Impact of School Principals' Leadership on Teaching Quality and Students' Achievement:

A Case Study of Primary Schools in Phnom Penh, Cambodia

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ABSTRACT

School leadership and management are recognized as key determinants for school reforms; however, little is known about the effects of school principals' leadership as perceived by teachers on teaching and learning outcomes, particularly at the primary education level. Therefore, this dissertation examines the effects of school principals' leadership on the quality of teaching and students' achievement in primary schools in Phnom Penh, Cambodia, from teacher perceptions. It is guided by the following research questions. *1. How and to what extent does school principals' leadership affect students' achievement in primary schools in Phnom Penh, Cambodia? 2. How and to what extent does teachers' teaching practice influence students' achievement in primary schools in Phnom Penh, Cambodia? 3. What are the relationships between school principals' leadership and teachers' teaching practices?*

This study employed a mixed-method research design using survey questionnaires to gather relevant information and data for analyzing and discussing the phenomenon of the research interest. This study was a one-time survey data collection project targeting primary schools in Phnom Penh, the capital city of Cambodia. By way of randomized selections, thirty-eight primary schools were chosen for this study. Out of the selected primary schools, fifty-four sixth-grade teachers and one principal from each school were involved in completing the survey questionnaire voluntarily. Meanwhile, 1,878 sixth-grade students under the fifty-four teachers were invited to answer the survey questionnaire. Furthermore, students' monthly test scores obtained from the school principals were used for data analysis in this study.

This study found that school principals' leadership significantly influenced students' achievement after controlling for the effects of students' socio-economic background characteristics. School principals influenced students' achievement when their leadership

was focused on the quality of teaching by (1) improving the instructional program and (2) involving them in the instructional process.

Another important finding was the influence of teaching practices on students' achievement. Teachers may positively contribute to improving students' achievement when focusing on four indicators: (1) Student progress is regularly reported to parents, (2) Assessment data are used to improve the school's program, (3) Student assessment data are monitored to modify the instruction to promote learning, and (4) Student performance is monitored in a variety of methods.

In addition, the quantitative findings indicate that school principals' leadership has a positive relationship with teachers' teaching practices. Additionally, the findings from qualitative data analyses revealed that principals influenced teaching practices in two ways as follows: (1) School principals should maintain and promote the practices of learning assessments for instructional improvement, and (2) School principals should ensure and enhance the practices of Teacher Professional Standards.

Class size was found to have a negative and significant effect on teachers' teaching practices and students' achievement. Large class sizes can disrupt the instruction processes, including the selection of teaching methods and the practices of learning assessments which negatively influence the quality of teaching and thus students' learning outcomes. Furthermore, school principals' years of leadership experience positively affected students' achievement, but the relationship was non-linear. However, teacher quality did not significantly influence teachers' teaching practices and students' achievement.

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CHAPTER ONE: Introduction

This chapter presents an overview of the current research study. The following sections will cover several aspects, including an introduction, the role of school principals on curriculum and instructional leadership and teachers' capacity development, challenges and constraints for school principals on leadership and management, the demand for effective school principals for education reform, research purpose and questions, the significance of the research, and the dissertation structure.

1.1 Introduction

The Royal Government of Cambodia (RGoC) introduced a large-scale education reform in 1996, which brought about significant changes in the education system, including the replacement of the old structure of education (5+3+3) with a new one (6+3+3), the introduction of new textbooks, curriculum, and teaching materials and manuals, and the new pedagogy for classroom teaching and learning (Song, 2015: 36). Since then, the Ministry of Education, Youth and Sport (MoEYS) of Cambodia has involved in the process of decentralization introduced by the RGoC by developing the *National Plan for Education for All (EFA) 2003-2015* as one of the key policy strategies to promote the decentralization in education for nationwide implementation (Kheang et al., 2018). This plan aimed at fostering local school actors' capacities to be more autonomous in their daily operations in supporting the reform progressions (Shoraku, 2006). Under the long-term national plan of *EFA* several key strategic policy documents were introduced as the medium-term plans that specially addressed issues of access and quality of education and the capacities of education personnel at all levels of education (Kheang et al., 2018). Those strategic plans and policies

addressed a broad development of the education sector, such as the Education Strategic Plans (ESPs) and Education Sector Support Program (2006-2010), while a number of strategies, guidelines, and programs were developed to achieve the goals of specific sub-sectors of education, in particular, the primary education which included Policy on Curriculum Development 2005-2009, Policy on Child-Friendly School (CFS) 2007 and Policy on Teacher 2013. These three policies were profoundly related to the development of school leadership and management (Kheang et al., 2018). Additionally, the MoEYS introduced three key mechanisms that support the implementation of the education strategies, policies, and programs, including (1) School-Based Management, (2) Cluster School Approach, and (3) School Operating Budget. The following sections will present each of these policies in turn.

One of the key strategies to promote decentralization in education is "*School-Based Management*" or "*SBM*." The concept of SBM has existed in the context of Cambodian schools for many years. However, it was formally introduced in 2002 to empower school leadership and management through the involvement and engagement of local participation of the school-level stakeholders (Kheang et al., 2018). Despite increased participation of school-level stakeholders in school development, this involvement is still viewed as being low with limited to some specific dimensions of school management such as school construction and maintenance, mobilization of school enrolment, fundraising, and promotion of a safe environment for teaching and learning (Kheang et al., 2018; No & Heng, 2015). Although significant progress has been made, the results of the implementation of SBM in primary schools have remained subpar due to a lack of policy and regulatory frameworks, a lack of resources, inadequate school administration, and a lack of leadership and management skills (MoEYS, 2018 as cited in Om et al., 2019: 6).

