



Qualification of Teaching Performance at Upper Secondary School in Cambodia: A Case Study at New Generation Schools (NGS)



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Abstract

In alignment with Global Sustainable Development Goal 4 (SDG 4) and the growing focus on teacher quality as a driver of student achievement, Cambodia has implemented the New Generation School (NGS) model to reform secondary education by increasing autonomy and accountability. However, empirical evidence regarding the specific qualifications and instructional performance of teachers within this innovative framework remains limited. This study evaluates the qualification of teaching performance at the upper secondary level across diverse NGS contexts. Utilizing a mixed-methods research design, primary data were collected between May and September 2023 from a purposive sample of 235 teachers across four schools: Preah Sisovath (Phnom Penh), Prek Anchanh (Kandal), Peam Chikorng (Kampong Cham), and Kok Pring (Svay Rieng). Quantitative data were analyzed using the Weighted Average Index (WAI) and ANOVA, while qualitative insights were derived from semi-structured interviews with school principals and teachers. The findings reveal a high level of teacher qualification and commitment (Overall WAI = 0.65), with teachers demonstrating advanced competencies in 21st-century pedagogical frameworks, including the 5E Instructional Model, Project-Based Learning (PBL), and the integration of Technological Pedagogical Content Knowledge (TPACK). Notably, the study identifies a significant urban-rural performance gap,

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with Preah Sisovath High School consistently outperforming provincial counterparts in instructional techniques and ICT integration. Key drivers of success include the institutionalization of Professional Learning Communities (PLCs) and a “dual-incentive” structure that combines state tenure with performance-based allowances. The study concludes that while the NGS model effectively professionalizes teaching, policy efforts must prioritize equitable resource distribution and ICT infrastructure for rural schools to bridge the existing quality divide.

Introduction

The qualification of teaching performance is universally recognized as a cornerstone of educational success (Gargani & Strong, 2017; Kraft, Blazar, & Hogan, 2018), particularly in secondary education, where foundational skills for higher education and workforce readiness are cultivated (Antoninis et al., 2023). Globally, teaching performance directly influences student learning outcomes, equity in education, and the development of 21st-century skills, such as critical thinking, creativity, and collaboration (L Darling-Hammond, 2017; OECD., 2018). International frameworks, such as UNESCO’s Sustainable Development Goal 4 (SDG 4), emphasize the critical role of qualified teachers in ensuring inclusive and equitable quality education and promoting lifelong learning opportunities (Carney, 2022). The OECD’s Program for International Student Assessment (PISA) consistently shows that countries investing in teacher quality outperform others in educational equity and student achievement (Peña-López, 2020).

The New Generation Schools (NGS) model in Cambodia reflects a global trend of adopting innovative approaches to improve teaching quality through autonomy, accountability, and professional development (Bo, 2021; MoEYS, 2016; No, 2020). By focusing on upper secondary schools, this study aligns with a growing body of international research exploring how enhanced teaching performance can prepare students to thrive in an increasingly interconnected and knowledge-driven world (Colvin & Edwards, 2018). Understanding and addressing the challenges of teaching qualifications at NGS not only helps improve Cambodia’s education system but also provides insights into broader global efforts to enhance teaching excellence in emerging economies (Schleicher, 2018).

The qualification of teaching performance is a key focus in educational management and leadership, as it directly influences student outcomes, instructional quality, and school effectiveness (Aquino, Afalla, & Fabelico, 2021; Fernández & Martínez, 2022; Lambert, 2018). This research advances pedagogical theories and informs policies aimed at enhancing teacher professionalism and accountability (Aquino et al., 2021); L.

In secondary education, teacher performance is critical in shaping academic success and socio-emotional development (Burroughs et al., 2019; Peña-López, 2020; Sala, 2022). Innovative models like Cambodia’s New Generation Schools (NGS) demonstrate how

autonomy and accountability can improve teaching quality. Examining these models connects theoretical in school management with practical strategies for educational reform, enriching global discussions on school improvement (Bo, 2021; Donaher & Wu, 2020; Harris & Jones, 2019).

This study also fills gaps in understanding the challenges and opportunities for developing countries to improve teaching quality. It provides evidence for balancing innovation with resource constraints, making it relevant to educational leadership in emerging economies (Donaher & Wu, 2020; Schleicher, 2018).

Teacher performance is a critical factor in students’ educational success (Aquino et al., 2021). Research consistently shows that effective teaching practices significantly impact students’ academic achievements, attitudes, and behaviors (Fernández & Martínez, 2022). For instance, teachers who provide emotional support and maintain well-organized classrooms tend to foster better student outcomes (Fernández & Martínez, 2022). In upper secondary schools, where students are preparing for higher education or vocational training, the quality of teaching becomes even more crucial (Donaher & Wu, 2020).

Challenges in Cambodia

The Cambodian education system faces several challenges, including teacher shortages, inadequate teaching resources, and insufficient professional development opportunities (Bo, 2021). Many teachers lack formal qualifications and require ongoing training to meet the evolving needs of the education system (MoEYS, 2016; No, 2020). These issues contribute to the overall quality gap in education, making it essential to focus on improving teacher performance (MoEYS, 2016; No, 2020).

New Generation Schools (NGS) in Cambodia aim to address these challenges by implementing innovative teaching methods, providing continuous professional development for teachers, and improving school infrastructure (MoEYS, 2016; Thy & Ann, 2023). These schools are designed to create a more conducive learning environment, which in turn enhances teacher performance and student outcomes (Bo, 2021; Donaher & Wu, 2020; Thy & Ann, 2023).

The qualification of teaching performance has been extensively studied, yet significant gaps persist in the literature. Many prior studies primarily focus on developed countries, limiting their applicability to

emerging economies like Cambodia (Burroughs et al., 2019; L Darling-Hammond, 2017; Pich, 2017). Research on teacher performance in Southeast Asia often emphasizes quantitative outputs, such as student test scores, while neglecting qualitative aspects, including teacher motivation, professional development, and contextual factors that influence teaching quality (HUYNH, 2022; Innotech, 2018; Játiva & Mills, 2022).

