Лучшие практики профессионального развития учителей в трех странах Азиатско-Тихоокеанского региона

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АННОТАЦИЯ

Введение. Вопрос профессионального развития учителей занимает важное место в образовательных политиках стран мира. В ответ на непрерывные изменения, происходящие в мире, учителя должны в течение всей карьеры приобретать новые знания и компетенции. Сегодня в профессиональном образовании происходит переход от традиционных моделей повышения квалификации к более гибким моделям, которые носят неформальный характер. *Исследование нацелено* на изучение современных моделей профессионального развития учителей, реализуемых в странах Азиатско-Тихоокеанского региона: Сингапуре, Китае, Японии.

Материалы и методы. В исследовании использованы методы сравнительного кейс-стади, анализа открытых источников и контент-анализа. Критерии для отбора стран основаны на рейтинге международных исследований образовательных результатов школьников PISA и TIMSS.

Результаты исследования. В результате анализа было определено, что эффективные модели профессионального развития учителей в рассматриваемых странах глубоко интегрированы в школьные системы обеспечения качества образования и культурный контекст, согласуются с профессиональными запросами учителей и их ценностями, соответствуют целям школы, ориентированы на практическое применение, поощряют роль учителя как активного исследователя, способствуют профессиональному сотрудничеству и предполагают обязательную поддержку наставников. Профессиональное развитие учителей предлагается рассматривать как экосистему, характеризующуюся 4 компонентами: рефлексивное планирование, сотрудничество, мотивация, интеграция с механизмами контроля качества.

Заключение. В рассмотренных образовательных системах профессиональное развитие учителей является не дополнительным элементом, а неотъемлемой частью образовательной инфраструктуры, что позволяет говорить об экосистеме профессионального развития. Экосистемный подход позволяет сфокусироваться на связях и условиях, которые обеспечивают эффективность исследуемых практик и моделей профессионального развития и способствуют их успешной интеграции в другие страны. Данный подход требует координированных усилий со стороны школ, исследователей, муниципалитетов и государства.

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Best Practices of Teacher Professional Development in Three Asia-Pacific Countries

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ABSTRACT

Introduction. Teacher professional development (TPD) is an important issue within the education policies of many countries. In response to the changing world and its growing demands, teachers must continuously acquire new knowledge and competencies throughout their careers. Today in professional education there has been a shift from traditional in-service training models to flexible models which are less structured and formal. *This study is aimed* at analyzing contemporary models of teacher professional development in three Asia-Pacific countries: Singapore, China, and Japan.

Materials and methods. In this study we used the methods of comparative case study, desk review and content analysis. The criteria to select the countries for the case study were based on the rankings of international assessments of student learning outcomes such as PISA and TIMSS.

Results. In the result of the analysis, we suggest that effective teacher professional development models are deeply integrated within school quality assurance systems and cultural context, correspond to professional needs of teachers and their values, comply with school goals, are practice-based and engage teachers in active research, promote collaboration and provide mentorship support. Teacher professional development is considered as an ecosystem characterized by 4 components: reflexive planning, collaboration, motivation, and integration with quality assurance mechanisms.

Conclusion. In the educational systems under consideration teacher professional development is not a simple add-on but an integral part of the educational infrastructure, which substantiates the understanding of teacher professional development as an ecosystem. An ecosystemic approach enables focusing on interconnections and conditions which ensure the efficiency of the TPD practices and models and their successful integration into different systems. This approach requires coordinated actions at the level of schools, researchers, regions and the state.

KEYWORDS

teacher professional development, school, TPD, ecosystem, Asia-Pacific region, Singapore, China, Japan

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INTRODUCTION

Professionalism of a teacher is one of the key factors that defines the quality of student learning, which makes teacher professional development (TPD) an important issue in the education policies globally. For example, two-thirds of World Bank projects with an education component in the last decade incorporated teacher professional development [1, p. 131]. Supporting continuing professional learning in schools is viewed by OECD as one of the key policies that largely impacts student success after finishing school [2, p. 31]. The UNESCO World Summit on Teachers 2025 announced teacher lifelong professional development as one of priority actions aimed at empowering teacher profession to transform education [3, p. 5].

In Russia, the importance of rethinking teacher professional development is also widely acknowledged. In the National Monitoring of Education Economics conducted by the Higher School of Economics it is stated that development of the ecosystem of teacher professional development is one of essential measures that will define the future of school education in the country [4, p. 93]. Provided that teacher is one of the key figures for the future of children and youth [5, p. 535], it is highly important to create in-service ecosystems for teachers that stimulate their professional growth, support in navigating meaningful professional paths and unleashing their creative potential [6, p. 94].

