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Bridging the gap: an examination of teacher deployment in Cambodian preschools

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Abstract

The current study examines teacher deployment strategies in Cambodian preschools and identifies challenges related to the supply and deployment of teaching staff in early childhood education by assessing the adequacy, efficiency, and quality of teacher deployment. This study employs multiple approaches in data collection, including desk review of existing policies and literature, analysis of school-level administrative data, and in-depth interviews at the national, sub-national, and school levels. The findings from the study highlight the severe teacher shortage, uneven distribution of qualified teachers and disparities in teacher quality in Cambodian early childhood education. Newly graduated and well-trained preschool teachers are disproportionately deployed in urban areas, while preschool teachers in rural schools are not adequately trained to be preschool teachers. Existing efforts to expand preschool access are insufficient without simultaneously addressing the urgent need for properly trained preschool teachers. Based on these findings, the study offers policy recommendations, including scaling up pre-service training, strengthening teacher workforce planning through improved data systems, and implementing targeted incentives to ensure a more equitable and sustainable ECE teacher workforce.

Keywords: Early childhood education, Teacher deployment, Education administration, Quality and equity, Cambodia

Introduction

The early years of human development establish the underlying architecture and function of the brain, which significantly affect the later stages of human development (Mustard, 2010). The awareness of the importance of Early Childhood and Education (ECE) has increased in recent years. Studies on ECE have proven that good quality ECE provides immediate health and nutrition benefits and longer-term outcomes in academic success, education system efficiency, future earnings, and social cohesion (SEAMEO & UNESCO, 2016). Children who went through quality ECE were found to be more ready for school, able to complete school without repetition, and earn higher incomes in the labour market (Heckman & Masterov, 2007; Kagitcibasi et al., 2009). Failure to invest in ECE leads to short-term and long-term losses for families and societies.

Given the benefits of ECE, Sustainable Development Goal (SDG) Target 4.2 calls on United Nations Member States to ensure that "all girls and boys have access to quality

early childhood development, care, and pre-primary education so that they are ready for primary education." Unlike in the past, where the family took responsibilities for children's early year education, governments now increasingly shoulder responsibilities for providing quality ECE services, either through public provision or by ensuring access to affordable and quality private ECE programmes, even in developing countries (Vandenbroeck, 2020). However, high-quality ECE cannot be achieved by governments merely opening ECE institutions and hiring staff, as there must also be an appropriate status of school facility installation and a well-designed teacher development strategy, which must be implemented. Currently, developing countries in Southeast Asia face severe challenges in ECE, mainly related to inadequate ECE school facilities, poor quality of ECE teacher training programmes, unstructured certification systems, and a lack of motivation strategies for ECE teaching staff (SEAMEO & UNESCO, 2016). Moreover, the disparities in ECE service provision across the region (rural–urban), socio-economic status, gender (male–female), and schools (public–private) are also neglected (SEAMEO & UNESCO, 2016).

ECE in Cambodia consists of 3 years of preschool education for children between 3 and 5 years; however, education at this level is not compulsory. Based on the National Early Childhood Care and Development Policy, the National Action Plan on Early Childhood Care and Development 2014–2018 was developed and endorsed by the National Committee of Early Childhood Care and Development in 2014 (NC-ECCD, 2014). One of the Action Plan's objectives is to expand ECCD and care services to young children, focusing on marginalised children. Over the past decade, from 2013 to 2023, public preschool enrolment has grown by more than 60%, rising from 157,288 to 257,725 students, while primary school enrolments have remained relatively the same, at around 2 million students (MoEYS, 2025a).

The number of preschools in Cambodia has increased steadily, particularly in the private sector, as shown in Fig. 1. As of the AY 2024–25, 217,509 children were enrolled in 4,725 public preschools (a 64% increase from AY 2011–12). In the same academic year, there were 963 private preschools (an increase of more than triple from 232 preschools in the AY 2011–12) and 3,348 community preschools (a 44% increase from the

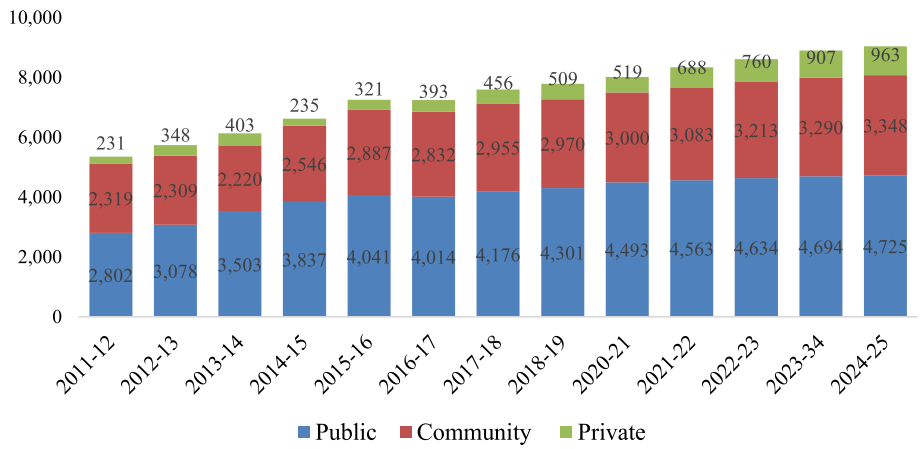

Fig. 1 Number of preschools by type between academic years 2011–2012 and 2023–2024. Source: MoEYS's Education Congress Reports