Moreover, studies frequently adopt generalized frameworks for evaluating teaching performance, overlooking the unique challenges posed by diverse educational systems (Linda Darling-Hammond, 2017; Minea-Pic, 2020; Tucker, 2019). For instance, the lack of autonomy and accountability mechanisms in many public schools is underexplored (Hanushek, Link, & Woessmann, 2018), particularly in contexts where systemic reforms like Cambodia's New Generation Schools (NGS) are being implemented (Chealy, Chanrith, Sitha CHHINH, & David, 2014; Donaher & Wu, 2020).

Another weakness in the literature is the limited investigation into the impact of innovative school models on teacher performance. While some research has examined NGS as a model for improving education quality, these studies often focus on student outcomes rather than explicitly addressing teaching performance (Corrado & Tungjan, 2019; Játiva & Mills, 2022; MoEYS, 2016). Additionally, most existing studies rely heavily on cross-sectional designs, which fail to capture the longitudinal effects of interventions aimed at enhancing teacher qualifications (L Darling-Hammond, 2017; Schleicher, 2018).

Finally, there is insufficient focus on the challenges faced by teachers in resource-constrained environments, such as limited access to professional development opportunities (Popova, Evans, Breeding, & Arancibia, 2022), inadequate teaching materials (Piper, Zuilkowski, & Ong'ele, 2016), and systemic inefficiencies. Addressing these gaps is crucial for designing targeted interventions that enhance teaching performance in underperforming education systems (Antoninis et al., 2023; Evans & Mendez Acosta, 2021; Hobusch & Froehlich, 2021; note regarding Israel).

The NGS model incorporates various mechanisms to ensure quality teaching, including merit-based teacher recruitment, continuous professional development, and the integration of student-centered teaching strategies (Bou, 2025; Bredenberg, 2018; Chealy et al., 2014; Nhem, 2023). These efforts align with Cambodia's broader development goals of achieving high middle-income status by 2030 and becoming a developed country by 2050, as outlined in its national education strategic plans (MoEYS, 2019b, 2024a). However, while the NGS model has garnered attention for its potential, there remains limited empirical evidence on its impact on teaching performance, particularly at the upper secondary level.

This study aims to evaluate the qualifications and performance of teachers at NGS upper secondary schools in Cambodia. By conducting a case study, the research seeks to identify key factors contributing to teaching effectiveness and to improve teaching quality nationwide. This investigation not only contributes to the growing body of literature on educational reform in Cambodia but also provides valuable insights for stakeholders seeking to replicate the NGS model in other public schools.

The Background of NGS's Schools and Methodology

In recent years, Cambodia has made significant progress, with reforms aimed at decentralizing school management and promoting autonomy. Since 2013, the Ministry of Education, Youth and Sport (MoEYS) has pursued the NGS initiative, launched in 2015 as part of a second wave of reforms focused on school-based management and accountability. The NGS model was first piloted at Preah Sisowath High School, emphasizing semi-autonomous governance within public education (Hangchuon, 2020; MoEYS, 2015, 2018). By 2024, the NGS had expanded to 11 schools across specific geographical areas of Cambodia, at both the primary and secondary levels, as well as the New Generation Pedagogical Research Center (MoEYS, 2024b, 2024c). The NGS model grants schools greater autonomy, particularly in STEM education, by enabling specialized curricula and innovative teaching approaches within a national framework. However, the Cambodian education system remains largely centralized, with the MoEYS overseeing consistency and quality across schools. Although this ensures uniform standards, it also limits flexibility in addressing local needs, as financial and staffing decisions are often controlled at the central level (Kitamura, Umemiya, Hirotsato, & Dy, 2016; MoEYS, 2019a). These constraints highlight both the potential and the limitations of school autonomy in Cambodia: schools within the NGS model can innovate. However, they must adhere to centralized policies and funding restrictions.

This study collected both quantitative and qualitative data to provide comprehensive insights into school financial management in the context of the autonomy adopted by the NGS in Cambodia. Both quantitative and qualitative data were chosen to capture both broad patterns and in-depth insights on the topic. Quantitative data provides measurable trends on the qualification of teaching performance, while qualitative data enriches the findings with contextual understanding of teachers' experiences and perspectives. This dual approach enhances the study's validity by ensuring that findings are statistically robust and grounded in real-world contexts, making them particularly relevant for educational policy-making. Data collected is a well-established approach in the social sciences, especially in educational

studies, where it enables triangulation and enhances the credibility of findings (Creswell & Clark, 2017).

The study, conducted from May to September 2023, collected primary data from the NGS teachers in upper secondary schools. To represent NGS teachers from diverse regions in Cambodia, a purposive sampling method was used a mix of urban and rural perspectives. At the time of the study, six NGS schools were operating nationwide: two in Phnom Penh (Preah Sisowath and Prek Leap High Schools), two in Kampong Cham Province (Hun Sen Kampong Cham and Peam Chikorng High Schools), one in Kandal Province (Prek Anchanh High School), and one in Svay Rieng Province (Kok Pring High School). One school from each province was purposefully selected to provide a representative sample of NGS in Cambodia. Overall, 235 NGS teachers were invited to the interview, comprising 80 from Preah Sisovath High School, 75 from Prek Anchanh High School, 47 from Peam Chikorng High School, and 33 from Kok Pring High School. The sample was diverse in teaching experience, age, and gender, providing a broad range of perspectives on the autonomy granted to NGS teachers in managing curriculum and school operations at the upper secondary level.

A structured questionnaire was selected as the primary tool for quantitative data collection in this study because it effectively gathers standardized data from a large sample. This approach is particularly well-suited for capturing teachers' perceptions of the qualification of teaching performance, enabling the collection of responses that can be statistically analyzed. Using a questionnaire facilitates clear comparisons among teachers' responses across different NGSs. It supports the exploration of variations in perceptions of teaching performance by school and across specific dimensions, such as academic qualifications, instructional techniques, pedagogical autonomy, subject-matter expertise, institutional participation, teacher commitment, outcome-based instruction, and teacher career satisfaction and professional motivation. Additionally, the structured format ensures efficiency, allowing data collection within a limited timeframe (approximately 40 minutes per interview) while maintaining consistency across respondents. These questionnaires were administered through face-to-face interviews with teachers, lasting approximately 40 minutes each. It focused on key dimensions of teaching performance. Quantitative responses were analyzed using ANOVA comparisons to compare across schools and WAI to evaluate and rank perceptions within these dimensions.