Cluster School Approach was another noticeable national strategy to promote

decentralization in education in the context of Cambodian schools. It was introduced by the MoEYS with technical support and collaborations with Save the Children Norway and UNICEF Cambodia in 1992 and became the Policy on Cluster School Development in 2010 (MoEYS, 2010; Pellini & Bredenberg, 2015). Depending on the accessibility and geographic locations of the schools, a cluster may have six to seven different schools. In principle, various cluster school committees were established, ranging from the national, provincial, and local levels. The implementation of the cluster schools has significantly contributed to promoting accountability and governance at schools in financial resource management and engaging local community members in the school management process (Kheang et al., 2018). The positive consequences of cluster school implementations at primary schools across the nation have been reported, including the reduction of students' dropout rate and repetition rate and the active participation of the local community in school management and governance (Kheang et al., 2018). Despite the positive gains of the cluster school approach, two constraints were identified to slow down the progress: the shortage of resource support and poor technical assistance from the upper-level cluster school committees to local schools due to the limited technical knowledge and skills. (Bredenberg, 2002 as cited in Kheang et al., 2018).

School Operating Budget was the program that influenced school leadership and management in primary education. Since the early 2000s, the MoEYS has introduced two operational budget programs to facilitate daily school operations and development. First, the "*Priority Action Plan*" (PAP) was introduced by the MoEYS in 2001 with two core strategies to increase students' enrollment rate in primary education, improve gender parity, and promote the completion rate. Those strategies included abolishing school fees and providing the school's operational budget to all primary schools across the country (Keng, 2009; Kheang et al., 2018). In addition, schools were given more autonomy in using those

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schools' operational budgets for other purposes, such as the maintenance of school buildings and other necessary educational equipment (Shoraku, 2006).

In order to promote the local capacities of schools and principals to carry out the tasks more effective and accountable, in 2002, the MoEYS of Cambodia started to provide training programs on school management that mandated school principals to attend, which aimed at developing school leadership and management (Kheang et al., 2018). The training supported school principals in addressing the issues related to general school administration and management but was less likely to enhance leadership capacity. Soon after, the World Bank funded the MoEYS of Cambodia to provide another leadership development program under the "Cambodian Education Sector Support" project to various key education stakeholders from central to school levels. There was a significant impact on school leadership and management over the daily school operations (Kheang et al., 2018).

The MoEYS began to improve educational quality by fostering institutional capacity, which raises students' learning outcomes across all educational levels (Hang-Chuon, 2017: 7). Consequently, schools should serve as the hub for education changes because that is where classroom instruction and learning take place (Hang-Chuon, 2017). In order to promote the quality of teaching and learning that increases students' learning performances, school capacity is needed. School capacity is relatively strengthened by strong and effective school leadership and management of the principals who can ensure good governance and accountability to provide a good quality of teaching and learning through establishing enabling learning environment (MoEYS, 2019a: 42). Consequently, the MoEYS outlined a number of strategies in the government's policy documents such as *Teacher Policy* (2013) and *Teacher Policy Action Plan* (2015) that promote leadership capacity of teachers and school principals (Kheang et al., 2018: 135).

1.2 School Principals' Roles in Curriculum and Instructional Leadership

At the beginning of each academic year, the MoEYS issues the directive related to school operations, which is sent to each school and principal for implementation. In principle, school principals are given a wide range of responsibilities, including managing student enrollments, dividing up teaching and administrative tasks for teachers, disseminating national policy plans and other regulations, conducting learning assessments, involving the local community in the development plans for the school, and other duties that can be divided into five categories: administration, teaching and learning, environment and infrastructure, program support, and community involvement (MoEYS, 2017a).

School principals play a crucial role as instructional leaders and internal school inspectors in assisting the teaching and learning process. According to the directive, school administrators must delegate teaching and administrative duties in accordance with the national curriculum and set up technical meetings every fourth week of the month to plan, discuss and distribute policy documents and other important tasks that schools must carry out (MoEYS, 2017a). In addition, school principals should plan how to ensure the quality of teaching and learning by regularly conducting classroom observations and inspections and ensuring that students' learnings are assessed properly. As the internal school inspectors, school principals can provide supportive feedback and comments to enhance teachers' teaching quality and practices, increasing students' learning performances.

Teaching practices and the roles of teachers are crucially significant in developing the education sector from the top system to the classroom level (Benveniste et al., 2008: iii). However, they are influenced by how teachers view the school organization structures, cultures and climates (Wang & Degol, 2016). More importantly, school managers' leadership behaviors in day-to-day practices can influence the quality of teachers' work-life, teaching effectiveness and students' learning outcomes (Pont et al., 2008: 191).

A teacher's beliefs, attitudes, and practices can all impact the learning environment, student's motivation, and academic achievement. Teachers can utilize these as coping mechanisms to deal with the obstacles in their professional lives and well-being (OECD, 2009: 89). Additionally, instructors' perspectives on teaching and learning may influence what they bring to the classroom, and their attitudes affect the caliber of their activities (OECD, 2014: 69). In order to enable teachers to perform well in teaching, it requires: (1) the leadership capacity to enable the conditions for teacher collaboration and (2) the external measures for teacher quality that moves away from teacher-centered to student-centered pedagogies (Tandon & Fukao, 2015).

1.3 School Principals' Roles in Teacher's Capacity Development

School principals are in the position of academic leaders or managers. The quality of teaching and learning can be improved when teachers are allowed to attend the professional learning community (PLC) that promotes a culture of collaboration and responsibility among the school members (DuFour & Mattos 2013: 36). In addition, enriching the collaboration at work through the PLC is more effective and probably the most effective way to improve the instructional quality than classroom observation (DuFour & Mattos, 2013: 39). Further, OECD (2014) asserted that teacher collaborations are vital for shaping the quality of teaching practices and influencing self-efficacy and job satisfaction (p. 69).

However, the lack of structural support, limited teachers' feedback and interaction, and teacher individualism were the three detectable flaws that hindered the professional learning community in the primary school contexts (Tan & Tee Ng, 2012: 4-5). Though these problems are common across primary schools, establishing a solid culture of PLC may provide the opportunity to enhance the collaborations in schools by eliminating the top-down power relationship, which hinders professional planning, sharing, and reflection (Tan

& Tee Ng, 2012: 10).