AY 2011–12). Despite this progress, Cambodia is still far from achieving the SGD 4.2's goal of providing all children access to quality early childhood development and care by 2030. Even in the latest Education Strategy Plan (ESP) 2024–2028, the MoEYS clearly acknowledges the challenge in expanding access to ECE. The latest ESP sets a moderate target of increasing the gross ECE enrolment rate for children aged 3–5 to 45%, a 3.6 percentage point increase from 2023 (MoEYS, 2025b).

In addition to expanding access to ECE, the MoEYS has taken steps to enhance its quality, including extending the ECE teacher training programme from 1 to 2 years and introducing preschool standards. However, key challenges in this sub-sector persist, such as the shortage of ECE teachers and high Student Teacher Ratio (STR) in public ECE facilities (World Bank, 2024b). In the past, there had been very few studies related to the ECE sub-sector in Cambodia, yet it has gained more attention in recent years. Om (2024) provides an overview of ECE in Cambodia, including its curriculum and issues related to teachers. Karim et al. (2025) investigated preschool teachers' beliefs and needs for professional development. Teacher deployment systems determine, where and how teachers are assigned, as well as the conditions for transferring between posts. Effective deployment strategies are essential for addressing disparities in teacher distribution, improving educational outcomes, and reducing inequalities, particularly in underserved and rural areas (UNESCO, 2024). However, little is known about preschool teacher deployment in Cambodia in the literature. To address this gap, this study first reviews the ECE teacher deployment strategies and then examines the challenges in teacher deployment, focusing on adequacy, efficiency and equity viewpoints.

Literature review

To the authors' knowledge, no studies have specifically examined preschool teacher deployment in Cambodia and research in other low- and middle-income countries (LMICs) on this topic also remains limited. Therefore, this literature review extends its scope to include evidence from primary and secondary education to explore patterns of inequitable teacher deployment and their policy implications. According to UNESCO, teacher deployment—defined as the assignment and distribution of teachers across schools, regions, or levels of education—plays a crucial role in ensuring equitable access to quality education. Research consistently highlights several challenges in teacher deployment, including geographic imbalances, shortages in subject specialisation, and socio-economic disparities between schools. Unequal deployment is closely linked to lower academic achievement, higher dropout rates, and widening educational inequality (e.g., Francis et al., 2019; Akiba & Liang, 2013).

A growing body of evidence shows that schools in economically disadvantaged, rural, and remote areas often face distinct deployment challenges and struggle with persistent teacher shortages (Jonyo & Jonyo, 2017; Mpokosa & Ndaruhutse, 2008). For instance, in Malawi, huge disparities in student–teacher ratios (STR) between rural and urban areas are driven by poor access to roads, electricity, water, and proximity to trading centres (Asim et al., 2019). In rural China, centralised deployment processes exacerbate inequalities by allocating more qualified teachers to better-resourced schools (Han, 2013). In Nigeria, it is especially challenging to deploy female teachers to rural schools, due to poor accommodation, low security, and weak incentives for women to work in rural

areas (Tao, 2014). In Peru, rural public schools in impoverished regions are frequently staffed with less qualified teachers through short-term contracts or non-certified hiring routes (Bobba et al., 2021).

Subject specialisation shortages remain a significant challenge in many education systems, primarily driven by the misalignment between teachers' qualifications and the subjects or areas, where they are most needed. Misalignments between teachers' qualifications and teaching assignments force many teachers to teach out of their fields (UNESCO, 2024). Studies in Nigeria reveal severe gaps in subject coverage, notably for local languages, and significant shortages in qualified teachers (Ugolo & Onukwu, 2025). Similarly, evidence from England shows that socially disadvantaged students are over-represented in low attainment groups and are less likely to be taught by highly qualified subject specialists. More experienced and specialised teachers tend to be assigned to higher-performing groups, further entrenching educational inequalities (Francis et al., 2019). These findings highlight that subject-specific shortages not only undermine teaching quality but also contribute to wider socio-economic disparities in education outcomes.

International research confirms that more qualified teachers are disproportionately concentrated in economically privileged areas. A cross-country study by Luschei and Chudgar (2016) found that children from low-SES backgrounds, ethnic minorities, and rural areas in India, Mexico, and Tanzania had less access to qualified teachers than their more advantaged peers. Similarly, Akiba and Liang (2013), using TIMSS data, demonstrated that countries where low-SES students have better access to qualified teachers show smaller achievement gaps, whereas those favouring high-SES students experience greater inequities. In OECD countries, less experienced teachers are more likely to be assigned to schools serving disadvantaged, special needs, or non-native language students. Although some OECD countries tend to deploy more teachers to lower-performing schools, these teachers often have lower qualifications and less experience, contributing to a qualitative gap in education provision (OECD, 2018). In Cambodia, the Teacher Policy Action Plan acknowledges the need to improve pupil–teacher ratios and teacher deployment to ensure better quality education, and disparities in teacher distribution exist across education levels. (Conochie et al., 2017). While state preschools often have qualified teachers with proper in-service training, many community preschools employ contract teachers with no formal qualifications, especially in disadvantaged areas (Ashida & Chea, 2017; Tandon & Fukao, 2014).