To create such ecosystems, it is useful to refer to international experience and investigate best practices of teacher professional development. There is an effective methodology for these purposes – benchmarking – used in education to analyze and identify successful international practices with the aim of adopting them to improve local educational systems [7, p. 175].

The authors of this paper conducted a benchmarking study of international teacher professional development practices in a number of previous research including a study by Gevorkyan et al. where the authors identified the mechanisms of teacher training in Singapore and China at all levels, from pre-service to in-service training [8]; and a study by Vachkova et al. focused on teacher career opportunities provided for teachers in the schools of Japan, China, and Singapore [9]. This study is focused more specifically on the practices of teacher professional development in Asia-Pacific countries (namely, Singapore, Shanghai, and Japan). The purpose of the study is to identify and describe effective TPD practices and conceptualize them as models that can be adopted into local educational contexts.

According to the objective of the study, we developed 3 key research questions:

1) What are the key constituents of effective TPD?

2) Which TPD practices of Asia-Pacific countries can be defined as effective and what is the context of their application?

3) What education policies are used to promote effective TPD practices in the studied countries?

To answer the first question, we conducted a literature review. One of the first comprehensive international studies of teacher professional development by OECD suggested a wide framework that defines TPD as "activities that develop an individual's skills, knowledge, expertise and other characteristics as a teacher" [10, p. 49]. It is essential to understand what makes these activities effective.

According to Darling-Hammond and others, effective teacher professional development is "structured professional learning that results in changes in teacher practices and improvements in student learning outcomes" [11, p. 5]. Researchers argue that effective TPD practices must include coaching and expert support and provide teachers with feedback and reflection [11, p. 6].

OECD suggests that effective TPD programmes are on-going, include training, practice and feedback, provide adequate time and follow-up support, involve teachers in learning activities that are similar to ones they will use with their students, and encourage the development of teachers' learning communities [10, p. 49].

Borko and others suggest a framework that describes effective TPD practices which includes two dimensions – TPD content and TPD process and structure. Within the TPD content dimension, effective TPD practices should be situated in practice and focused on students' learning. Within

the TPD process and structure dimension, effective TPD practices should be modeling preferred instructional strategies, engage teachers in active learning, build a professional learning community, ensure that PD settings are appropriate to goals, and be ongoing and sustainable [12, p. 551–552].

Based on a cross-cultural study of one top-performing European country – Finland, and one top-performing Asian country – Hong Kong, Gracheva et al. identified that the effectiveness of TPD practices deeply depends on the cultural context [13, p. 192]. For example, in Hong Kong social networks are widely used for peer learning and professional purposes which is substantiated by the culture of intensive communication. While in Finland a personalized approach that features support of individual mentors to teacher students starting from pre-service training is considered more efficient since in this culture people tend to maintain a narrow circle of connections.

Ensuring the continuity of TPD activities is emphasized in the study by Yakovenko who suggests using for this purpose digital learning platforms where teachers can receive twenty-four-seven targeted mentorship support and become engaged in professional learning communities [14, p. 293].

In the framework developed by Ivanova and Antonov, TPD includes a personal dimension which comprises teachers' motivation and values that shape the basis for a positive attitude towards self-improvement and are an incentive for professional development [15, p. 53].

When examining the motivation that drives teachers to engage in professional growth, a significant conceptual shift must be noted: the move from "teacher professional development" to "teacher professional learning," as advanced by OECD. OECD researchers define teacher continuing professional learning (CPL) as "formal and informal activities that aim to update, develop and broaden the skills, knowledge, expertise and other relevant characteristics of in-service teachers" [16, p. 14].

The distinction between traditional professional development (TPD) and CPL centers on two key dimensions:

(1) Agency: This dimension highlights a contrast between active and passive approaches to growth. Professional development often carries a passive connotation of being required to develop, whereas professional learning implies personal motivation and a more active role. Consequently, professional learning encompasses more dynamic, contextualized forms of inquiry and reflection, granting teachers greater agency in defining and pursuing their learning objectives.

(2) Formality: Professional development is typically viewed as more structured and formal, often delivered through scheduled courses or programs. In contrast, professional learning is less formal and more deeply embedded in classroom practice. It frequently involves unstructured, collaborative activities such as coaching, mentoring, collaborative lesson planning, and the sharing of effective practices [17].

Besides, OECD researchers argue that formal professional development activities may or may not lead to actual professional learning and may be seen as only one component within a much larger ecosystem of continuing professional learning opportunities [16, p. 14].