High dropout rates, inadequate pay and incentives for teachers, a lack of instructional materials, inadequate school infrastructure, a lack of parental involvement, and limited professional development opportunities for teachers all presented challenges for school principals to improve student outcomes and performance (Kheang et al., 2018). In addition, the social structure has posed another challenge for school principals to work closely with teachers to improve the quality of teaching and school development. Although the MoEYS aimed to involve teachers in the development and collaboration in the school process; however, school principals were not informed of how to promote teachers' collaboration to achieve the school's goals or what types of collaborations are needed and under what conditions the collaborations work (Shoraku, 2006). Meanwhile, it was not easy to engage teachers in collaborations with school principals due to the high-power distance in schools.

Moreover, both the MoEYS and schools, including school principals, found it challenging to design and provide the necessary support for teachers at the primary education level due to the large gap in teacher capacity concerning backgrounds and characteristics such as age, experience, and training, and those having a wide variety of knowledge and pedagogical skills (King 2018: 8). However, it requires a strong and effective school principal who sees the benefits of teachers' development and collaborations, which could improve teachers' teaching performances and strengthen professional learning among their teaching staff at schools.

1.4 Challenges and Constraints for School Principals in Leadership and Management

Effective leadership and management remain key concerns for the quality of the education system (McNamara & Hayden, 2022). The MoEYS of Cambodia formally

introduced the concept of decentralization to its education system in the early 2000s to mainly facilitate the administrative elements of service delivery. However, little consideration was given to the effectiveness of teaching and testing, which were the main duties carried out in schools and necessitated the professional and specific skills of those who performed them (Shoraku, 2006). According to Keng's (2009) research, there is a disconnect between primary school actors' demands for reform and the school's management capacity. In this view, rather than concentrating on instruction and pedagogical growth, school principals spend the majority of their time at school addressing issues linked to administration and financial management (Keng, 2009).

School principals have never received official training on school leadership and management (No & Sok, 2022; Shoraku, 2006). Nonetheless, after their appointment, school principals or vice principals received 20-day training on leadership and management (Kheang et al., 2018). With no prior training in school leadership and management, principals did not play their role effectively to enhance classroom teaching quality. Instead, they spent most of their time on general management and administration.

A critical loss of instructional hours at the primary schools and teachers' absenteeism were attributed to the lack of leadership and management capacity and commitment of school principals (Sot et al., 2022). Consequently, these issues negatively contribute to low students' performance in the learning assessment (Benveniste et al., 2008; McNamara & Hayden, 2022; Song, 2012a). At this point, the MoEYS of Cambodia has admitted that students performed poorly in their learning as indicated by the results of the local and national learning assessments, including the 2010 Early Grade Reading Assessment, the 2013 and 2016 National Learning Assessment, as it was reported as follow:

"Early Grade Reading Assessments (EGRA) conducted in 2010 and 2012 suggest that children in Cambodia are not adequately prepared for primary schooling. In the 2012

EGRA test, half of grade 1 students could not recognize any letter and two-thirds could not read any familiar word. Likewise, half of grade 2 students were unable to read a familiar word. Similarly, of the total grade 3 children who took the Khmer and Math tests in 2012 only 54.1% and 48% answered correctly respectively. The assessment conducted in 2014 was even more disappointing as only 35.2% of the total grade 3 children taking the Khmer test demonstrated correct performance. The pattern of under-performance is also found among the 6th graders. Only 45.7% of the total grade 6 children who took the test in Khmer responded correctly whereas in Math only 43.4% did so in 2013" (p. 12).

Several key school environment issues influenced the quality of leadership and management of school principals. *First,* when education was free but lacked quality, poor teacher discipline, and professionalism, parents did not see the differences whether their children were in school or not (Keng, 2009). However, some parents tended to justify that disrupting their children's schooling for some days did not cause many problems. Instead, they took their children's schooling for granted and put more value on the opportunity cost. *Second*, although the education policy has prioritized the community's involvement in strengthening school accountability, the Parent-Teacher Association or School Support Committee did not play its role as it was supposed to promote the quality of teaching and learning (Keng, 2009). *Third*, the school-operational budget was not efficiently used for quality improvement. In addition, the school's operational budget was rigid. It was not flexible as it was pre-determined by the upper level of education (Keng, 2009). Little budgets can be used to support everyday school activities besides teachers' salaries (Shoraku, 2006: 125). Moreover, the budget's operating funds were transferred to schools less timely (Shoraku, 2006).

The conditions and circumstances of Cambodian classrooms and schools are poor, negatively impacting the quality of education provisions. Teachers were working in

unfavorable school settings with inadequate physical infrastructure, a lack of instructional tools and supplies, packed classrooms, undesirable locations, and lengthy workdays (Benveniste et al., 2008: 71). Poor learning quality and a lack of educational resources and facilities were prevalent problems in Cambodian schools (Dy, 2004: 5; Kheang et al., 2018: 161-166). Keng (2009) concluded that these key challenges were attributed to the limited capacity of individuals and institutions at the local implementation level to carry out the reforms successfully. Of this, the quality of education remained low, and school's learning outcomes were not satisfied as intended despite the efforts of education reforms over the past decades (Keng, 2009; McNamara & Hayden, 2022). Consequently, McNamara and Heyden (2022) pointed out that "*Cambodian schools are not equipping students sufficiently with the knowledge and skills required to be competitive in a global context*" (p. 4).

McNamara and Hayden (2022) summarized the existing school leadership and management-related issues reported in past research. These included the lack of accountable school climate, inability to demonstrate transparency and meritocracy, low participation of the local levels in making decisions on policy reforms, limited power sharing, limited involvement of parents and community in school development, and ways of corruption (p. 6). However, these challenges may have been addressed, and the quality of school leadership and management seemed to be gradually improved due to the strong leadership of the central level of education in introducing the inspection mechanism, which limited the chances of corruption and improved accountability levels (McNamara & Hayden 2022: 6).

1.5 The Demand for Effective School Principals [1] for Quality Improvement and

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[1] "School principal" in this study is interchangeably used with "School director".