Various policy measures have been proposed to address these inequities in teacher deployment. Strengthening information systems such as EMIS and TMIS is critical for collecting accurate data on teacher availability, qualifications, and placement, yet planning and data utilisation remain weak in many country contexts. Tools like the World Bank's SABER-Teachers framework and spatial analysis techniques used in Sierra Leone and Malawi have provided government planners better insights into disparities (Mackintosh et al., 2020; World Bank, 2013). Incentive schemes—such as financial bonuses, housing allowances, professional development opportunities, and fast-tracked promotions—have attracted teachers to remote or disadvantaged areas (UNESCO and Teacher Task Force, 2019; Mulkeen et al., 2017). Low-cost, behavioural interventions, such as listing disadvantaged schools first in job application platforms—as piloted in Ecuador

and Peru—have also successfully influenced teacher preferences by leveraging altruistic motivations (Ajzenman et al., 2021, 2024). Long-term strategies like local recruitment have proven effective, as teachers tend to stay close to their communities (Bertoni et al., 2023; Raju, 2017). In addition, rotational deployment systems, such as those implemented in the Republic of Korea, combine mandatory rotations with financial and professional incentives, supporting a more equitable distribution of experienced teachers (Jeong & Luschei, 2019).

Methodology

This study employs multiple data sources, including desk review, administrative education data, and interview data collected from the field study: i) to review the ECE teacher deployment strategies and ii) to examine the challenges in teacher deployment, focusing on adequacy, efficiency and equity viewpoints. The research team has extensively reviewed existing literature and policy documents related to Cambodian teacher policies, focusing on ECE teacher placement and the current teacher situation. These documents were collected through search engines before and after the fieldwork, although some additional documents, which are not publicly available online, were obtained during the fieldwork. The literature and policy document review are mainly used to inform the first objective related to the teacher placement strategy in Cambodia.

In response to the second objective, this study mainly uses MoEYS's Education Management Information System (EMIS) school-level secondary data for AY 2014–15, AY 2018–19, and AY 2022–23, supplemented by interview data collected during the field research. The field research was carried out from the 8th to the 21st of August 2019, during which the research team conducted in-depth semi-structured interviews with preschool principals. Phnom Penh Municipality, Kandal, and Battambang were selected as the targeted provinces to ensure variations in school characteristics and types of schools. Four preschools from each Municipality/province were purposely chosen to include schools with different degrees of teacher shortage or surplus. Basic information on the 12 schools visited during the field research is shown in Table 1.

For data triangulation, the research team conducted interviews with the Provincial Offices of Education (POE) and District Offices of Education (DOE) at the sub-national level. At the national level, interviews were held with key MoEYS departments—such as the Departments of Early Childhood Education, Department of EMIS, Teacher Training Department, Directorate General of Policies and Planning, and Preschool Teacher Training Centre (PSTTC)—as well as development partners (UNICEF and UNESCO). In addition, relevant policy documents and reports were collected during field research.

Table 1 Basic information of the visited schools

No	School Code	Teachers	Non-teaching	Students (by Age)				Classes	Class Size	STR*
				3	4	5	Total			
1	School A	3	2	30	26	25	81	3	27.00	27.00
2	School B	6	3	Mixed-age classes			89	4	22.25	14.83
3	School C	10	4	70	70	70	210	6	35.00	21.00
4	School D	9	2	18	28	25	71	4	17.75	7.89
5	School E	6	1	38	40	112	190	4	47.50	31.67
6	School F	4	1	25	55	110	190	4	47.50	47.50
7	School G	2	1	0	27	35	62	2	31.00	31.00
8	School H	1	0	0	23	20	43	1	43.00	43.00
9	School I	1	0	0	37	38	75	2	37.50	75.00
10	School J	2	0	0	81	76	157	4	39.25	78.50
11	School K	5	2	25	38	79	142	5	28.40	28.40
12	School L	1	0	5	6	3	14	1	14.00	14.00

Source: Created by the authors based on field research in August 2019

*STR stands for student-teacher ratio

Results

ECE teacher deployment strategy

Teacher recruitment

Attracting the best-performing students to teaching careers was a big challenge in Cambodia, as the salary was not competitive compared to other professions (Tandon & Fukao, 2014; World Bank, 2011). Over a decade ago, the starting monthly salaries for public preschool and primary school teachers was as low as USD 20 (Rao & Pearson, 2009). However, the situation has significantly improved due to the recent increase in teacher salaries as a means of attracting talents to teaching careers. Over the past decade, starting salaries for teachers have doubled, now surpassing the average private-sector wages for comparable jobs (World Bank, 2024a).