To analyze the data, the Weighted Average Index (WAI) was applied to rate teachers' perceptions of autonomy across the four key dimensions. Responses were recorded and analyzed using SPSS software, with each response assigned a weight to quantify the level of autonomy perceived: 'very high' was assigned the highest

weight of 1.00 ($5/5 = 1.00$), 'high' a weight of 0.80 ($4/5 = 0.80$), 'moderate' a weight of 0.60 ($3/5 = 0.60$), 'low' a weight of 0.40 ($2/5 = 0.40$), and 'very low' a weight of 0.20 ($1/5 = 0.20$). The overall assessment (OA) of WAI was calculated based on the mean scores and interpreted as follows: (1) Very High (VH) = 0.81-1.00, (2) High (H) = 0.61-0.80, (3) Moderate (M) = 0.41-0.60, (4) Low (L) = 0.21-0.40, and (5) Very Low (VL) = 0.00-0.20 (DeVellis & Thorpe, 2021; Pallant, 2020). This rating system provided a structured approach to quantify and interpret teachers' perceptions of autonomy in each dimension, facilitating meaningful comparisons across responses. This methodological approach offers a robust foundation for examining teachers' perceptions of autonomy within the NGS framework, enabling a thorough analysis of variations in autonomy across different school dimensions and contexts.

This study has a few key limitations. First, as New Generation Schools (NGSs) operate as public schools under the MoEYS, certain information must be verified by MoEYS experts. Additionally, NGSs are supported by the Kampuchea Action to Promote Education (KAPE) organization, and insights from KAPE experts would have enriched the findings. However, due to time constraints, it was not possible to conduct interviews with representatives from either MoEYS or KAPE. This lack of expert input may limit the depth of understanding regarding policy and implementation nuances within NGSs. Future studies could address this gap by incorporating perspectives from these key stakeholders.

Results and Findings

Teachers' Involvement in Academic Qualifications.

Teachers were asked, "To what extent do teachers in your school have the necessary academic qualifications to teach at the secondary level?" (Table 1). Overall, the teachers assessed that they have the necessary academic qualifications to teach at the secondary level in their schools. They evaluated a high degree of satisfaction regarding (1) the establishment of a school management committee with the participation of authority, parents, and the community, (2) sharing roles and responsibilities, (3) formulation of internal regulation, (4) implementation of internal regulation according to the actual misconduct of the staff, and (5) implementation of internal regulation based on the actual misconduct of students. At the same time, they rated a moderate degree of their involvement regarding (1) the ability to make the appointment of the management team, (2) the decision of school management committees in internal regulation, and (3) the involvement of the teachers in deciding the internal regulations.

ANOVA confirms that teachers at the four study schools shared significantly different degrees of involvement regarding (1) the establishment of the school management committee with the participation of authority, parents, and the community (p -value = 0.012), (2) the implementation of internal regulation according to the actual misconduct of the staff (p -value = 0.020) and (3) implementation of internal regulation based on the actual misconduct of students (p -value = 0.028). Compared with Preah Sisovath Upper Secondary School, teachers at Kok Pring Upper Secondary School, Prek Anhchanh Upper Secondary School, and Peam Chikornng Upper Secondary School reported higher levels of involvement satisfaction regarding organizational autonomy performance. Based on an interview with the school principal, it was revealed that NGS Phnom Penh evaluates and selects teachers through a set of clear criteria. Teachers are required to hold at least a bachelor's degree in their area of specialization. Both senior-level civil servant teachers and contract-based teachers must also possess a certificate in teaching methodology or have prior teaching experience in a private school. The principal further explained that all teachers in New Generation Schools are fully capable of teaching students, adapting instruction to accommodate both slower and faster learners within the same class, and preparing standardized tests to accurately assess students' abilities, which helps support slower learners in a timely manner [KII-2-PP].

Four teachers differ significantly. It largely depends on the individual teacher's commitment to teaching their specialized subject, as basic-level teachers also have numerous opportunities for further study and ongoing research. Additionally, New Generation Schools implement a career orientation program at the start of each academic year, along with a weekly Professional Learning Community (PLC) to enhance teachers' pedagogical methods, instructional materials development, subject-matter materials development, subject-matter expertise, and ongoing Continuous Professional Development (CPD). These initiatives aim to strengthen professional competencies and address evolving educational demands.

Teachers and educational staff continually improve their teaching and school management practices through activities such as attending training workshops, gathering the latest research findings, engaging in professional discussions, integrating new technologies into teaching, and attending educational forums, conferences, and other professional gatherings. Such professional development efforts enable teachers to better meet students' needs and improve the overall quality of education at the school.

Teachers also emphasized that student assessment is a key component of New Generation Schools, serving as

an essential tool for accurately measuring student ability and providing timely feedback to improve teaching and learning. Most teachers adopt a common approach to assessment, focusing on two main areas: (1) Formative assessment—through oral questioning, group quizzes, and similar activities; and (2) Summative assessment—via monthly, semester, and annual examinations.

For monthly exams, teachers may design tests according to individual class levels or organize them for mixed-level students. The school typically administers two types of tests: standardized tests—using a single version of the test for all students in the same grade level on a designated date; and teacher-designed tests in cases where the school schedule is particularly busy, allowing subject teachers to arrange exams by class level.

Furthermore, teachers assign students small project-based learning tasks to support formative assessment. Teachers noted that the school's standardized tests help precisely measure student abilities, targeting areas where students receive low or failing marks to provide timely interventions. These tests also help teachers review and refine their own teaching practices.

In addition, teachers implement a research project at the beginning of each academic year, encouraging students to collaboratively create group projects for assessment at the end of the year. These projects are also showcased in an annual exhibition of student research outcomes [IDI-3-PP, IDI-5-KD, IDI-7-SVR & IDI-8-SVR].