Education Reform Interventions

A high-quality school principal is vital for education reform. School principals are the key agents who play their role in bridging policy development to policy implementations and practices. Since the early 2000s, school-based management (SBM) has been incorporated into primary education as one of the key tactics for localizing the process of decentralization in education. This strategy aims to improve the quality of educational services at local levels, lessen access disparities, and foster education quality for all children regardless of their various socioeconomic backgrounds (Om et al., 2019: 5). In addition, the National Learning Assessment on Grade 6 revealed that despite some disappointing results, there was noticed a subtle improvement in the students' test scores were identified in schools that operated in the 'Advanced' status of Child-Friendly School (CFS) category compared to the 'Medium' and 'Basic' levels (MoEYS, 2016a: 27). By this, the Ministry of Education, Youth and Sport (MoEYS) claimed that these results could be attributed to the improved school management practices that enhance the teaching quality at schools via the school inspection mechanism, as the report says: '*the critical functions of school-based management practice and school inspections as the formative mechanism to reflect and improve key education policies and implementation gaps*' (MoEYS, 2016: 27).

In order to make reforms succeed, the quality of school principals must be enhanced if the resources and inputs are transformed for better school results and outcomes, including students' learning and achievements. Strengthening the capacity of school leadership and management can be seen as one of the policy objectives of the MoEYS (MoEYS, 2014, 2019a). Therefore, the long-term plans of the MoEYS's education reforms target to develop a highly skilled and motivated workforce that could contribute to society's development and changes and compete with other citizens in the regions and worldwide. This will be accomplished by improving teachers' teaching quality and effective school leadership and

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management of school principals (MoEYS, 2019a: 19). More significantly, the results of the transformation of the educational system are to realize the vision of becoming a country with an upper-middle income status by 2030 and a high-income status by 2050 that supports peace, development, inclusion, and democracy by using educational transformation as the primary fundamental indicator (MoEYS, 2019a: 21).

1.6 Purpose of the Study

Reviewing existing literature on the context of Cambodia's primary schools on the role and demand of effective school principals concerning school quality and outcomes could signify that it is necessary to investigate and examine the impacts of school principals, in particular the effective leadership for school improvement. School leadership and management have been the central focus of the current education reforms. A high-quality school principal is vital for education reform. School principals are the key agents who play their role in bridging policy development to policy implementations and practices. However, little is known about the effects of school principals' leadership as perceived by teachers on teaching quality and students' learning outcomes in Cambodian primary schools.

There is a need to investigate the interrelationships among the school principals' leadership, teaching practices and students' achievement. Therefore, this dissertation aims to examine the effects of school principals' leadership on the quality of teaching and students' achievement in primary schools in Phnom Penh, Cambodia, from teacher perceptions. The following research questions guide this study.

1. *How and to what extent does school principals' leadership affect students' achievement in primary schools in Phnom Penh, Cambodia?*

2. *How and to what extent does teachers' teaching practice influence students'*

achievement in primary schools in Phnom Penh, Cambodia?

3. *What are the relationships between school principals' leadership and teachers' teaching practices?*

1.7 Significance of the Study

This study has significant contributions to both academic and policy aspects.

This study adds new knowledge and understanding by drawing the theoretical and conceptual understanding of the factors contributing to improving students' academic achievement in the primary education sector of the Cambodian education system. The interesting finding of this study is that school principals' leadership can significantly affect teachers' teaching quality and students' achievement. First, the effects of school principals' roles and practices as perceived by teachers can impact the quality of teachers' classroom teaching and practices and students' achievement. No matter how beautiful their school plans are or actions they propose, it is important for school principals to convince their followers (teachers) to believe in and get involved, which affects the overall school operations in achieving school vision and goals. In this sense, principals should constantly reflect on what teachers think and how they react toward their decisions and actions; otherwise, it may ruin their plans. When teachers are convinced of what school principals planned or proposed to make a difference in schools, teachers may be motivated and be involved in the plans. Therefore, when discussing the influences of leadership and management of school principals, teachers (followers) should consider how they perceive, react, and act and what makes them involved. Equally important, the school leadership of principals is an important contextual factor that is different from one school to another and reflects the local needs, demands, and characteristics of those schools. In addition, this

study contributes to the scarcity of literature in Cambodian's primary education subsector context, particularly on the effects of school leadership on teaching quality and students' learning outcomes.

This study's findings may add more evidence to the Ministry of Education, Youth and Sport (MoEYS) in formulating and developing the policy documents that address the quality of education, particularly in the primary education sector. These study's findings may shed light for policymakers to take into account the important aspects of the role of school leadership of the principals for further investing more in the quality of leadership preparation and development.

1.8 Structure of the Dissertation

This dissertation is structured into six chapters.

Chapter One provides an overview of the dissertation, including an introduction, the role of school principals in curriculum and instructional leadership and teachers' capacity development, challenges and constraints for school principals on leadership and management, the demand for effective school principals for education reform, research purpose and questions, the significance of the research, and the dissertation structure.

Chapter Two provides an overview of Cambodia's primary education sector context and development. It details the historical context and development of the education system after the overthrow of the black regime until the advent of the present education system and how it shifted from quantity expansion to quality improvement.

Chapter Three summarizes the literature review on the development and research of various school contexts and includes theoretical perspectives of school leadership and management for teachers' education and development. In addition, it reviews the literature

on the associations between school leadership and student achievement, the quality of teaching practices, and student achievement at the primary school level.

Chapter Four presents an overview of the research methodology for the current study, including the research design used for the investigations, conceptual framework, analytic methods, research site, data collection procedures, research instruments, data description, and research ethics of the study.

Chapter Five presents the analyses, results, and findings that examine the impacts of school principals' leadership and teaching practices on students' achievement held other variables controlled.

Chapter Six presents the analyses, results, and findings of how school principals' leadership influences the quality of teachers' teaching practices.

Chapter Seven presents the conclusions, recommendations, and limitations of the study.

