particular, would benefit from sustained duration and clearer subject matching to enhance beginning teacher support and professional growth. China's two to three-year mentoring arrangements can also face mismatches between mentors' and beginning teachers' grade levels, affecting relevance [45]. Overall, Singapore and Germany demonstrated the strongest alignment among mentoring structure, duration, and subject specificity.

Action research enables teachers to examine and improve their practices through systematic inquiry [46]. In Singapore, it is a central feature of the induction process and is embedded within PLCs. Beginning teachers use e-portfolios to document research projects that link theory with classroom practice, supported by mentoring and reduced workloads [47]. Germany integrates action research into the *Vorbereitungsdienst*, combining reflective inquiry and feedback from *Studienseminare* under manageable teaching loads [10]. In China, TRGs coordinate action research activities, including lesson studies and trial classes, which bridge theory and practice, although implementation varies regionally [48]. In Kazakhstan, action research remains largely limited to short-term courses and professional development events, with high teaching loads hindering sustainability [31]. Comparatively, Singapore and Germany demonstrate how action research can function as a professional bridge between theoretical learning and classroom innovation, while Kazakhstan's fragmented approach constrains its transformative potential. Expanding structured action research through mentoring and PLCs can strengthen teachers' reflective capacity and foster a culture of inquiry-based professional growth.

Table 3. Comparative features of PD structures for beginning teachers in four educational systems

Country	PLCs	Mentoring	Action research	Key strengths
Singapore	Nation-wide PLCs with PLTs (grade/subject-based); learning circles, GESL	SMP, 40% of teachers with subject-aligned mentors, STEM-trained	Integrated in PLCs; e-portfolios document inquiries	Strong policy coherence, sustained collaboration, inquiry culture
Germany	Decentralized collaboration within subject departments and school projects; autonomy-driven professional communities	Subject-aligned mentors	Reflective inquiry and classroom research	High autonomy and professional trust; strong mentor expertise
Kazakhstan	PLCs emerging through Orleu and NIS reforms; system-level scaling remains limited	Teacher-researcher/master mentors, may be cross-disciplinary	Short-term courses and professional development events	Reform potential through pilot initiatives
Shanghai (China)	TRGs (subject/grade-based), collaborative lesson study, peer observation, small-scale experimentation	Same-field mentors, often different grades	Via TRGs; research programs, trial classes	Cultural fit for collective inquiry; integration of research and practice

3.4. The quality of beginning teachers' professional development during the induction period

In Kazakhstan, the PD of beginning teachers in their early career stages is constrained by systemic and cultural factors. Unlike Singapore, Germany, and China, Kazakhstan does not have a formally established induction period, and professional support largely depends on short-term initiatives such as mentoring arrangements, short-term professional training courses and development events, as well as pilot programs implemented in selected schools. While these measures aim to support beginning teachers, research indicates that mentoring quality is uneven, mentors are often poorly selected, and regional disparities limit access to experienced supervisors [31]. School administrators frequently prioritize formalized activities such as portfolio assessment over collaborative and reflective practices, reducing opportunities for meaningful professional interaction. Cultural attitudes towards interference in classroom practice further restrict curriculum supervision, mirroring challenges observed in China [49]. Mentors may provide guidance and co-plan lessons, but intensive monitoring is often avoided because of perceived intrusiveness [50]. Moreover, heavy teaching loads, averaging 50 hours per week for early career teachers, limit the time available for mentoring, lesson study, and participation in PLCs, compared to the OECD average of 39 hours [51]. International comparisons highlight the potential gains of structured induction. Singapore integrates mentoring, PLCs, and lesson study within a coherent national framework, ensuring reflective practice and consistent pedagogical feedback [52]. Germany's constructivist-oriented mentoring fosters reflection, experimentation, and independent decision-making under manageable workloads [19]. Although regional disparities persist, China combines TRGs with mentoring to strengthen content knowledge and classroom skills.