Teachers' Involvements in Instructional Techniques and Pedagogical Autonomy

This indicator assesses the instructional techniques employed by teachers within the schools. Teachers were surveyed using the question: "To what extent do you participate in the implementation of teaching techniques in your school?" (Table 2). Overall, teachers reported high satisfaction with the implementation of instructional techniques. Specifically, high satisfaction was observed in ten key areas: (1) detailed and clear lesson explanations, (2) use of appropriate language, (3) encouraging students to ask questions, (4) active engagement with students in classroom activities, (5) unbiased grading based on established rubrics, (6) punctuality, (7) providing opportunities for student expression, (8) clear and constructive feedback on student work, (9) lesson planning that bridges theory and practice, and (10) stimulating student critical thinking through questioning.

In contrast, a moderate level of satisfaction was reported regarding: (1) the preparation of teaching aids appropriate to the lesson, (2) effective time management during instruction, (3) creating a joyful classroom atmosphere, and (4) clear and organized handwriting. Furthermore, one-way ANOVA results indicated significant differences in perceptions across the four schools

Table 1: Teachers' involvement in academic qualifications.

Attribute	Preah Sisovath (n = 80)		Prek Anchanh (n = 75)		Peam Chikorng (n = 47)		Kok Pring (n = 33)		Overall (n=235)		P-value
	WAI	OA	WAI	OA	WAI	OA	WAI	OA	WAI	OA	
	All teachers in this school possess the academic qualifications required to teach secondary-level students.	0.72	H	0.67	H	0.65	H	0.70	H	0.69	
Teachers' academic qualifications significantly influence students' academic achievements.	0.71	H	0.66	H	0.65	H	0.68	H	0.67	H	0.177
Teachers with professional teaching qualifications maintain better records of students and their performance.	0.70	H	0.65	H	0.63	H	0.67	H	0.66	H	0.230
The quality of teachers in this school directly reflects students' academic achievements.	0.63	H	0.61	H	0.62	H	0.62	H	0.62	H	0.180
Teachers with professional teaching qualifications demonstrate superior skills in student assessment and evaluation.	0.60	M	0.59	M	0.58	M	0.60	M	0.59	M	0.258
Overall	0.67	H	0.64	H	0.63	H	0.66	H	0.65	H	0.056

Notes: OA = Overall assessment. WAI = weight average index measured on a five-point scale [Very Low (VL) = 0.00-0.20, Low (L) = 0.21-0.40, Moderate (M) = 0.41-0.60, High (H) = 0.61-0.80, Very High (VH) = 0.81-1.00]. ** Very significant at the 0.01 level, *** Perfectly Significant at the 0.000 level. Overall = the average score of all the above scores.

regarding the indicator: “Teacher consistently engages with students in classroom activities” ($p = 0.026$). Comparative analysis revealed that instructional techniques at Preah Sisovath High School were rated significantly higher than those at Kok Pring, Samdech Chea Sim Prek Anchanh, and Peam Chikorng High Schools.

Interviews with school principals highlighted that teachers at Preah Sisovath High School possess advanced competencies in integrating Technological Pedagogical Content Knowledge (TPACK), including Information and Communication Technology (ICT), digital tools, and Artificial Intelligence (AI) to enhance teaching, research, and classroom management. Teachers effectively utilize Student-Centered Learning (SCL) to foster problem-solving skills and moral development aligned with international standards. While following the national curriculum, teachers employ modern methodologies such as the Constructivist Approach, Inquiry-Based Learning (IBL), Project-Based Learning (PBL), and the 5E Instructional Model: (1) Engage: Stimulating student interest and prior knowledge; (2) Explore: Facilitating hands-on experiences and autonomous problem-solving; (3) Explain: Clarifying concepts and addressing student inquiries; (4) Elaborate: Applying new knowledge in diverse or real-world contexts; and (5) Evaluate: Assessing understanding through testing and feedback. Furthermore, teachers use blended learning and collaborative strategies such as Gallery Walks, Jigsaw, and Think-Pair-Share. Library-based research is also integrated into the curriculum,

supported by digital resources, including Smart TVs, tablets, and specialized reading materials. The use of ICT—including LCD projectors, Google, YouTube, online examinations, and Quizzes—is standard practice. Additionally, Science, Technology, Engineering, and Mathematics (STEM) subjects are prioritized through practical laboratory experiments and specialized study clubs [KII-2-PP].

Regarding specific instructional strategies, teachers emphasized the importance of lesson planning and scaffolding based on student proficiency. For complex concepts, the Demonstration Method is utilized to enhance clarity. For instance, in Chemistry, this involves conducting experiments to observe chemical changes; in Physics, it focuses on principles of energy and motion; in Mathematics, it clarifies complex calculations through practical modeling; and in English Language Teaching, it demonstrates proper grammatical usage. These methods foster an interactive learning environment.

For lessons requiring collaboration, teachers employ Collaborative Learning Activities, role-playing, and interactive environments to promote peer-to-peer communication and a positive learning climate [IDI-3-PP & IDI-7-SVR].

In terms of teaching aids, teachers at New Generation Schools (NGS) utilize a two-pronged approach: (1) Collaborative Preparation: Subject-based technical groups meet to develop shared materials, including LCD slides, ICT-integrated presentations, and educational

Table 2: Teachers’ perception related to instructional techniques and pedagogical autonomy

Attribute	Preah Sisovath (n = 80)		Prek Anchanh (n = 75)		Peam Chikorng (n = 47)		Kok Pring (n = 33)		Overall (n = 235)		p-value
	WAI	OA	WAI	OA	WAI	OA	WAI	OA	WAI	OA	
	Clear and systematic presentation	0.68	H	0.62	H	0.62	H	0.64	H	0.64	
Voice can be heard clearly	0.73	H	0.67	H	0.65	H	0.70	H	0.69	H	0.144
The teacher prepares the teaching materials according to the lesson.	0.53	M	0.48	M	0.45	M	0.50	M	0.49	M	0.282
Good time management in the delivery of content.	0.56	M	0.52	M	0.51	M	0.54	M	0.53	M	0.341
The teacher makes a pleasant atmosphere in the classroom.	0.53	M	0.48	M	0.48	M	0.50	M	0.50	M	0.232
Always encourage students to ask questions.	0.65	H	0.62	H	0.61	H	0.64	H	0.63	H	0.155
Always involve students in classroom activities.	0.71	H	0.66	H	0.65	H	0.68	H	0.68	H	0.026*
Grade students’ assignments fairly.	0.70	H	0.68	H	0.68	H	0.69	H	0.69	H	0.212
Punctual for class.	0.69	H	0.64	H	0.61	H	0.67	H	0.66	H	0.201
Write legibly	0.51	M	0.46	M	0.43	M	0.48	M	0.48	M	0.280
The teacher gives the students a chance to express ideas.	0.75	H	0.69	H	0.66	H	0.72	H	0.71	H	0.102
Teachers provide clear feedback on student work.	0.65	H	0.63	H	0.61	H	0.61	H	0.61	H	0.172
The teacher prepares the lesson by linking the theory with practice.	0.77	H	0.71	H	0.69	H	0.74	H	0.73	H	0.080
The teacher inspires the students by asking questions.	0.73	H	0.68	H	0.65	H	0.70	H	0.69	H	0.124
Overall	0.66	H	0.61	H	0.60	M	0.63	H	0.62	H	0.047*