CHAPTER TWO: Cambodia's Primary Education Sector – Context and Background Development

This chapter presents the background and contextual development of Cambodia's education system focusing on the primary education level. In order to fully comprehend the context and development of education reform, it is important to understand the goals of the education reforms themselves. According to Wilson (1973 as cited in Chhinh & Dy, 2009: 114), the goals of educational reform mainly focus on two key aspects: access and quality. These two aspects of education reforms were broadly implemented in both developed and developing countries around the globe. The World Bank defined access reforms as the expansion of educational opportunities for school-age children regardless of sex, geographical location, health and/or wealth (World Bank, 1995 as cited in Chhinh & Dy, 2009: 114). Quality reforms were linked to the efficiency of the education system by enhancing teacher quality, teaching materials, and school leadership and management.

To put this into a historical perspective, the educational changes, particularly access and quality, will be examined from the recent past until the present. The changes in the education system will be presented in three phases:

1. From 1979 to 1989

2. 1989 to 1998;

3. 1998 to the present time.

This is followed by highlighting the Cambodian government's attention and commitments and other stakeholders working to improve educational quality.

2.1 Education System Between 1979-1989: The People's Republic of Kampuchea

The following paragraphs will present the Cambodian educational development from the period that saw the end of the Khmer Rouge/Pol Pot regime. During this period, Cambodia seriously destroyed the social and economic structure due to the attempts by the Khmer Rouge to ruin institutional and physical infrastructures, particularly impacting the education system (Duggan, 1996: 365). This turbulent history left many dark legacies, particularly the loss of human resources and the decimation of the physical and social infrastructures. Most educated people, such as teachers and higher education students, were killed, while many fled the country (Duggan, 1996: 365). It is estimated that about two million Cambodians died under the Khmer Rouge administration (Dy & Ninomiya, 2003: 6). The United Nations Transitional Army in Cambodia (UNTAC) (1992, as cited in Duggan, 1996) estimated that only about 300 qualified, educated people from all disciplines survived, while the educational infrastructure, teaching materials, and facilities were destroyed entirely (p. 365).

After the fall of the Khmer Rouge regime in 1979, a new government: "*The People's Republic of Kampuchea or PRK*," was established to restore and rehabilitate the country's social and economic order. Despite the limited resources left for the country's development, the attempts to restore and re-establish the education system were vigorous. What can be described as the key priority for the government in re-establishing the country's education system was to construct the basic physical infrastructures to provide education for the public masses. Thus, the government of Cambodia called for the citizens who were willing to be involved in the process of re-establishment and rehabilitation of the education system by encouraging people who had some education to teach those who were illiterate; these practices were applied across the country. In addition, the massive mobilization of education access was followed by the slogan "*Going to teach and going to school is nation-loving*"

(Dunnett, 1993 as cited in Dy & Ninomiya, 2003: 7) or the maxim "*Those who know much teach those who know little and those who know little teach those who know nothing*" (Collins, 2008: 193; No & Sok, 2022: 50). The rapid increase in access to basic education was fueled by large financial and technical support from international agencies and donors, such as UNICEF and the International Red Cross, to restructure educational institutions (Dy & Ninomiya, 2003: 6). The public education services were symbolized by the structure of 4+3+3, which comprised four years of primary school, three years of lower secondary schools, and three years of upper secondary schools (Dy & Ninomiya, 2003: 6; Kheang et al., 2018: 106).

Consequently, the quantitative progress of student enrollment increased from 947,319 to 1,597,081 between 1979 and 1982 (McNamaraa, 2015: 79). By the year 1980, about 5,000 primary schools were in place, with 21,000 primary school teachers deployed across the country (Duggan, 1996: 367; No, 2012: 14). School infrastructures and educators were in great demand to serve the fast-growing numbers of enrollments. To facilitate the vast increase of enrolled students, the Cambodian government received technical support from the Vietnamese administrators to organize in-service training programmes to develop Cambodian teachers' basic knowledge and teaching skills (Collins, 2008: 193). Consequently, more and more teachers were trained, and the quality of training programmes gradually concentrated more on quality to overcome the wide range of teachers' education levels and background characteristics (Dy & Ninomiya, 2003: 7; No & Heng, 2017: 13). UNESCO (1989, as cited in Duggan, 1996) reported that teachers' training programmes varied in length and intensity from the years 1979 to 1985 and asserted that:

"*In the course of the last ten years of educational reconstruction, teachers, virtually picked up from city streets and village pathways, were provided a highly variable range of short-term training (3 weeks, 1 month, or ½ months). By 1982/83 there were some 32,000*

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*teachers with an enormously wide range of competencies, or lack of them, nevertheless maintaining the education system. These 32,000 teachers ranged in subject competence from primary level to university "(*p. 367).

Despite significant changes in the education sector during the restoration and rehabilitation processes, the government faced challenges in balancing the rapid increase in enrolled students with a shortage of trained teaching staff, physical infrastructures, teaching facilities, and the lack of a standard national curriculum. Duggan (1996) reported that:

"*Those quality provision concerns included large numbers of unqualified teachers, an absence of curriculum and relevant and quality teacher training program and high wastage and drop-out rates at all levels.*" (p. 367).

These challenges were probably exacerbated due to the lack of regulation on student enrollment and the strategies to maintain students' attendance in schools when the classes had a mixture of students from the age of five to 16 years old (Ratcliffe et al., 2009, as cited in Kheang et al., 2018: 106). Moreover, the lack of financial support for the rehabilitation process was another constraint. It caused the PKR government to charge the school fee from the parents as their contribution to sustaining children's learning in school. However, this has caused a negative impact on school enrolments (Kheang et al., 2018: 107).

2.2 Education System between 1989-1998: UNTAC and Coalition Government

After the withdrawal of the Vietnamese military in late 1989 and the international intervention in the Paris Peace Accord in 1993, the war existed in some parts of the country and was totally ended in the late 1990s (Ogisu & Williams, 2015: 15). Cambodia's education-sector development changed after the transition from the planned economy in the 1980s to a free market economy in the 1990s (Dy & Ninomiya, 2003: 7). The government

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of Cambodia introduced the necessary reforms in the education sector as the key priority for nation-building. These changes also dramatically impacted the country's education system, in which the coalition government prioritized human resources development as a path for national reconstruction and development (Kheang et al., 2018: 109). The Cambodian government introduced two key policy documents in order to facilitate the systematic reconstruction process: (1) the Constitution of the Kingdom of Cambodia and (2) the policy of the Ministry of Education, Youth and Sport.