The Teacher Policy aims to "develop teachers with quality, competencies, and accountability in line with their professional code of conduct as well as providing enabling conditions to fulfil their profession effectively and efficiently" (MoEYS, 2013, p. 3). Aligned with the policy, MoEYS released the Teacher Policy Action Plan with concrete activities and timelines aimed at implementing the Teacher Policy (MoEYS, 2015). As a teaching career has become more popular among high school graduates, the number of more competent applicants to the Teacher Training Centres (TTCs) has increased in recent years (Sot et al., 2019). One of the key challenges in Cambodia's ECE sector is the shortage of qualified preschool teachers with adequate in-service training. Currently, the Preschool Teacher Training Centre (PSTTC) is the only institution offering a 2-year preschool teacher training programme. In recent years, however, discussions have emerged about expanding the teacher training programme at Phnom Penh Teacher Education College (PTEC) to include preschool teachers alongside primary and lower-secondary educators.

The teacher recruitment process, including preschool teachers, is highly centralised in Cambodia. Schools report the number of teachers needed to the DOEs every academic year, while the DOEs and POEs compile teacher shortages at the district

Table 2 Number of preschool teacher recruitment for academic years 2019–2020 by province

Province	Number of School	Class	Student	Teacher	STR	2019–2020 Recruitment
Banteay Meanchey	324	542	16,624	85	196	12
Tboung Khmum	225	446	13,374	198	68	12
Koh Kong	65	83	2,078	31	67	6
Siemreap	443	863	26,016	421	62	22
Preah Vihear	109	143	3,822	73	52	9
Pursat	173	261	8,387	160	52	9
Kampong Chhnang	112	218	6,914	152	45	7
Otdar Meanchey	102	125	3,652	83	44	4
Kampong Cham	273	502	15,704	367	43	14
Svay Rieng	172	252	7,757	187	41	6
Whole Kingdom	*4301*	*7122*	*217,509*	*5335*	*41*	*101*
Kampong Speu	195	296	9,886	270	37	9
Ratanak Kiri	58	91	2,422	66	37	5
Mondul Kiri	23	31	1,079	30	36	5
Kampong Thom	204	308	10,080	287	35	8
Pailin	25	39	1,092	33	33	2
Phnom Penh	146	284	10,901	328	33	4
Kandal	234	498	15,755	491	32	3
Preah Sihanouk	57	78	2,395	76	32	3
Prey Veng	368	547	15,501	486	32	10
Battambang	367	630	18,765	620	30	20
Kep	22	30	909	30	30	3
Kratie	90	134	3,896	135	29	5
Stung Treng	35	40	1,215	42	29	5
Takeo	282	421	12,229	429	29	9
Kampot	197	260	7,056	255	28	8

Created by the authors based on the EMIS 2018–2019 and MoEYS's announcement No. 3765 AYK/BV on August 8, 2019 on teacher recruitment for primary schools and preschools

and provincial levels, respectively. Based on our interview data, the MoEYS negotiates with the Ministry of Civil Service and the Ministry of Economic and Finance to determine the number of teachers the MoEYS can recruit for each education cycle. Around August each year, the MoEYS announces the number of preschool teacher trainees that can be recruited from each province. Due to its limited human and physical resources, the PSTTC can only accept 200 preschool teacher trainees annually for its 2-year programme. Table 2 presents the number of trainees by province for the 2019–2020 academic year, with Battambang receiving the second-largest allocation (20 trainees), while Kandal and Phnom Penh could only recruit 3 and 4 trainees, respectively. Despite having significantly higher student–teacher ratios (STR) than Battambang, Banteay Meanchey, Tboung Khmum, and Koh Kong were allocated fewer preschool teacher trainees.

According to our interview data, MoEYS began adopting a new teacher deployment strategy in the 2019–2020 academic year. Under this guideline, candidates applying for pre-service teacher training at the PSTTC or other teacher training institutions must select their preferred schools for placement upon graduation. This

new strategy aims to increase the effectiveness of teacher deployment, avoid sending trained teachers to undesired schools, and ensure that hard-to-staff schools can receive teachers with pre-service training. MoEYS prepares a list of schools by district and province and determines the teacher quota of each school. Prior to 2019, quotas were set at the provincial level; however, beginning in 2019, quotas were established at the school level. To register for the teacher training examination, prospective candidates must obtain approval from the school principal of their preferred placement school.

Teacher training

According to Article 20 of the Education Law, educational personnel, except professors and staff working in higher educational establishments, shall receive pedagogical pre-service and/or in-service training recognised by the ministry in charge of education (Royal Government of Cambodia, 2007). Currently, there are 18 provincial teacher training centres (PTTCs) and two teacher training colleges (TECs) offering pre-service training for primary school teachers; however, the PSTTC is the only institution providing pre-service training for preschool teachers in Cambodia.

As of 2025, all preschool trainees from 25 provinces and municipality in Cambodia need to be trained at the PSTTC in Phnom Penh. Upon finishing the 2-year pre-service training programme, teacher trainees are assigned to teaching positions at preschools, where they were initially designated. While no specialised pre-service training programme exists for disadvantaged students, trainees from disadvantaged or minority areas receive priority in the teacher recruitment through lower entry requirements.