Notes: OA = Overall assessment. WAI = weight average index measured on a five-point scale [Very Low (VL) = 0.00-0.20, Low (L) = 0.21-0.40, Moderate (M) = 0.41-0.60, High (H) = 0.61-0.80, Very High (VH) = 0.81-1.00]. ** Very significant at the 0.01 level, *** Perfectly Significant at the 0.000 level. Overall = the average score of all the above scores.

videos tailored to lesson objectives. For example, in an Integral Calculus lesson, teachers use visual representations, interactive software (e.g., GeoGebra or Desmos), and educational videos to clarify abstract concepts; and (2) Individual Preparation: Specialized teachers develop supplementary materials during their non-teaching hours to address specific classroom needs.

To foster a positive classroom atmosphere, teachers focus on motivation and interaction rather than punishment, particularly for low-achieving students. Energizers, educational games (e.g., Kahoot! and Quizizz), and memorable learning experiences—such as outdoor learning—help reduce stress and increase engagement.

To encourage student participation and questioning, teachers prioritize building trust and a safe environment. Scaffolding techniques are used to break complex questions into manageable parts. Strategies include: (1) structured class discussions, (2) diverse questioning

techniques (including open-ended questions), (3) supportive feedback, (4) research-based activities, and (5) creating a “no-blame” culture where errors are viewed as learning opportunities. Furthermore, to promote student voice, teachers utilize: Problem-solving questions and Think-Pair-Share techniques, Inclusive acceptance of all ideas to build student confidence, Small group discussions and Q&A sessions, and Digital tools (e.g., Padlet, Mentimeter) for anonymous contributions.

When students make errors, teachers respond with constructive feedback, re-explanations using new examples, and individual assistance. Scaffolding and collaborative learning allow students to learn from peers. Finally, teachers ensure that curriculum content is relevant to daily life. For example, in English, vocabulary is linked to personal items (e.g., “bag”), and in Mathematics, calculations are taught through the lens of personal finance and expenditure management [IDI-3-PP, IDI-4-PP & IDI-8-SVR].

Table 3: Teachers' involvements in subject-matter expertise and institutional participation

Attribute	Preah Sisovath (n = 80)		Prek Anchanh (n = 75)		Peam Chikorng (n = 47)		Kok Pring (n = 33)		Overall (n = 235)		p-value
	WAI	OA	WAI	OA	WAI	OA	WAI	OA	WAI	OA	
	Teachers have in-depth knowledge of the specialized subjects they need to teach (Ex: mathematics, Khmer language ...).	0.78	H	0.73	H	0.72	H	0.76	H	0.75	
Teachers have extensive knowledge more than specialized subjects (Ex: foreign languages, ICT, soft skills ...).	0.57	M	0.51	M	0.51	M	0.55	M	0.53	M	0.141
High professional consciousness, moral goodness of character, and behavior.	0.77	H	0.72	H	0.73	H	0.75	H	0.74	H	0.094
The teacher makes good relationships between schools and communities.	0.55	M	0.49	M	0.47	M	0.52	M	0.51	M	0.202
Teachers are involved in school development.	0.73	H	0.66	H	0.66	H	0.70	H	0.69	H	0.048*
Overall	0.68	H	0.62	H	0.62	M	0.65	H	0.64	H	0.062

Notes: OA = Overall assessment. WAI = weight average index measured on a five-point scale [Very Low (VL) = 0.00-0.20, Low (L) = 0.21-0.40, Moderate (M) = 0.41-0.60, High (H) = 0.61-0.80, Very High (VH) = 0.81-1.00]. ** Very significant at the 0.01 level, *** Perfectly Significant at the 0.000 level. Overall = the average score of all the above scores.

Teachers' Involvements in Subject-Matter Expertise and Institutional Participation

Teachers were surveyed on their perceived level of involvement and proficiency in applying subject-matter expertise and in school-wide participation (Table 3). Overall, teachers reported a high level of satisfaction and perceived competence in these areas. Specifically, high satisfaction was noted in three key domains: (1) deep subject-matter expertise (e.g., Mathematics, Physics, Khmer Literature, etc.), (2) strong professional conscience, including ethics, character, and conduct, and (3) active participation in school development initiatives.

A moderate level of satisfaction was reported regarding: (1) broad general knowledge beyond their primary specialization (e.g., foreign languages, ICT, and soft skills) and (2) the facilitation of strong school-community relations. Furthermore, one-way ANOVA results indicated a statistically significant difference in teachers' perceptions across the four target schools regarding their "participation in school development" ($p = 0.048$). A comparative analysis revealed that teachers at Preah Sisovath High School demonstrated higher levels of subject-matter depth than their counterparts at Kok Pring, Samdech Chea Sim Prek Anchanh, and Peam Chikorng High Schools.

Interviews with school principals clarified that the high level of expertise at Preah Sisovath High School is the result of a rigorous recruitment process that includes competitive examinations, interviews, and specific competency assessments. Moreover, recruited teachers undergo professional orientation and continuous capacity building. Beyond their core specializations, NGS teachers

possess supplementary skills in foreign languages and Information and Communication Technology (ICT), as well as strong competencies in communication and collaboration with school management, colleagues, students, parents, and the broader community [KII-2-PP].