The Constitution of the Kingdom of Cambodia was published in 1993, which mainly addressed the issues of the country's education development, including the construction of more schools and the acceleration of education access to basic education (Kheang et al., 2018: 110). After ratifying the Constitution, the MoEYS was established in 1996 to focus on reconstructing the education sector. The first education policy produced by the Department of Planning was published in 1996 and outlined several objectives such as:

1. To provide universal basic education for nine years and improve functional literacy,

2. To modernize and improve the quality of education through comprehensive and effective changes,

3. To establish a link between education and training and the labor market and society, and

4. To rehabilitate and develop youth and sport

(UNESCO, 2008 as cited in Kheang et al., 2018: 110; Chhinh & Dy, 2009: 115).

It is noteworthy that the MoEYS introduced a new formula for the education structure (6+3+3) which consisted of 12 years of education to replace the previous ones (4+3+3) and (5+3+3). The new formula requires six years of primary education, three years of lower secondary education, and three years of upper secondary education. A new national

curriculum was introduced and updated for primary and secondary education levels to respond to the needs and changes of the country's education development (MoEYS, 1994 as cited in Kheang et al., 2018: 111). By expanding the years of schooling through the policy implementation to promote access to education, the number of students enrolled, particularly at the primary school level, was drastically improved from 947,317 in 1980 to 2.1 million in 1999 (Kheang et al., 2018: 111). Dunnett (1993, as cited in Kheang et al., 2018: 106) stated that the number of schools increased, and thousands of teachers were recruited, trained, and deployed at various levels of the education system across the country.

Even though progress in education restoration had been made, several challenges persisted. After a decade of re-establishment of Cambodia's education system, many children remained unable to access primary schools (Kheang et al., 2018: 111). The quality of teaching and learning at these schools remains poor. The first challenge was the lack of school resources such as qualified teachers, teaching materials, and school facilities and classrooms. This was a huge burden for the government of Cambodia and the MoEYS in facilitating the rapidly increasing enrollment of children. For instance, many schools reported large numbers of pupils per class, often over 100 (MoEYS, 1994 as cited in Kheang et al., 2018: 111), while about fifty percent of the total number of primary schools in the nation were deficient in grade levels (1 to 6 grades) (Dy & Ninomiya, 2003: 8; Collins, 2008: 193).

A further constraint was the shortage of school budgets and financial support for school operations, which impeded educational reconstruction processes. This problem negatively affected the construction and maintenance of school facilities, teaching materials, and salaries for educational staff, including teachers (Ayres, 2003 and MoEYS, 1994, as cited in Kheang et al., 2018: 111). As Cambodia's government confronted financial and human resource constraints, the only resource for rehabilitating and reconstructing the education

system was to sign agreements on the Aid for Development from the world-led organizations via bilateral and multilateral collaboration and partnership. Development Partners supporting the country's education sectors included UNESCO, UNICEF, the World Bank, and JICA, among others. Other challenges, however, were caused by the lack of competent educational staff in planning and facilitating the resource investment required to meet the educational objectives and deadlines for aid development and support (McNamara, 2015: 79).

2.3 Education System from 1998 onward: Kingdom of Cambodia

After the election in 1998, the country became more unified and peaceful, which enabled the government to focus on social and economic development and expand access to high-quality education. A large-scale reform in the education sector was introduced in 1996, allowing the government of Cambodia to start implementing many significant educational changes. These included launching the first National Plan for Education for All 2003-2015 as the long-term development plan. The Education for All (EFA) National Plan included clear technical and financial development plans focused on four key policy strategies. These included:

(1) Establishing gender-responsive strategies,

(2) Developing early childhood care and development,

(3) Providing formal basic education, and

(4) Providing non-formal education and adult literacy programmes

(Chhinh & Dy, 2009: 115).

In addition, several key strategies to promote access to free and equitable quality basic

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education were listed. The elimination of school fees, the implementation of formula-based block grants for schools, the creation of a decentralized education service management system, and the implementation of vacation-time remedial classes were among the strategies to reduce student repetition or dropout rate at schools (MoEYS, 2003 as cited in Kheang et al., 2018: 116).

To achieve the national goal of EFA, the MoEYS first introduced a five-year education plan, namely, "*Education Strategic Plan (ESP) 2001-2005,*" which focused on universal access to education for all children regardless of their individual and family's socioeconomic status. Later, after achieving the key indicators of the development areas in education, the Education Strategic Plan 2006-2010 was introduced, which spelled out two key developmental goals:

1. To produce high-quality, ethical human resources in order to build a knowledge-based society inside the country; and

2. To lead, manage, and develop the education, youth, and sports sectors in response to socioeconomic and cultural diversification

(Chhinh & Dy, 2009: 115).

The next ESPs (2009-2013, 2014-2018) laid out three broad areas of education: equitable access to education services, quality and efficiency of the education service, and the institutional development and capacity building for decentralization. Following the 2016 mid-term evaluations of the ESP 2014-2018, the educational objectives were narrowed down to two policy objectives. These were:

1. To ensure inclusive and equitable quality education and promote lifelong learning opportunities for all, and

2. To ensure the effective leadership and management of education staff at all levels

(Kheang et al., 2018: 117; MoEYS, 2014, 2019).

According to education statistics, in 2017, there were 7,144 primary schools across the country, with an enrollment of 2,022,061 children. The pupil-teacher ratio was 43.8 in 2016-2017, gradually decreasing from 51.3 in the previous ten years. The overall quality of school resources was improved, contributing to the school process's improvement. However, many schools across the country, particularly rural schools, needed better quality inputs to transform teaching and learning for better school outcomes. Even though most primary school teachers were better qualified and paid during the last five years, the quality of elementary education in Cambodia remains an issue. The primary school completion rate is about 80%, of which 85% of the completers could advance to Grade 7 (Dy et al., 2019: 70).