The ECE pre-service training programme in Cambodia incorporates both theoretical and practical components. In addition to classroom-based theoretical instruction, trainees must engage in hands-on teaching practice at the preschools affiliated with the PSTTC. However, based on interview data, no ECE specialists currently serve as preschool teacher trainers. Instead, experienced preschool teachers who graduated from PSTTC are assigned as trainers to prepare new trainees. Despite this, no institutions exist, where trainers can update their knowledge, enhance their skills, or further develop their teaching expertise.

Teacher placement strategy

Each POE annually recruits preschool teacher trainees based on the quota allocated by the MoEYS. After graduation, all trainees will be dispatched to preschools with a shortage of teaching staff. Based on interview data at both the national and sub-national levels, prior to 2019, the provincial quota was determined at the time of recruitment, while the district quota remained undecided until a few months before deployment. As mentioned earlier, this quota system has changed as MoEYS has introduced a new mechanism for recruiting teachers by letting trainees select schools before joining the pre-service programme.

At the time of interviews in 2019, teacher deployment was determined by discussions between the director and chiefs of relevant offices at POE and directors of DOEs of the districts, where trainees are deployed. The primary responsibility in placing new teachers lies with POEs and DOEs at the sub-national level. With the recent recruitment

mechanism, the central government is in charge of deployment destinations, as the MoEYS decides the school quota. In other words, the POE and DOE at the sub-national level have little say in teacher deployment.

Challenges in ECE teacher deployment

Adequacy of ECE teachers

The shortage of preschool teachers remains a significant challenge for Cambodia. With 5,764 teaching staff members in public preschools nationwide, the STR in preschools for the AY 2023–24 stands at 44.7. This is notably higher than in neighbouring countries in the region, such as Vietnam (17.27), Laos PDR (18.24), and Myanmar (14.95) in 2018 (UIS, 2025). As shown in Fig. 2, while STRs in primary and secondary education have declined over the past two decades, the STR in preschools has risen significantly, by approximately 67%, from 26.78 in AY 2003–04. In addition, from AY 2015–16, the STR at public preschools exceeds the STR at primary schools. While preschool enrolment has increased by more than 250% over the past two decades, the number of preschool teachers has grown by less than half that rate, at under 110%. As a result, the rise in teaching staff has not kept pace with the rapid expansion of public preschools, contributing to increasingly high STRs.

According to school-level EMIS data, 918 preschools (25%) had no preschool teachers in the AY 2014–2015, which increased to 1,388 schools (30%) by the AY 2022–23. This issue is prevalent in preschools located within primary schools. Based on our interviews, primary school teachers can teach preschool classes when preschool teachers are not assigned. Fieldwork observations further confirmed this practice in Cambodian preschools. In some cases, contract teachers are hired to fill these positions; however, compared to primary schools, the use of contract teachers in preschools is not encouraged by the government.

As shown in Table 3, there are noticeable differences between STR and class size in Cambodian public preschools, although it is supposed to be roughly the same, as typical preschools have one teacher per class. For instance, in AY 2014–15, only around 45% of schools had an average STR below 30, while the schools with an average class

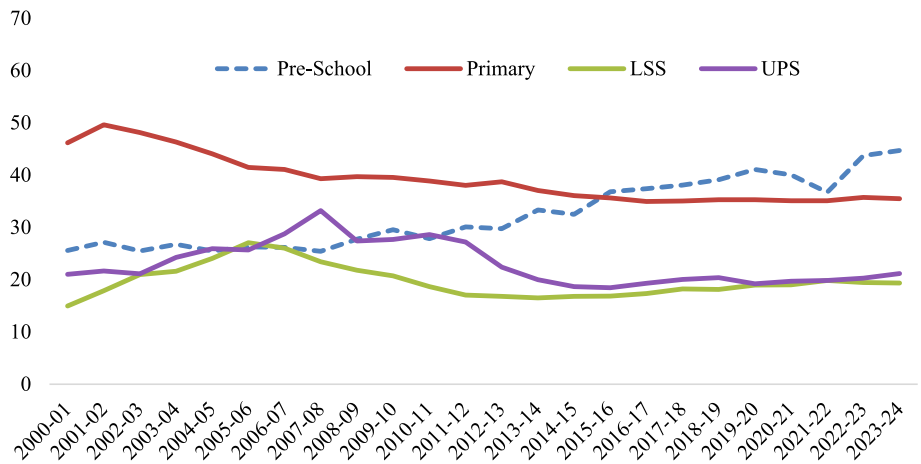

Fig. 2 Student teacher ratios by education level. Source: MoEYS's EMIS 2023–2024

Table 3 STR and class size in preschools

	STR			Class size		
	2014–15	**2018–19**	**2022–23**	**2014–15**	**2018–19**	**2022–23**
< = 10	1.0%	0.7%	1.0%	1.0%	0.9%	1.2%
10.01–20	12.2%	10.0%	7.1%	15.2%	13.1%	10.7%
20.01–30	31.8%	30.1%	22.7%	47.9%	46.5%	40.2%
30.01–40	16.6%	18.8%	18.6%	24.8%	27.8%	30.8%
40.01–50	7.0%	7.0%	9.6%	7.7%	8.3%	12.3%
50.01–60	3.2%	3.5%	4.4%	2.3%	2.2%	3.3%
60.01–70	1.4%	1.6%	2.4%	0.8%	0.6%	1.1%
70.01–100	1.5%	1.6%	3.0%	0.2%	0.3%	0.5%
Over 100	0.5%	0.9%	1.3%	0.0%	0.1%	0.0%
No teacher	24.8%	25.8%	29.9%	0.0%	0.2%	0.0%
Sample	3706	4300	4635	3706	4300	4635