In this study we will use the term "teacher professional development" (TPD) as still more prevalent in the academic literature, however we agree with this conceptual shift and provide evidence (in the findings below) that effective TPD practices feature teachers' agency and format flexibility.

Based on the literature review we developed a framework of effective teacher professional development which served as foundation to identify best practices in the studied countries. According to this framework, effective professional learning:

- results in changes in practices;
- improves student learning outcomes;
- is rooted in practice;
- is on-going and sustainable;
- provides follow-up and mentorship support;
- promotes teachers' learning communities;

- engages teachers in active learning;
- is provided in flexible formats;
- is based on teachers' motivation and values;
- is incorporated into local cultural contexts.

MATERIALS AND METHODS

The following methods were used in this study: a comparative case study, a desk review and a content analysis method.

Since the initial focus of the study was on the Asia-Pacific region, the countries were selected for analysis based on the fact that efficiency of TPD practices is mainly confirmed by the quality of student learning outcomes. Therefore, three Asia-Pacific countries have been selected as top-performing in the recent cycles of PISA and TIMSS assessments, namely, Singapore, China, and Japan.

Within the educational systems of these countries, we selected those TPD practices that mostly correspond to the framework of effective teacher professional development presented in the introduction.

These TPD practices have been analyzed using the desk-review method, including content analysis of academic papers on teacher professional development published in English, Russian, Chinese and Japanese; websites of education ministries and TPD providers of Singapore, China, and Japan; policy documents in the sphere of education of these countries.

RESULTS

Case 1 – Singapore

Singapore is a top-performing country in terms of student learning outcomes according to the results of international PISA, TIMSS and PIRLS assessments [18, p. 12]. Admission to pre-service teacher training programmes is highly competitive and prestigious in Singapore. The Ministry of Education recruits teachers from the top one-third of each cohort of the graduating class that qualifies for tertiary education, and only one of eight applicants interviewed is accepted [18, p. 16].

There are several major TPD initiatives of Singapore's Ministry of Education that are aimed at sustainable professional growth of school teachers.

Teacher Growth Model (TGM) is an initiative launched by Singapore's Ministry of Education in 2012 serving as a comprehensive roadmap for teachers to plan their professional learning journeys [19]. It marks a deliberate move away from a "deficit model", where training was often designed to address identified weaknesses, to a "growth model" that focuses on nurturing teachers' strengths and interests.

TGM and its philosophy Every Teacher, A Gem conceptualizes teacher as a multi-faceted professional within five dimensions: teacher as an ethical educator, competent professional, collaborative learner, transformational leader, and community builder.

TGM is operationalized through a supportive ecosystem that comprises a wide array of professional development opportunities provided by schools and the Ministry of Education, such as face-to-face courses, conferences, mentoring, online learning, research-based practice, and experiential learning; as well as three distinct career tracks that cater to teachers' different strengths and aspirations: a teaching track, a leadership track, and a researcher track. [8, p. 334]

SkillsFuture for Educators (SFEd) model is a competency framework or a roadmap for teachers that guides their professional learning journey. SFEd focuses on six core competency domains identified as critical for preparing students for the future: assessment literacy, differentiated instruction, Inquiry-based learning, E-Pedagogy, Character and Citizenship Education (CCE), support for students with special educational needs.

For each of the six competency areas, SFEd defines four levels of practice: emergent, proficient, accomplished, and leading. This allows teachers to benchmark their current stage and identify concrete next steps for professional growth. The levels are progressive, moving from foundational awareness to the ability to lead others [20].

Teacher Work Attachment Plus (TWA+) is a 2 to 4-week programme for teachers aimed at providing them with opportunities of industry, corporate, or academic exposure to deepen their understanding of industry trends, such as AI, technology, or creative arts [21]. The programme offers hands-on projects, shadowing, and industry visits, including the TWA+ VISTAs (Voices of Entrepreneurs). VISTAs is an engagement series (vodcasts or podcasts) that gives teachers valuable insights beyond their school by providing them with exposure to thought leaders, industry experts and entrepreneurs.

Professional development of teachers in Singapore is also deeply incorporated within the Enhanced Performance Management System (EPMS) which is a growth-focused appraisal mechanism designed to identify teachers' strengths and areas for improvement. The EPMS is an efficient tool to understand teachers' professional learning needs and to manage their professional learning [22, p. 7].