In-depth interviews with teachers further revealed that their role extends beyond traditional classroom instruction. Teachers play a pivotal role in holistic student development, focusing on "soft skills" such as leadership, entrepreneurship, communication, solidarity, and teamwork. The objective is to produce well-rounded graduates who possess both academic knowledge and high moral standards. Additionally, teachers promote school-community engagement through social activities and community programs. These initiatives strengthen the bond between students and guardians while raising awareness of community challenges.

To drive school development and student progress, teachers' responsibilities are categorized into two frameworks: (1) Core Duties: These include pedagogical leadership, research, project-based work, managing study clubs, and preparing students for national and international competitions in Mathematics, Khmer, and English; and (2) Additional Duties: These encompass hygiene education, agriculture, physical education, youth empowerment, and social work to ensure students' well-being and social integration.

Teachers also maintain robust communication with parents through regular meetings, phone calls, and social media. Specifically, Telegram groups are utilized to provide real-time updates on student attendance, academic progress, and examination results. In terms of institutional quality improvement, teachers are actively

involved in lesson planning, creating a supportive and interactive learning environment. Ultimately, teachers in the NGS model serve not only as instructors but as educational leaders, mentors, and catalysts for institutional growth. The synergy between teachers, parents, and the community is essential for creating an effective learning environment and developing students into ethical, skilled citizens capable of contributing to societal development [IDI-3-PP, IDI-5-KD & IDI-8-SVR].

The Role of Teacher Involvement in Commitment and Outcome-Based Instruction

Teachers were surveyed on the following question: “To what extent do you participate in the practice of willingness to teach by focusing on student learning outcomes in your school?” (Table 4). Overall, teachers expressed a high level of satisfaction and commitment regarding student-centered instruction.

Specific indicators receiving high satisfaction ratings included: (1) a strong passion for teaching, characterized by commitment and professional pride; (2) a high sense of responsibility toward students; (3) the use of pedagogical tactics to accommodate both gifted and slow learners (differentiated instruction); (4) providing opportunities for students to participate in classroom activities; and (5) engaging in professional dialogue with peers to exchange instructional strategies. Conversely, a moderate level of satisfaction was reported regarding the teachers’ perceived ability to adapt or change teaching materials.

Furthermore, one-way ANOVA results revealed significant differences in perceptions across the four schools regarding two indicators: “Tactics for adapting instruction for gifted and slow learners” ($p = 0.039$) and “Providing opportunities for student participation in classroom activities” ($p = 0.046$). Comparative analysis showed that the level of student-centered instructional commitment at Preah Sisovath High School was significantly higher than at Kok Pring, Samdech Chea Sim Prek Anchanh, and Peam Chikorng High Schools, respectively.

Qualitative insights from interviews with school principals indicated that Preah Sisovath High School employs rigorous, systematic planning to improve student outcomes. Teachers develop specific monthly, quarterly, and annual instructional plans based on standardized test results and real-time assessments. These plans utilize a grading scale from A to F to monitor student distribution within each classroom.

For example, if a Grade 7 class of 50 students initially shows a high percentage of “Grade F” (Fail) results in Mathematics, the teacher’s subsequent monthly and quarterly plans must outline specific targets to increase the number of “Grade A, B, and C” students while progressively eliminating “Grade F” by the end of the academic year. These instructional plans are formalized

through performance agreements signed with the Technical Committee and the School Principal, with progress evaluations conducted every three months.

To support struggling students, the school implements intensive remedial programs lasting between 1.5 and 3 months prior to the start of the academic year, with a focus on Khmer Literature and Mathematics. Specifically, newly enrolled students in Grades 7 and 10 who are identified as “slow learners” receive three months of additional remedial support after the school year begins. Furthermore, teachers facilitate various support mechanisms, including study clubs for struggling students, “Peer-to-Peer” support programs, and “Gifted Students Tutoring Slow Learners” initiatives [IDI-3-PP & IDI-4-PP].

The Role of Teacher Involvement in Career Satisfaction and Professional Motivation

The final core indicator focuses on career satisfaction at the school level. Teachers were surveyed using the question: “To what extent are you satisfied with your teaching career?” (Table 5). Overall, the findings indicated a high level of general career satisfaction among teachers.

Notably, teachers expressed “very high” satisfaction regarding their permanent civil servant status (tenure). Furthermore, high satisfaction was reported in five specific areas: (1) the respect and recognition received from the school principal, (2) the sense of personal accomplishment derived from their teaching, (3) the degree of institutional support and guidance provided, (4) opportunities for professional growth and self-development, and (5) the opportunity to provide direct instructional support to students during classroom exercises.

In contrast, a moderate level of satisfaction was observed regarding: (1) salary levels relative to their professional contribution, (2) supplementary benefits (e.g., performance incentives, pensions, and health insurance cards), (3) opportunities for social interaction within the workplace, (4) the degree of professional autonomy and independent action in teaching, and (5) the competitive nature of their roles.

Moreover, ANOVA results confirmed statistically significant differences in perceptions across the four target schools regarding three indicators: additional benefits ($p = 0.011$), institutional support and guidance ($p = 0.030$), and the opportunity to assist students during lessons ($p = 0.003$). Comparative analysis revealed that career satisfaction at Preah Sisovath High School was significantly higher than at Kok Pring, Samdech Chea Sim Prek Anchanh, and Peam Chikorng High Schools, respectively.

Qualitative insights from the principal of Preah Sisovath High School indicated that teachers receive

Table 4: The Role of Teacher Involvement in Commitment and Outcome-Based Instruction

Attribute	Preah Sisovath (n=80)		Prek Anchanh (n=75)		Peam Chikorng (n=47)		Kok Pring (n=33)		Overall (n=235)		P-value
	WAI	OA	WAI	OA	WAI	OA	WAI	OA	WAI	OA	
	Strong passion for teaching: commitment and pride for teaching pupils/students.	0.67	H	0.65	H	0.65	H	0.66	H	0.66	
Responsibility toward pupils/students.	0.73	H	0.68	H	0.65	H	0.70	H	0.69	H	0.067
Teachers have teaching tactics to adapt to good students and slow learners.	0.64	H	0.62	H	0.62	H	0.63	H	0.63	H	0.039*
The teacher gives chances for students to participate in class activities.	0.78	H	0.73	H	0.70	H	0.76	H	0.75	H	0.046*
Ability to change/make use of teaching materials.	0.53	M	0.48	M	0.45	M	0.50	M	0.49	M	0.518
Teachers discuss teaching tactics with other teachers	0.75	H	0.70	H	0.67	H	0.72	H	0.71	H	0.153
The teacher guides students in a positive direction for their personal growth	0.76	H	0.71	H	0.69	H	0.74	H	0.73	H	0.109
Teachers are creative with student success.	0.56	M	0.50	M	0.48	M	0.53	M	0.52	M	0.094
Overall	0.68	H	0.63	H	0.61	H	0.66	H	0.65	H	0.028*