2.4 Focusing on Quality Improvement

Quality of education has been recognized as an important priority for Cambodia's socio-economic development and growth. Providing free access to inclusive and equitable quality basic education and beyond has been a long-term goal and commitment of the Cambodian government, as clearly articulated in the national and sector policies and action plans such as National Strategic Development Plan 2019-2023, Industrial Development Policy 2015-2025, and Education Strategic Plan, among others. In order to pursue the global agenda for education development, the Government and the MoEYS have paid more attention to both quantity and quality of education aligned with the Sustainable Development Goals-4-Education (MoEYS, 2019a). Therefore, the following sections summarize key development aspects that mainly focus on the school quality improvement.

2.4.1 Improving Quality of Teachers

Good teachers play a key role in classroom instruction quality, directly influencing students' learning and performance (Popova et al., 2022: 107). In order to raise students' learning outcomes, teachers should be at the center of education reforms (Hang-Chuon, 2017). The Government recognizes teachers as the most dynamic factor for the quality of teaching and learning. It transforms its education system to achieve the ambitious vision of becoming an upper medium-income country by 2030 and a high-income country by 2050. As clearly articulated in the policy documents such as Cambodia's Education Roadmap 2030, all teachers will be professionally qualified and competent in academic content and pedagogical skills under the clear framework of continuous professional development and support (MoEYS, 2019a).

However, there is a pressing concern about the quality of teachers with poor pedagogical knowledge and skills caused by the inadequate and ill-designed training modules to be effective in their teaching. For instance, teachers in low- and middle-income nations face many obstacles to delivering their teaching effectively to students, which demonstrates the lack of ability to generate good questions for provoking students to think and perform in the classroom and monitoring students' learning progress (Bold et al., 2017; Popova et al., 2022). Cambodian teachers are not an exception.

As a result, the MoEYS created the Teacher Policy (2013) and Teacher Policy Action Plan (TPAP) (2015) as a direction and road map for developing future teachers. In these policies, teachers should be qualified, competent, and dedicated to the teaching profession and meet the requirements of the 21st-century classroom teaching and learning that is in line with the rapid changes in the development of global education and the integration of the ASEAN community in 2015 (Dy, 2017). These invaluable policy documents play a crucial role in paving the way for the future of the teaching profession, which aims at gradually

improving the situations and development of Cambodian teachers nationwide, of whom about two-thirds have qualifications below the Bachelor's degree. In addition, Teacher Policy (2013) and the Teacher Policy Action Plan (2015), for example, outlined the key strategies for upgrading Cambodia's existing teacher training system and opening new pathways for young and qualified high school graduates to pursue careers in teaching (MoEYS, 2015: 7).

In order to improve the quality of education, an advanced teacher training formula for pre-service teachers is needed and must be prioritized. In 2020, the MoEYS of Cambodia introduced a revised teacher training program known as "12+4" as a new education program at Teacher Education Colleges equivalent to regional and international standards. Furthermore, the MoEYS has approved several policies to prepare and develop teachers and other education officials to enhance professional competencies. Those policies included Teacher Education Provider Standards in 2016, Policy on Continuous Professional Development for Education Staff in 2017, Teacher Education College in 2017, and Teacher Career Pathways in 2018.

With low educational qualifications, teaching quality has become a major concern for promoting students' learning and performance regardless of grade levels. Making the reforms in education as the major key priorities requires a systemic and systematic change for teachers' pre-service and in-service training.

In addition, introducing the innovative institutionalizing in-service training for all education levels is urgently needed in order to provide teachers with professional development. There is a call for an urgent need for systematic, institutionalized in-service programs to replace the existing ill-designed cascade training modules. The existing school-based in-service training, workshops and clustered-school technical meetings do not respond to the needs of teachers to fulfill their potential (King, 2018). Such cascading and

unsystematic capacity development models may risk teachers and quality of learning due to the limited scopes of the training models (King, 2018). Additionally, teachers seem to have insufficient interactions among their peers at the same school/or other schools within the clusters. These professional interactions thus may or may not allow teachers to improve the quality of their work in their classroom (King, 2018; Tandon & Fukao, 2015). It is necessary to provide teachers with better training and support to perform their teaching job effectively and improve students' learning quality.

2.4.2 Changes and Development of the National Curriculum

In order to reach the status of a medium-income country by 2030, and a high-income country by 2050, the government of Cambodia has indicated its commitment to reforming the education system. It must have a clear and consistent school curriculum for future human resource development. The quality of education depends heavily on the national curriculum as it can contribute to achieving the objectives of the national development policies, including the Rectangular Strategies of the Government, Cambodia's National Strategic Development Plan, National Plan for Education for All, and the Education Strategic Plans (Hang-Chuon, 2016: 323).

Since the 1980s, Cambodia has experienced changes in its curriculum policies five times based on the changes in political regimes. Under the Kampuchea People's Republic from 1980 to 1987, the curriculum was divided into two levels: curriculum for general primary education level 1 and curriculum for general secondary education levels 2 and 3. The second curriculum, from 1987 to 1996, consisted of three levels: general curriculum for primary education level 1, general curriculum for lower-secondary education level 2, and general curriculum for upper-secondary education level 3 (Hang-Chuon, 2016).

After several years of curriculum implementation, the 1996 curriculum was reviewed in 2004, and some key features were changed. Time for instruction is one of the important concerns related to the quality of learning. According to the MoEYS (2004, as cited in Kheang et al., 2018: 126), the total number of teaching hours for primary schools was between 684 to 760 hours per annum. However, these numbers were small compared to international standards of teaching hours (850 to 1,000 hours per academic year), which are recommended by UNESCO (Kheang et al., 2018: 125).