The EPMS cycle consists of three stages (Figure 1). Within the Planning phase at the beginning of the year a teacher sets her professional targets and develops training and development plans. At the Coaching phase a teacher together with her line manager or mentor reflects on the mid-year results of her work, receives feedback and adjusts her strategies. The Evaluating phase comprises the year-end appraisal interview and review of actual performance against planned goals. The result of the appraisal impacts the salary increment and career prospects of a teacher.

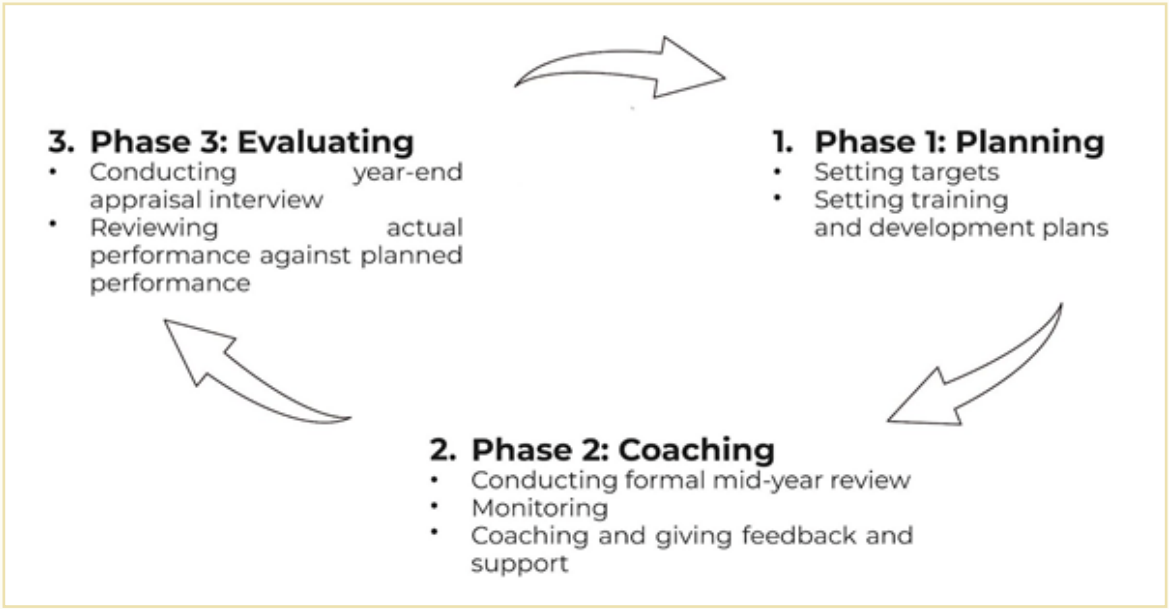


Figure 1 The annual EPMS cycle of teacher appraisal

There is an entitlement for teachers to participate in up to 100 hours of TPD per year, which is not mandatory but necessary for successful appraisal and career progress. The Ministry of Education fully subsidizes the cost of TPD.

In choosing the relevant TPD, teachers are supported by their mentors and school leaders. In 2006, a new teacher leader role was established in Singapore schools – the school staff developer. School staff developer is responsible for drawing up a professional development strategy for the whole school within the framework of its strategic goals, supporting teachers and administrative staff in developing their individual professional development plans, providing coaching and mentoring to the school staff, and promoting learning and collaboration within the school community in general [22, p. 5]. School staff developers have their own professional network to provide peer support and a vehicle to share knowledge and resources.

There is a developed system of mentorship support in Singapore, which includes induction training for beginning teachers, school-level mentoring and structured learning programmes. Mentors are veteran teachers who assist aspiring teachers in their professional development by helping to set learning targets, engaging in reflection, and providing professional advice. Mentoring is one of career tracks for those teachers who have good interpersonal skills and like to inspire others for professional growth. There are also specialized mentors who play the role of a specialist coach to aspiring teachers in specific skills areas.

There are two major models of mentorship support in Singapore's schools: a One-to-one model and a Specialized model. In the One-to-one model a beginning teacher is paired with a mentor based on her teaching subject, level, or department. This model is relationship-driven since it fosters deep relationships between a teacher and a mentor as time is given for trust to be built. The Specialized model is efficiency-driven: a team of mentors works with newly-employed teachers which enables to efficiently combine mentors' strengths and capacities to address the diverse learning needs of beginning teachers [23, p. 6].

Mentorship support is provided to teachers not only at the initial stage but throughout their careers, manifesting the concept of lifelong learning. Within this approach most experienced teachers are engaged in capacity building of the school's staff, training senior teachers as mentors for beginning teachers.