Notes: OA = Overall assessment. WAI = weight average index measured on a five-point scale [Very Low (VL) = 0.00-0.20, Low (L) = 0.21-0.40, Moderate (M) = 0.41-0.60, High (H) = 0.61-0.80, Very High (VH) = 0.81-1.00]. ** Very significant at the 0.01 level, *** Perfectly Significant at the 0.000 level. Overall = the average score of all the above scores.

ongoing opportunities for professional and pedagogical development, alongside motivational mechanisms such as verbal praise, certificates of appreciation, and financial incentives.

Interviews with teachers corroborated these findings, noting that they receive professional orientation at the start of each academic year and participate in Professional Learning Communities (PLCs) for weekly knowledge and pedagogical sharing. Teachers also highlighted opportunities for research, workshops, and both domestic and international study tours to expand their expertise.

Financially, the NGS model provides significant motivation; civil servant teachers receive supplementary monthly allowances ranging from \$150 to \$250, while non-civil servant (contract) teachers receive monthly salaries between \$300 and \$400. Additionally, teachers are equipped with digital tools, purposes. The school also provides financial subsidies for teachers pursuing higher education (Bachelor's, Master's, or Doctoral degrees). At the end of each academic year, a comprehensive performance evaluation is conducted. Outstanding teachers who successfully meet the targets of their Performance Agreements and demonstrate excellence in student learning outcomes are rewarded with certificates

of honor, gifts, and additional performance-based bonuses [KII-2-PP].

Discussion

The findings of this study provide a nuanced understanding of how teaching performance is qualified and enacted within Cambodia's New Generation Schools (NGS). By analyzing five core dimensions of teacher involvement, the results reveal a significant shift toward a professionalized, high-accountability instructional model, distinguishing NGS from traditional public schools. A primary finding of this study is the high perceived level of academic qualification among NGS teachers (Overall WAI = 0.69) and its direct link to instructional quality. Unlike traditional models, in which qualifications may be viewed as static credentials, the NGS framework treats qualifications as a foundation for continuous pedagogical evolution. The qualitative data reveal that "academic qualification" in the NGS context extends beyond degrees to include "pedagogical leadership" and "technological integration" (TPACK). This suggests that the NGS model effectively bridges the "qualification gap" often cited in Cambodian education literature by institutionalizing Professional Learning Communities (PLCs) and mandatory Continuous Professional Development (CPD).

Table 5: The Role of Teacher Involvement in Career Satisfaction and Professional Motivation

Attribute	Preah Sisovath (n = 80)		Prek Anchanh (n = 75)		Peam Chikorng (n = 47)		Kok Pring (n = 33)		Overall (n = 235)		P-value
	WAI	OA	WAI	OA	WAI	OA	WAI	OA	WAI	OA	
	I get a lifelong framework.	0.88	VH	0.85	VH	0.83	VH	0.86	VH	0.85	
An appropriate salary level for what I have contributed to the school.	0.59	M	0.54	M	0.52	M	0.56	M	0.56	M	0.350
Additional benefits on my salary (bonus, pension, medical certificate)	0.55	M	0.53	M	0.53	M	0.55	M	0.53	M	0.011*
The respect and appreciation I received from the principal.	0.72	H	0.67	H	0.66	H	0.69	H	0.68	H	0.079
I gained a sense of accomplishment through my work as a teacher.	0.73	H	0.69	H	0.66	H	0.71	H	0.70	H	0.491
Opportunity to get to know other people while working.	0.57	M	0.52	M	0.52	M	0.55	M	0.54	M	0.600
The amount of support and guidance I received at this school.	0.70	H	0.65	H	0.64	H	0.67	H	0.67	H	0.030*
Personal development and progress that I have achieved as a teacher.	0.75	H	0.70	H	0.68	H	0.73	H	0.72	H	0.061
The scope of independent ideas and activities that I can apply to work as a teacher.	0.53	M	0.50	M	0.49	M	0.51	M	0.51	M	0.888
Opportunity to help students practice during class.	0.77	H	0.71	H	0.70	H	0.75	H	0.74	H	0.003**
Competition in my job as a teacher.	0.52	M	0.48	M	0.46	M	0.50	M	0.49	M	0.184
Overall	0.66	H	0.62	H	0.61	H	0.64	H	0.64	H	0.010**

Notes: OA = Overall assessment. WAI = weight average index measured on a five-point scale [Very Low (VL) = 0.00-0.20, Low (L) = 0.21-0.40, Moderate (M) = 0.41-0.60, High (H) = 0.61-0.80, Very High (VH) = 0.81-1.00]. ** *Very significant at the 0.01 level*, *** *Perfectly Significant at the 0.000 level*. Overall = the average score of all the above scores.

A consistent trend across all findings is the statistical superiority of Preah Sisovath High School in almost every indicator compared to Kok Pring and Peam Chikorng. This divergence highlights an “urban-rural divide” in the implementation of school autonomy. While all NGS schools operate under the same policy framework, Preah Sisovath’s higher scores in areas like Subject-Matter Expertise and Instructional Techniques (WAI = 0.78 and 0.73, respectively) likely stem from its role as the pilot site, which allowed for a more mature institutional culture and better access to ICT resources and specialized training. This finding implies that for the NGS model to achieve national equity, policy focus must shift from “model replication” to “contextualized support” for rural schools that face greater challenges in resource mobilization.