These findings underscore several key insights for Kazakhstan. First, system-level coherence is critical: policies must link mentoring, PLCs, and professional standards into a continuous support framework. Second, protected time for reflection and collaboration is necessary to reduce workload pressure and enhance engagement. Third, mentor selection and training should prioritize subject alignment and professional expertise to maximize the quality of guidance. As Darling-Hammond [1] noted, teacher development flourishes when professional learning is embedded in a supportive school culture, with leaders acting as facilitators rather than managers. Similarly, Terhart [9] emphasizes that without structured and consistent support, beginning teachers risk isolation and uneven skill development. In conclusion, although Kazakhstan has initiated reforms to support beginning teachers, the quality of PD is constrained by the absence of a formal induction period and structural limitations in mentoring, collaboration, and reflective practice. Lessons from Singapore, Germany, and China suggest that integrating a coherent, culturally appropriate induction framework, aligned with workload management, professional learning communities, and skilled mentoring, could significantly enhance the early professional growth of teachers in Kazakhstan.

4.   CONCLUSION

This study contributes a policy-oriented comparative synthesis that operationalizes international PD practices for Kazakhstan: it identifies feasible induction duration (two years), workload adjustment targets (move toward OECD median protected time for reflection), and scalable mentoring and PLC arrangements that can be piloted and evaluated within Kazakhstani regions. In doing so, the study demonstrates how hybrid models can be adapted to post-Soviet education systems. Using Bereday's four-phase comparative methodology, the study systematically analyzed PD models in Germany, Singapore, China, and Kazakhstan, moving beyond descriptive reviews to actionable policy guidance. The study's core contribution lies in its prescriptive, policy-informed framework that explicitly links cross-country evidence to reform feasibility within Kazakhstan's socioeconomic and cultural contexts. The findings demonstrate that institutionalizing a two-year induction phase aligned with international standards, implementing structured, subject-specific mentoring with protected collaboration time and reduced workloads, and embedding PLCs and action research in school practice are essential for improving teacher retention and efficacy. These recommendations align with established theories of teacher professionalization, confirming that effective induction systems are underpinned by coherence, mentoring, and collective inquiry.

The study further highlights rural–urban and gender disparities in PD access, calling for equity-oriented strategies such as incentives for rural mentors, digital PD platforms for remote schools, and gender-sensitive leadership pathways. By operationalizing Bereday's comparative model as a prescriptive policy tool, this study extends earlier comparative work and contributes new insights into how post-Soviet systems can localize global frameworks. Future research should examine the long-term effects of workload reduction and extended mentoring on teacher retention and self-efficacy, as well as the scalability of hybrid PD models in diverse regions of Kazakhstan. Ultimately, this study reinforces that structured, inclusive, and reflective PD can serve as a catalyst for educational excellence and social equity in Kazakhstan and beyond by translating global frameworks into culturally coherent strategies. Theoretically, this study advances comparative education by demonstrating that Bereday's model can function not only as an analytical heuristic but also as a tool for policy design in transitional education systems.

AUTHOR CONTRIBUTIONS STATEMENT

This journal uses the Contributor Roles Taxonomy (CRediT) to recognize individual author contributions, reduce authorship disputes, and facilitate collaboration.

Name of Author	C	M	So	Va	Fo	I	R	D	O	E	Vi	Su	P	Fu
Oxana Kereyeva	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Almazhai Yegenissova	✓	✓				✓		✓	✓		✓		✓	
Adem Bayar	✓			✓	✓		✓	✓	✓	✓		✓	✓	
Kairat Tleuov	✓			✓		✓			✓	✓		✓	✓	
Nurbike Bisaliyeva		✓				✓		✓	✓		✓		✓	
Karylgash Kudarova	✓					✓			✓		✓		✓	
Shynar Iskakova		✓				✓		✓	✓				✓	

C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis

I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting

Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

CONFLICT OF INTEREST STATEMENT
Authors state no conflict of interest.

DATA AVAILABILITY
The authors confirm that the data supporting the findings of this study are available within the article.

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BIOGRAPHIES OF AUTHORS

Oxana Kereyeva is a doctoral candidate at the Department of Pedagogical Sciences, Caspian University of Technology and Engineering named after Sh. Yesenov in Aktau, Kazakhstan. Since 2002, she has worked as a lecturer at the Teachers College. With over 20 years of teaching experience, her research focuses on the professional development of beginning secondary school teachers, with particular emphasis on mentoring as a critical mechanism for enhancing teacher efficacy and retention. She actively promotes professional learning communities as collaborative platforms where educators exchange effective teaching strategies and reflective practices. Her work emphasizes the development of communicative competence and culturally responsive pedagogy among beginning teachers. Through her mentoring programs, she integrates systematic reflection to support the professional growth of beginning educators. She can be contacted at email: oxana1.kereyeva@yu.edu.kz.