Singapore is investing extensively into building a highly skilled teachers' nation by creating various mechanisms that stimulate teacher professional development that is sustainable, stimulating, corresponding to school's goals and providing expert support at all levels.

Case 2 – China

Chinese teachers are recognized as well-prepared, highly professional and strongly supported at the government, school and society levels. China is represented in international student assessments by various economic regions such as Beijing, Shanghai, Hong Kong, Macao, etc. In this study we have selected Shanghai for a detailed analysis since this region is constantly producing high-quality student outcomes in scientific, mathematics and reading literacy [24].

Entering pre-service teacher training in Shanghai is highly competitive: only those applicants who obtained test scores in the top 30% would be admitted to Normal (teacher's training) Universities. Teachers are comprehensively and rigorously trained while enrolled in pre-service programmes and within subsequent regular professional development activities [25, p. 32].

Teacher pre-service and in-service education systems can be represented as a Chinese pagoda: basic education & university academic and professional education are the base and the main body of the pagoda, while in-service training forms the triangle tower top.

In 2010, Shanghai Municipal Education Commission issued a Three-Year Action Plan to Promote Curriculum Leadership of Secondary and Primary School Principals. According to this policy, principals were expected to assume the role of learning leaders and to adopt more innovative approaches to student learning and teacher development [26]. To stimulate teacher professional development, the government designed and developed the Triangle TPD system in collaboration with teachers' unions and other educational stakeholders to reflect teachers' needs [27].

The Triangle TPD System is a cycle that consists of 3 interconnected parts: (1) in-service training; (2) performance evaluation & rewards; (3) teachers' career ladder (Figure 2).

According to the requirements of the Shanghai municipal government, in-service training for newly employed teachers includes at least 360 hours during their first five years of service, and an additional 540 hours to become eligible to apply for a senior rank [24, p. 19]. There are special arrangements for teachers to effectively participate in TPD activities, such as (1) time arrangement: teachers are allocated a half working day for TPD, one weekend day for self-study, and at least 2 hours per week for school-based training; (2) financial support: costs or fees of most programs are paid by school and/or government.



Figure 2 The Triangle System of Teacher Professional Development

There are various types of in-service teacher training, including school-based training, trainings provided by teacher training institutes and universities, professional associations and teacher unions. There is also a wide choice of online TPD by various providers.

School-based TPD is an ecosystem that includes several dimensions:

1. Mentor system for younger teachers.

2. Teaching research and grade groups to share experience for subject instruction and solve problems for similar aged students.

3. Classroom observation to improve teaching by mutual learning.

4. Research projects and groups to engage in research beyond routine work.

5. Internal appraisal to define professional growth areas [28].

The second element of the Triangle model is Teacher appraisal system, which includes:

- Regular appraisal for individual teachers: half-year review, annual appraisal, promotion evaluation;
- Regular collective evaluation: Teaching research group annual evaluation; school evaluation;
- Excellent teacher, principal and school awards at the school, district, municipal and national levels;
- Teaching achievement awards at the school, district, municipal and national levels;
- Excellent Teaching Contests for young teachers (below age of 40) at the school, district; municipal and national levels;
- Other professional and social awards and titles, such as Special-grade (Mastery) Teachers and Model Labours.

In Shanghai, school teacher career ladder is a component of the wider professional trajectory system of China for nearly 30 professionals, including university teachers, natural and social sciences researchers, medical doctors, engineers, accountants, journalists, etc. In each profession, there are 3 to 5 ranking titles with 10 to 15 smaller levels.

For school teachers there are 5 grades, starting from Junior teacher to Professorship grade teacher (Figure 3). For each grade there are requirements including education qualifications, years of service, quality of appraisals, amount of in-service training, awards and research achievements. Within the career ladder there are 3 distinct tracks: teaching, research and administrative. There is also a special career ladder for school leaders.



Figure 3 Career ladder for teachers and principals in Shanghai

In this paper we will focus in more detail on one of the school-based TPD activities which is Teaching research groups (TRGs). TRGs are grass-root units of teachers organised according to school subjects. TRGs have two basic functions:

(1) Teachers try to solve problems they face in their instruction, to learn new techniques and approaches, and to improve the quality of subject teaching and learning in their schools.

(2) Teachers in the same TRG share their tacit knowledge and skills: veteran teachers share their successful experience while young or inexperienced teachers are able to know those matters which are not easily found in books.