The study identifies a sophisticated system of Outcome-Based Instruction at Preah Sisovath, where teachers develop “target-based grade improvement

plans”. This practice represents a high degree of “instructional autonomy” balanced by “performance-based accountability.” By using standardized tests to categorize students from Grade A to F and setting specific targets to eliminate failure (Grade F), teachers move from a passive delivery of the national curriculum to an active, data-driven pedagogical strategy. However, this intensity of monitoring—formalized through Performance Agreements—introduces a paradox: while it drives results, it also risks creating a “high-stakes” environment that may limit teacher creativity in areas not easily measured by standardized tests, a concern reflected in the moderate satisfaction scores for “independent ideas and activities” (WAI = 0.53).

The role of teacher motivation in this study extends beyond simple salary levels. While teachers expressed only “moderate” satisfaction with their base pay, they reported “very high” satisfaction (WAI = 0.85) regarding their permanent civil servant status (tenure). This

indicates that in the Cambodian context, professional security remains the primary motivator. However, the NGS model enhances this “traditional” security with “modern” incentives, such as supplementary allowances (\$150-\$250), access to digital tools (laptops/tablets), and subsidies for higher education. This “blended motivation” strategy—combining state stability with performance-based financial and professional rewards—appears to be the key driver of the high levels of commitment observed in this study.

Finally, the findings demonstrate a successful transition toward Student-Centered Learning (SCL) and toward prioritizing STEM. The widespread use of the 5E Instructional Model (Engage, Explore, Explain, Elaborate, Evaluate) and Project-Based Learning (PBL) indicates that NGS teachers are moving away from rote memorization toward inquiry-based methods. The integration of “soft skills” aligns Cambodian secondary education with international standards (SDG 4 and PISA frameworks).

Conclusion

This study concludes that the New Generation School (NGS) model in Cambodia has successfully created a high-performance instructional environment by integrating professional autonomy with rigorous accountability. The findings demonstrate that NGS teachers possess high academic and professional qualifications, which they actively leverage through modern pedagogical frameworks such as the 5E Instructional Model, Project-Based Learning (PBL), and TPACK integration. A central conclusion is that the NGS model effectively shifts the teaching culture from a traditional, passive delivery system to a data-driven, outcome-based approach. This is evidenced by the systematic use of standardized testing and individualized student improvement plans to eliminate learning failures. However, the study also highlights a persistent geographic disparity, with urban pilot sites such as Preah Sisovath High School exhibiting significantly higher performance indices than provincial schools, suggesting that resource concentration and institutional maturity remain critical to success. Finally, the study confirms that teacher commitment is sustained by a “dual-incentive” structure: the stability of civil servant tenure combined with performance-based financial allowances and professional growth opportunities.

Based on the findings, the following policy recommendations are proposed for the Ministry of Education, Youth and Sport (MoEYS) and relevant educational stakeholders: (1) Institutionalizing Professional Learning Communities (PLCs): The success of NGS teachers in pedagogical innovation is largely attributed to the mandatory weekly PLCs. MoEYS should consider institutionalizing the PLC model across all public secondary schools to facilitate continuous,

peer-led professional development and the sharing of best practices in subject-matter expertise; (2) Bridging the Urban-Rural Digital Divide: To ensure the equitable scaling of the NGS model, targeted investments are needed for provincial and rural NGS sites. Policy focus should shift toward providing rural schools with equivalent ICT infrastructure (e.g., Smart TVs, high-speed internet, and tablets) and specialized TPACK training to narrow the performance gap observed in this study; (3) Formalizing Data-Driven Instructional Planning: The “Target-Based Grade Improvement Plans” used in NGS should be integrated into the national teacher evaluation framework. By requiring teachers to analyze standardized test data to inform their monthly and quarterly lesson plans, the ministry can move the entire system toward a more proactive, outcome-based instructional culture. (4) Expanding Performance-Based Incentive Structures: The study highlights that supplementary allowances (\$150-250) are significant drivers of teacher satisfaction and effort. MoEYS should explore sustainable funding models—potentially through School-Based Management (SBM) and community partnerships—to introduce performance-linked incentives for outstanding teachers in non-NGS schools; and (5) Prioritizing 21st-Century Pedagogical Competencies: Teacher training programs (at the NIE and Provincial Teacher Training Centers) should prioritize the 5E Model, STEM-based research, and Inquiry-Based Learning. Formalizing these methodologies in the national curriculum will better prepare Cambodian students for the global knowledge economy, as envisioned in the 2030 and 2050 national goals.

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Declaration of Competing Interest

The authors declare no conflict of interest. The paper is prepared solely by Kongkea Tep, Serey Sok, Sovanna Sieng, and Phors Lach. The findings of the research explore academic qualifications and teaching performance at New Generation Schools (NGS) in Cambodia, focusing on teaching performance to enhance students’ outcomes. The research provides both quantitative and qualitative

insights into the implementation of teaching performance within the Cambodian education system and its alignment with national policies and Sustainable Development Goals (SDGs). This study contributes valuable knowledge to educational reform in Cambodia and is among the first of its kind conducted by local scholars.

Credit Authorship Contribution Statement

Conceptualization: Kongkea Tep and Sovanna Sieng, Methodology: Kongkea Tep, Sovanna Sieng, and Phors Lach. Data entry and cleaning: Kongkea Tep, Data analysis: Kongkea Tep, Writing—original draft preparation: Kongkea Tep, Sovanna Sieng, and Phor Lach, Writing—review and editing: Kongkea Tep, Sovanna Sieng, and Phor Lach. All authors have read and agreed to the published version of the manuscript.

Data Availability Statement

Data for this research were collected through a survey conducted at four upper secondary schools in the capital province of Phnom Penh and the provinces of Kampong Cham, Kandal, and Svay Rieng. The data set can be shared upon request.

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Appendix. List of interview codes

Code	School Name	Research Design	Date
<i>Peam Chikorng High School, Kang Meas District, Kampong Cham</i>			
KII-1-KPC	Principal [M]	Key informant	15 July 2024
<i>Preah Sisovath High School, Daun Penh District, Phnom Penh</i>			
KII-2-PP	Principal [M]	Key informant	16 July 2024
<i>Samdach Cheasim Prek Anhchanh, Mukh Kampul District, Kandal</i>			
KII-3-KD	Principle [M]	Key informant	16 July 2024
<i>Kok Pring High School, Svay Chrum District, Svay Rieng</i>			
KII-4-SVR	Principle [M]	Key informant	17 July 2024