Source: MoEYS's EMIS school-level data

Table 4 Student–teacher ratio at public preschool by province

	2014–15		2018–19		2022–23	
	STR	**Rank**	**STR**	**Rank**	**STR**	**Rank**
Oddar Meanchey	17.3	1	19.1	1	19.8	1
Phnom Penh	22.9	2	24.0	2	27.9	6
Mondul Kiri	23.4	3	24.9	4	24.6	3
Stung Treng	24.1	4	27.9	9	30.8	9
Preah Sihanouk	24.1	5	26.0	6	29.6	8
Kep	25.1	6	25.8	5	26.2	4
Koh Kong	25.8	7	24.7	3	23.5	2
Preah Vihear	27.9	8	27.7	8	28.2	7
Kampot	29.3	9	27.3	7	27.4	5
Svay Rieng	30.1	10	32.0	12	33.9	13
Banteay Meanchey	30.2	11	31.9	11	34.8	14
Pursat	30.8	12	33.2	13	36.3	18
Kratie	31.9	13	33.8	15	33.8	12
Pailin	33.2	14	35.9	19	35.3	16
Nationwide	33.3	15	34.0	16	35.3	15
Kampong Chhnang	33.4	16	33.8	14	33.6	11
Takeo	33.4	17	31.8	10	31.4	10
Kandal	33.6	18	34.7	17	37.5	20
Kampong Thom	34.2	19	35.2	18	36.1	17
Battambang	34.6	20	36.5	20	37.0	19
Kampong Cham	38.0	21	38.0	21	38.9	21
Kampong Speu	38.7	22	38.1	22	40.2	23
Ratanak Kiri	40.0	23	42.5	24	39.3	22
Prey Veng	41.1	24	40.9	23	41.9	24
Siemreap	44.2	25	44.7	25	45.3	26
Tboung Khmum	48.5	26	45.8	26	43.9	25

Source: Created by the authors based on EMIS school-level data

size below 30 were around 65%. By AY 2022–23, only around 30% of schools have an average STR under 30. The severe shortage of qualified preschool teachers continues to worsen as the government struggles to increase the intake of preschool teacher trainees, while the number of preschool enrolment continue to increase. The shortage of qualified ECE teachers is very challenging. Primary school teachers assigned to work as preschool teachers did not receive pre-service teacher training to be ECE teachers, but they also received little or no in-service training to become preschool teachers (Table 4).

Efficiency in ECE teacher deployment

This study analyses the efficiency and equity of teacher deployment based on the proportion of teachers against students. Efficiency in teacher allocation is found by observing how the number of teachers distributed to schools is proportional to the number of students. To evaluate the effectiveness of teacher deployment, this study employs the scatter plot of the number of students and teachers and the regression R-squared (R^2) to measure the non-randomness in teacher deployment, following the analysis guideline from UNESCO et al. (2014). In statistics, R^2, valued between 0 and 1, indicates the proportion of the variance in the dependent variable (number of teachers) that is predictable from the independent variable (number of students). The closer to 1 the R^2 is, the stronger the relationship between the number of students and teachers. The inverse of this R^2 (1-R^2), also known as the degree of randomness, captures the share of teacher distribution explained by other unobserved factors affecting the teacher deployment. The data used in the analysis are from the EMIS AY 2014–2015, AY 2018–19, and AY 2022–23, containing information on 4,600 public preschools.

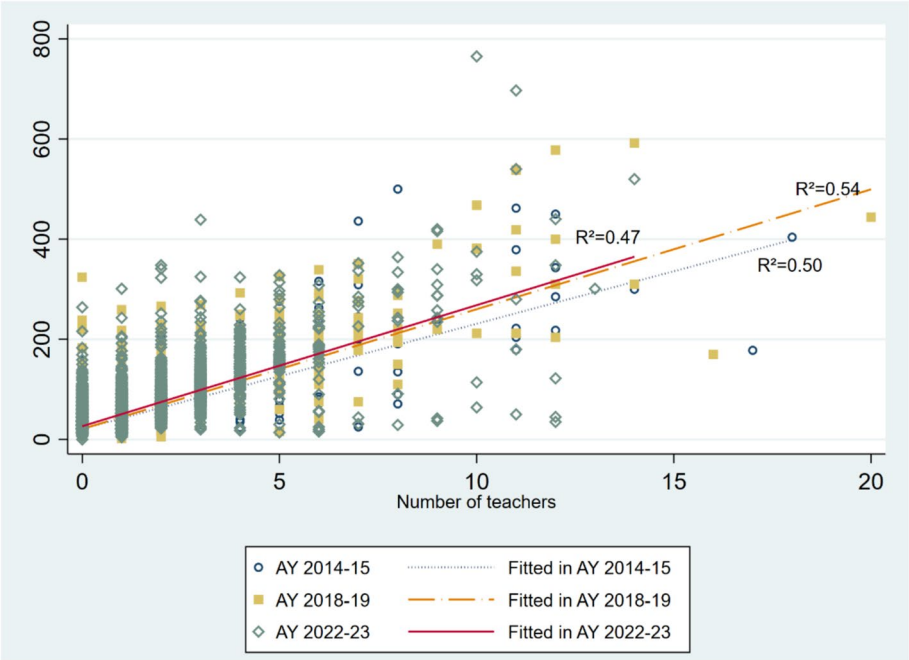

Fig. 3 Scatter plot of the numbers of students and teachers by year. Source: Created by the authors based on school-level EMIS data