Main research objects of TRGs are content, problems, skills, designs around curriculum, textbooks, lessons and units, and students' learning. Teachers in the same subject have common situations, targets, and interests, therefore it is easy to engage every teacher in the TRG activities.

The schedule of TRGs is regulated by schools: workshops usually last for 2 hours and can be held once per week or once every two weeks, some schools conduct TRGs at least once every month.

This system in general is aimed at promoting school-based research led by school principals including writing and contributing papers in scientific journals [29, p. 349].

Case 3 – Japan

Japan is known for high levels of both student and adult literacy. To achieve this, Japan has implemented a number of reforms including the Third Basic Plan for the Promotion of Education (2018–2022). The Plan included reforming the teaching career to improve teaching skills, comprehensive career training and reorganisation of teachers' schedules to allow time for training [30, p. 15–16].

Besides, high teaching standards in Japan are deeply rooted in the philosophy of teaching as a craft which is embodied through a teachers' commitment to continuous learning, collaboration, and sustainability of knowledge [32, p. 436]. This commitment is fostered by Zen Buddhist culture of continuous improvement (kaizen), which considers one's craft as a path of spiritual growth.

Entering the teaching profession in Japan is highly competitive. However, having a teacher's diploma does not entitle for teaching. After successful graduation from pre-service training programmes teacher candidates apply to the local Board of Education to obtain a certificate that allows teaching at public schools. Teacher candidates need to pass a multiple stage competitive employment examination which typically tests general knowledge, subject-based knowledge and professional knowledge, and may include essay writing, interview, practical and aptitude test. Successful candidates become teachers with probationary status in their first year of employment [30, p. 57].

Teachers in Japanese schools walk their professional journey along several paths which differ across prefectures. Generally, 3 career tracks are offered: teaching, mentorship and leadership [9, p. 98]. To progress across the career ladder, teachers undergo evaluations according to their aspirations and the prefecture requirements.

Newly employed teachers, as well as experienced teachers, engage in various TPD activities which can be broadly divided into five groups:

1. Mandatory one-year training program for newly employed teachers;
2. Government-sponsored programmes;
3. Programmes by teachers' associations;
4. Internal professional development;
5. Voluntary teacher networks [31, p. 440].

All newly employed public school teachers in Japan are required to engage in the Mandatory one-year training program which includes 25 days of offsite training and 10 hours per week school-based training supported by assigned mentor teachers [32, p. 421].

Government-sponsored programmes include nationally or provincially funded TPD initiatives for all teachers that provide access to expert-led training, centralized resources, and collaborative networks. These programmes are usually conducted at specialized national or local in-service education centers.

Programmes by teachers' associations are subject-specific TPD initiatives organized by teacher associations that promote exchange of specialized expertise.

Internal professional development includes school-based initiatives, such as mentoring and lesson studies that cultivate a reflective teaching culture.

Voluntary teacher networks are teacher-led associations that promote professional development through conferences, workshops, and publications.

Here we will focus more on unstructured informal school-based TPD practices which were initially unique to Japan, such as teachers' office and lesson study.

Teachers' office or shokuin shitsu (職員室) is a shared space where all teachers have individual desks and meet daily to prepare, complete work, and collaborate about practice [32, p. 421]. A distinguishing feature of shokuin shitsu is that teachers' desks are often aggregated by grade-level islands with the administrator desks placed in the front center to oversee day-to-day school operation. This arrangement facilitates collaboration among teachers: newly employed teachers have an opportunity to consult with veteran teachers teaching the same subject.

There is a more formal school-based TPD practice which is widely known for its efficiency – jugyō kenkyū (**授業研究**) or lesson study. Lesson study is a teacher-centered method to improve instruction, which makes teachers the owners and the drivers of professional activity. Within this type of professional development, teachers study instruction-related issues together by planning a lesson that tackles the issue, conducting and observing the lesson in practice and discussing what they have observed [33, p. 575].

The cycle of lesson study comprises 3 stages: (1) examination of lesson plan, (2) lesson practice and observation, (3) post-lesson discussion (Figure 4).