Almazhai Yegenissova is an associate professor at the Department of Pedagogical Sciences, Caspian University of Technology and Engineering named after Sh. Yesenov, where she has worked since 1994. She holds the degree of Candidate of Pedagogical Sciences, having successfully defended her dissertation on "Pedagogical conditions for environmental education and upbringing in primary school students" in 2001. Her scholarly contributions include more than 75 publications in national and international journals and conference proceedings, as well as the authorship of three textbooks: "Methods of Psychology Teaching", "Pedagogical Ethics and Skills", and "Psychology" and four teaching aids approved by Kazakhstan's Ministry of Education. Her research and teaching focus on pedagogical theory, educational methodology, and teacher preparation. She can be contacted at email: almazhai66@mail.ru.

Adem Bayar is a professor of educational sciences at Harran University, Turkey. He earned his Ph.D. in educational leadership and policy analysis with an emphasis on educational administration from the University of Missouri, Columbia, USA, in 2013. His research interests encompass teacher education, professional development, teaching and learning processes, collaborative learning environments, pedagogy, and educational evaluation. Professor Bayar's work examines the systemic factors that influence teacher effectiveness and professional growth, with particular attention to mentoring, instructional leadership, and organizational structures that support educational improvement. He can be contacted at email: adembayar@harran.edu.tr.

Kairat Tleuov serves as director of the Institute for Professional Development (Mangystau Region branch) at the National Center for Professional Development "Orleu" JSC. Holding a master's degree in pedagogical sciences, he brings over 23 years of experience in teacher education and professional development. Previously serving as a senior trainer and methodological coordinator at the Nazarbayev Intellectual Schools' Center of Pedagogical Excellence, he has designed and delivered professional development programs in collaboration with international experts. Tleuov's expertise includes action research, lesson study, mentoring, and the establishment of professional learning communities. As a certified trainer in 37 professional development programs, his work focuses on supporting the induction, professional growth, and retention of beginning teachers. He can be contacted at email: tleuov_k@orleu.edu.kz.

Nurbike Bisaliyeva ⬤ 🔲 SC ◖ is a senior lecturer at the Center for Language Development, Zhangir Khan West Kazakhstan Agrarian-Technical University. With over 30 years of teaching experience, her research centers on action research as a reflective methodology for improving language instruction. She applies action research cycles to address practical challenges in developing students' communicative competence within Kazakhstan's multilingual educational context. Bisaliyeva's work emphasizes the integration of research-based practices into everyday teaching and the facilitation of collaborative professional development initiatives. Her publications demonstrate the application of action research in bridging theoretical frameworks with practical pedagogical solutions. She can be contacted at email: nurbikebisalieva@mail.ru.

Karylgash Kudarova ⬤ 🔲 SC ◖ is a senior lecturer of English at the Center for Language Development, Zhangir Khan West Kazakhstan Agrarian-Technical University. With over 20 years of experience in language education, her primary focus is teacher professional development within Kazakhstan's multilingual context. She actively promotes professional learning communities as mechanisms for collaborative professional growth, enabling educators to share best practices and adapt international teaching strategies to local educational requirements. Kudarova's work addresses critical challenges in teacher retention, including workload management and the provision of systematic mentoring and institutional support, with the goal of sustaining a qualified teaching workforce. She can be contacted at email: T.karylgash@mail.ru.

Shynar Iskakova ⬤ 🔲 SC ◖ is a senior lecturer at the Center for Language Development, Zhangir Khan West Kazakhstan Agrarian-Technical University, where she has been employed since 1995. With more than 30 years of experience in language education, her professional activities focus on developing innovative teaching methodologies, enhancing students' language competence, and conducting research in applied linguistics. She has authored over 30 scientific publications and several educational manuals, including "Vocabulary in Practice", "English in Dialogues", and "Idioms in Everyday English". Her work emphasizes the practical application of language teaching strategies and the development of instructional materials tailored to the needs of technical university students. She can be contacted at email: shynar_iskakova@mail.ru.