As shown in Fig. 3, between 2014 and 2022, the association between student numbers and teachers in Cambodian preschools, measured by R^2, has been inconsistent, ranging from 0.54 to 0.47. The drop from 0.54 in 2018–19 to 0.47 in 2022–23 suggests that teacher allocation has become less efficient over time. In other words, only 47% of the increase in preschool teachers can be directly attributed to the rising student enrolment in 2022–23. The remaining 53% (1–0.47) depends on other, unexplained factors, meaning many teachers may not be placed, where they are needed most. This inefficiency is also lower than what is found in Cambodian primary schools, where Ashida and Chea found a stronger connection ($R^2 = 0.65$) between student numbers and teacher numbers. One major issue contributing to this inefficiency is that nearly 30% of preschools had no teachers at all in the 2022–23 academic year. When these schools are excluded from the analysis, the relationship improves ($R^2 = 0.54$); however, the broader problem remains: too many preschools are left without qualified preschool teachers, resulting in young children lacking access to quality early learning.

For urban–rural comparison, teacher deployment in rural areas (R^2 of 0.37) is far worse than in urban areas (R^2 of 0.65) in 2022–23. The average class size in urban areas (37.0) is actually bigger than in rural areas, at 30.9. However, the variation of class size measured by the standard deviation is bigger in rural areas than in urban areas.

Equity in ECE teacher deployment

In addition to the adequacy and efficiency of teacher deployment in the ECE sub-sector, teacher distribution remains unequal, with slight improvement in recent years. In AY 2014–15, the national STR at public preschools was 33.3, and by AY 2022–23, the ratio increased to 35.3. By province, the disparities are very significant, ranging from 17.3 in Oddar Meanchey to 48.5 in Tboung Khmum. By AY 2018–19, this gap had slightly narrowed as the STR in Oddar Meanchey increased to 19.1 and the STR in Tboung Khmum decreased to 45.8. Nevertheless, Ratanak Kiri, Prey Veng, Siem Reap, and Tboung Khmum are consistently in the group of provinces with the highest STRs since 2014–15.

Based on the interview with the relevant department at MoEYS, most newly graduated teachers are deployed to preschools in or near urban areas. Like primary school teachers, preschool teachers working in disadvantaged areas are eligible for additional allowances (MoEYS, 2015). However, this incentive is not effective in attracting and retaining teachers in hard-to-staff areas (Ashida & Chea, 2017). According to interviews at the sub-national level, more than 95% of the preschool teacher trainees are female, so it is rather challenging to deploy them to rural and remote areas due to safety concerns. In addition, while the preschool teacher shortage issue in rural areas is more severe, there is also considerable disparity in terms of the quality of teachers between urban and rural areas. As noted previously, new graduates are often posted in and around urban areas, and many preschools in rural areas (particularly those located inside primary schools) have little choice but to assign primary school teachers to teach preschool classes.

Teacher trainees are not trained to manage a multi-lingual or multi-ethnic environment, and no trainer at PSTTC can speak ethnic languages. Some PSTTC trainees are from minority backgrounds and are expected to be deployed to their hometowns after completing the pre-service training in Phnom Penh. The MoEYS has planned to increase the number of multi-lingual preschool teachers from 94 teachers in 2009 to 127 by 2023.

UNICEF is a key development partner in helping train those teachers. As of 2023–24, multi-lingual preschool programmes are conducted in four public preschools and 154 community preschools across five provinces, namely, Ratanakiri, Mondulkiri, Stung Treng, Preah Vihear, and Kratie (MoEYS, 2025a).

Conclusions and discussion

This study finds that preschool teacher shortages are a serious issue in Cambodia, consistent with broader patterns observed in teacher deployment challenges across low- and middle-income countries (UNESCO, 2024; Akiba & Liang, 2013; McBurnie et al. 2022). To rapidly expand access to early childhood education (ECE), the MoEYS has established preschool classes in primary schools and assigned primary school teachers to teach in community preschools, particularly in rural and remote areas. However, these stopgap measures have not been sufficient to meet the growing demand for qualified preschool teachers. Cambodia currently has only one dedicated preschool teacher training institution offering pre-service programmes, and the limited annual teacher quota approved by the Ministry of Civil Service further restricts MoEYS's ability to recruit new preschool teachers. These structural constraints mirror similar findings from other contexts, where systemic limitations hinder efforts to staff disadvantaged schools (Asim et al., 2019; Bobba et al., 2021; Tao, 2014).