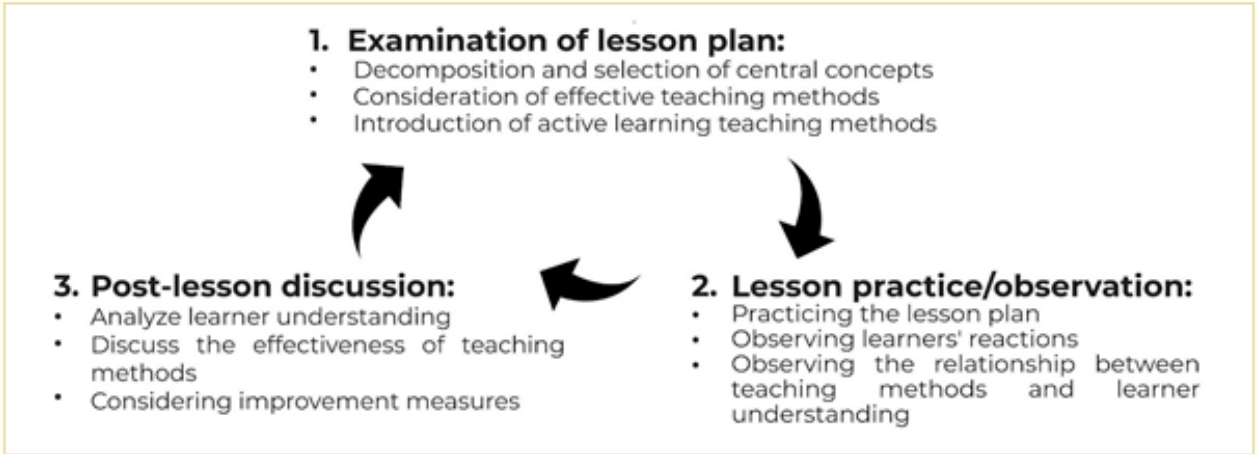


Figure 4 One cycle of lesson study (adapted from the materials of Science Education Research Group at Niigata University https://niigata-rikyo.jp/pdf/reference_lessonstudy.pdf)

The focus of the lesson study is not as much on discussing the teaching methods used during lesson observation but on suggesting the improvement methods to facilitate learner's understanding. Lesson studies are not only school-based but can also be district-level or even nation-wide level. The practice of lesson study originated in Japan and reflects the culture of close collaboration among individuals and constant improvement (kaizen) that is rooted in Buddhist philosophies.

DISCUSSION

The results of this comparative study of teacher professional development practices in top-performing Asia-Pacific countries are mostly consistent with the results of previously conducted international and national research aimed at identifying the key characteristics of effective professional learning. This consistency is supported by the foundational OECD study on effective teaching and learning environments, which identified that professional development must be sustained, collaborative, and embedded in teachers' daily practice [10]. Similarly, Borko et al. [12] emphasized that effective TPD requires active teacher engagement, a focus on student learning, and development of professional learning communities.

The practices we identified in all three countries—ongoing, practice-embedded, collaborative, and linked to career progression—also align with the framework developed by Darling-Hammond et al. [11] and the OECD's conceptualization of continuing professional learning as distinct from traditional professional development [16]. Gracheva et al. [13] further demonstrated that the effectiveness of TPD practices is deeply influenced by cultural context, as shown in their comparative analysis of Finland and Hong Kong.

However, the key discrepancy with the previous research identified in this study lies in the tendency to describe individual TPD practices in isolation rather than examining them as part of integrated ecosystems functioning within broader institutional and cultural contexts. Tregubova [7] draws attention to this methodological limitation in her work on benchmarking international experience, noting that isolated borrowing of practices often fails to produce expected outcomes.

In particular, previous research of TPD in Singapore, Shanghai, and Japan has identified individual effective practices such as mentorship models [23], teaching research groups [29], and lesson study [33]. In this study we prefer viewing teacher professional development as an integrated ecosystem rather than a collection of isolated practices. The power of these practices lies specifically in their systemic integration with quality assurance mechanisms, career structures, and school-level support systems. This finding corresponds with the data obtained by the HSE National Monitoring of Education Economics stating that an ecosystemic approach to teacher professional development is essential to improve school education in the country [4].

The results of this study allow us to define effective teacher professional development as an ecosystem characterized by the following features:

(1) Reflexive planning.

Effective TPD systems provide teachers with opportunities to reflect upon their experience and design their future professional paths, which is particularly evident in Singapore's Teacher Growth Model and Shanghai's Triangle System. In both cases, teachers are supported not merely to acquire new skills but to project their own professional trajectories – to understand where they are in their development, where they need to go, and how institutional supports can help them get there. This is consistent with the work of Borko et al. [12], who emphasize that effective TPD must engage teachers in active learning and reflection. Ability to navigate one's own career path fills professional life with positive meanings – a finding that resonates with Ivanova and Antonov's emphasis on teacher motivation and values as drivers of professional growth [15].

(2) Collaboration.

The country case study showed that collaborative professional development plays a special part in all three countries. Within Singapore's mentorship models, Shanghai's Teaching Research Groups, Japan's lesson study and teachers' office, teachers develop and acquire positive experience through peer interaction. The main features of this experience are its relevance to daily practice and its

reproducibility across different classroom contexts. Collaborative structures provide an opportunity to go beyond a concrete pedagogical situation to find an innovative solution. The basis of such "going beyond" is represented by understanding one's own professional practice through the lens of collegial feedback and shared inquiry – a process that Badawi [31] associates with the Buddhist understanding of craft as a path of spiritual growth.

(3) Motivation.

The motivational mechanisms embedded in these TPD systems –Singapore's Enhanced Performance Management System, Shanghai's Triangle System and Japan's career ladder demonstrate that effective professional development cannot be separated from teacher recognition and career advancement. This is consistent with the findings of Gevorkyan et al. [8] and Vachkova et al. [9], who identified career progression opportunities as a key factor in teacher retention and motivation in high-performing Asia-Pacific systems. Our study extends this understanding by showing how these motivational mechanisms are not external add-ons but integral components of coherent TPD ecosystems. The teacher's involvement in the profession is sustained by a system that recognizes professional growth at multiple levels –school, district, municipal, and national – as exemplified by Shanghai's teaching achievement awards and Singapore's "Every Teacher, A Gem" philosophy. As Rahimi et al. [34] suggest, such mechanisms may motivate teachers not merely through external rewards but by shaping their mindsets, encouraging them to see professional competence as something that can be developed.

(4) Integration with quality assurance mechanisms.

Integration of TPD with quality assurance mechanisms represents an important contribution of this study to understanding effective professional learning. In all three countries, professional learning is not an optional extra but a core component of how schools are managed and how teacher quality is ensured. Singapore's EPMS cycle embeds professional development within the annual rhythm of school life. Shanghai's Triangle System explicitly links in-service training to performance evaluation and career progression. Japan's comprehensive teacher certification and appraisal processes ensure that professional learning is continuous and consequential. This finding aligns with the OECD's assertion that supporting continuing professional learning in schools is one of the key policies that impacts student success [2].

In this study we have provided comparative empirical evidence that effective teacher professional development operates as an ecosystem – a coherent system of interconnected elements that includes reflexive planning, collaboration, motivation and integration. Such an ecosystem perspective offers a more holistic framework for understanding teacher professional development and for designing interventions that can be successfully scaled across different educational contexts.

CONCLUSION

This comparative case study of teacher professional development in three high-performing Asia-Pacific countries – Singapore, Shanghai, and Japan – has yielded two key conclusions that offer insights for educational systems seeking to improve teacher quality.

First, the study provided empirical validation of the framework of effective teacher professional development suggested by the authors in the introduction. The practices identified in all three countries align with the key characteristics of effective professional learning: they are ongoing, practice-embedded, collaborative, linked to career progression, and responsive to teachers' needs, motivations and values. In Singapore, the Teacher Growth Model and SkillsFuture for Educators framework embody the principles of ongoing, practice-embedded learning that engages teachers as active agents in their professional growth. In Shanghai, the Teaching Research Groups and the Triangle TPD System demonstrate how professional development can be rooted in collaborative inquiry and linked to career progression. In Japan, lesson study and the teachers' office exemplify how informal, practice-based collaboration fosters continuous improvement.

Second, the study demonstrated that TPD practices in top-performing Asia-Pacific countries function as an integrated ecosystem rather than a collection of isolated initiatives. In all three systems, professional development is not an add-on or a series of disconnected workshops but a

coherent system deeply embedded within the broader infrastructure of educational quality assurance. The ecosystem model, as evidenced by our findings, is characterized by four interconnected features: reflexive planning, collaboration, motivation and integration with quality assurance mechanisms.

Based on these findings, we suggest employing the potential of the ecosystemic thinking in understanding and designing teacher professional development. This perspective allows researchers and policymakers to move beyond identifying individual "best practices" for potential borrowing and instead focus on understanding the systemic conditions that make such practices effective.

The ecosystemic approach recognizes that sustainable teacher professional development requires attention to the interconnections between policy, practice, institutional culture, and motivational mechanisms.

This study in its next iteration will attempt to employ an ecosystemic approach to developing innovative TPD models for school education. Further steps of the study include conducting expert discussions of the draft TPD ecosystemic models with the principals of local schools and piloting the revised models in several schools. The results of the pilot stage will be presented in the following papers by the research team, contributing to the ongoing effort to build sustainable, effective teacher professional development that can support the growth and success of educators and, ultimately, their students.

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