Beyond teacher shortages, the study also highlights significant concerns regarding the quality of preschool teachers. Many public preschools located in primary schools and community settings are staffed by teachers who lack specialised pre-service training in early childhood education. In-service training opportunities for community preschool teachers are also limited in duration and scope. This finding echoes international evidence that disadvantaged schools, especially in rural and low-income areas, are often staffed with less qualified teachers, undermining education quality and equity (Francis et al., 2019; Luschei & Chudgar, 2016). It reinforces that while investments in infrastructure and school expansion are important, they are insufficient without simultaneously addressing the need for adequately trained teaching staff.

The Education Management Information System (EMIS) data analysis further reveals wide disparities in preschool teacher allocation across and within Cambodian provinces. Although EMIS provides valuable insights, it likely underestimates disparities, because it does not account for primary school teachers concurrently serving as preschool teachers. This limitation reflects a broader challenge noted in the literature: the importance of robust administrative data systems for accurately diagnosing teacher deployment gaps and informing targeted policy interventions (Mackintosh et al., 2020; World Bank, 2013).

Inequities in teacher placement are also evident. Qualified graduates from the Preschool Teacher Training Centre (PSTTC) are disproportionately concentrated in urban areas, leaving rural and community preschools with less qualified staff. Similarly, low-cost private preschools, which often cater to lower-income families, frequently employ untrained teachers in an effort to minimize operational costs. These patterns mirror findings in other LMICs, where more experienced and specialized teachers gravitate toward higher-performing or better-resourced schools (Han, 2013; OECD, 2018).

Overall, the findings align with international evidence that inequitable deployment of teachers, both in terms of quantity and quality, contributes to persistent educational

inequalities. Addressing these challenges in Cambodia will require systemic reforms, including scaling up pre-service training opportunities, strengthening teacher workforce planning using improved data systems, implementing targeted incentives to attract qualified teachers to disadvantaged areas, and investing in infrastructure and continuous professional development. Drawing on successful experiences from other countries—such as local recruitment strategies (Raju, 2017), financial and professional incentives (UNESCO & Teacher Task Force, 2019), and rotational deployment systems (Jeong & Luschei, 2019)—could inform policy efforts to ensure a more equitable and sustainable preschool teacher workforce in Cambodia.

Policy implications

Adequacy and quality issues Preschool teacher shortage: there is an urgent need to increase the number of preschool teacher training institutions that can provide initial pre-service training programmes. At the same time, the government should establish programmes that can systematically update the knowledge and skills of preschool teacher trainers. Two teacher education colleges were recently established in Phnom Penh and Battambang. There should be feasibility studies on establishing ECE teacher training programmes at these two teacher colleges. The government should provide long-term courses to primary school teachers working as preschool teachers, as teaching at primary schools is quite different from teaching at preschools. This training can be conducted during school vacations. There should be a mechanism to retain those trained teachers to encourage them not to return to primary schools. Some community preschools are now eligible for the school operation budget (SOB) from the MoEYS. Therefore, there is a need to offer training on how to manage the school budget properly. The current training for community preschool teachers is insufficient and should be more comprehensive.

Efficiency issues To clearly understand teacher deployment issues, EMIS data with more detailed information is necessary. In the future, MoEYS should include primary school teachers working as preschool teachers in the EMIS database. Otherwise, it is difficult to systematically identify the actual needs of preschool teachers. As mentioned in earlier sections, MoEYS has introduced a new recruitment mechanism to improve teacher deployment efficiency. There should be a rigorous study to evaluate the impact or effectiveness of, as well as the challenges faced, by this new mechanism. In the meantime, MoEYS should strictly follow teacher transfer guidelines to avoid teachers moving from schools with a high STR to a low STR.

Equity issues To narrow the gap between preschools in urban and rural areas, there should be a more precise mechanism to ensure that newly trained teachers are deployed to preschools, where they are most needed. The new teacher recruitment mechanism is expected to alleviate the inequality issue in teacher deployment between urban and rural areas. The list of preschools eligible for teacher deployment should be prepared based on actual needs, prioritising hard-to-staff preschools. From the lessons learnt from primary school teacher deployment, recruiting local teachers can effectively prevent teachers from transferring out. To better equip preschools, innovative financing is needed to mobilise more funding, such as fundraising from parent contributions or private donors, particularly in urban areas. Previous studies have implied that parents are engaged when

schools operate the funding with transparent accountability for their children's education. Public–Private Partnerships (PPP) and Corporate Social Responsibility (CSR) projects are also potential sources to finance investment in preschool facilities.

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Author contributions
Phal Chea was involved in the conceptualisation, design of the study, data collection and analysis, and drafting and revising the manuscript. Kexin Wang conducted fieldwork in Cambodia and contributed to the drafting and revising the manuscript. Keiichi Ogawa and Akemi Ashida made substantive contributions to the conceptualisation and design of the study and helped revise the manuscript.

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Data availability
The data sets generated and analysed during this study are not publicly available due to privacy and confidentiality reasons but are available from the corresponding author on reasonable request.

Declarations

Competing interests
The authors declare that they have no competing interests.

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