Later, the new curriculum 2005-2009 was developed, aiming to cultivate new talented and capable citizens for the country's development and achieved the objectives of the National Plan for Education for All 2003-2015, Education Strategic Plan 2006-2010, and Education Sector Support Programme 2006-2010 (Kheang et al., 2018: 116). According to the MoEYS (2004 as cited in Kheang et al., 2018: 176), the curriculum needs to be reviewed every five years. However, teachers and school principals face several challenges in dealing with frequent curriculum changes due to a lack of support for school curriculum implementation, knowledge about the nature of the changes, and linking them to actual implementation. The informal instructional time loss is also about 27 percent because of the unprecedented school closures, teacher absence, official school holidays, and shortened teaching time (Kheang et al., 2018: 126).

In 2015, the MoEYS reviewed the in-use curriculum and completed a textbook analysis. They found some textural mistakes, a disconnection between subjects and grade levels and daily lives, redundancies between grade levels, a lack of skills and no link to the real-world context. These problems in the curriculum issues meant the graduates from each level of education were ill-equipped with essential knowledge and skills for daily life and future studies at higher levels of education (Chhinh et al., 2015; MoEYS, 2015b). Based on these findings, the MoEYS formed a committee to develop the new curriculum framework,

namely, the '*Curriculum Framework of General Education and Technical Education*.' This framework's vision is to ensure that all citizens reach their full potential in terms of physical appearance, knowledge, behaviors, and national identity, contributing to Cambodia's national development and integration into the region and the world (MoEYS, 2015a: 2). Therefore, with this updated curriculum, the MoEYS would be able to link its development of national educational policies and with other national policies that make it more consistent for implementation.

Curriculum development reforms are key in improving school quality and raising student achievement. The systematic reform should prioritize the key development of the curriculum contents and define each subject's core learning achievement standards, thus promoting school accountability through monitoring and learning assessments (Hang-Chuon, 2017: 14).

2.4.3 Learning Assessment

Learning assessment is aimed at improving students' learning; therefore, '*Students should be placed at the centre*' (OECD, 2013: 15). In order to raise the quality of students' learning and performance, evaluation and assessment of students' learning play a critical role for the government and policy-makers to plan and develop a broader frame that focuses on not only student assessment but also external school evaluation, incentives and appraisal and the utility of achievement data (OECD, 2013). For instance, formative assessment of learning is necessary for teachers (1) to understand their students' learning progress and needs and (2) to modify the quality of classroom-level preparation for teachers and strengthen school-level planning (OECD, n.d.-a). Generally, effective learning outcomes are the key indicators to judge whether schools perform their tasks properly and how the education system functions toward students' learning outcomes (OECD, n.d.-b).

Using national and international student assessments could enable the education system of one country to plan and design measurable and attainable learning outcomes more effectively. The MoEYS implemented its first national learning assessment in 2006 and continues to conduct national learning assessments across grade levels. In addition, the MoEYS highlighted the importance of participation in the international learning assessment as one of the priority programs in the ESP 2014-2018 (MoEYS, 2014). As planned, in 2018, the MoEYS conducted a Program for International Student Assessment for Development (PISA-D) for the first time, a project which allowed low- and middle-income countries to compare their student performances through a broader assessment (p. 1). More importantly, from experience gained through the involvement in international assessments, the MoEYS can set the stepping stone for the next stage for fully participating in the PISA assessment, the large-scale international student assessments (MoEYS, 2018: 1).

Teachers must teach students using the specified instructional time, but they should clearly plan and conduct the assessment of students' learning based on what has been taught in the classroom. Teachers should practice classroom assessments regularly by collecting data, analyzing it, and reflecting on the learners' abilities. Furthermore, teachers can use the evaluation data to provide direct feedback that reflects the needs of each learner in order to help them progress (MoEYS, 2015a: 17).

Despite these commitments to prepare for the international assessments, the national assessments' results play a vital role in reflecting how good the education system performs in improving the quality of education, which is considered the key pillar of education reforms (Hang-Chuon, 2016: 305). The sixth-grade National Learning Assessment results showed that students did not perform in meeting the expected levels stated in the national curriculum (MoEYS, 2016a). Such poor performances may reflect the past as the present reforms are still being implemented. More importantly, student performance is influenced

by multiple factors that are too complex. The absence of instruments used to inform the relevant school practitioners, including school administrators, teachers, policymakers, students, and parents, with regard to the quality of student learning can be a major failure of the reforms in education (Hang-Chuon, 2016: 306). In addition, the findings of learning assessments showed that the factors that are negatively associated with poor student performance not only affect the learning of students in the classroom but also influence the results of student performance in international assessment competitions (Hang-Chuon, 2016: 305-306).

Despite the countless advantages of students' learning assessment, noticeable barriers remain critical, hindering the practices (OECD, n.d.-a: 1). These include (1) lack of a link between classroom, school, and system for the learning assessment and evaluation, and (2) tensions between the necessity of formative assessment and the summative assessment for school accountability.

2.4.4 Strengthening Capacities for Good School Governance and Management

Capacities for individuals are important for the development of school organizations. In order to promote and strengthen the quality-of-service delivery at school, it is necessary to devolve more autonomies to the local school stakeholders to make their own decisions on the development plans that reflect community needs which enable them to be accountable for their school performances. Decentralizing decision-making power to local levels, the privatization of education services and other reform programs to improve educational quality are significant developments in education (Keng 2007: 4). The adoption and selection of the approaches to education reform policies vary across countries. Cambodia has adopted many reform policies to improve the system and has been influenced by internationalized education policies. Those policies included decentralization in education,

Sector-Wide Approach (SWAp), and other reform agendas (Keng, 2007: 5-6).

School-Based Management (SBM), one of the educational reform initiatives, was initially introduced by the World Bank in 1999 and formally approved in 2002 for implementation as a nationwide program (Kheang et al., 2018: 132) to promote effective school leadership and local community participation to enhance basic education quality. Devolving the power of decision-making to local school administrations is a key strategy of the school-based management policy and it promotes the objective of the decentralization of education. It can stimulate quality-of-service delivery, promote good governance, strengthen accountability and transparency (Kheang et al., 2018: 127), and influence school quality (Bo, 2019: 2). The SBM system enables local school practitioners the power to control material, human, and financial resources (De Grauwe, 2005: 2). It means that the power of decision-making on the management issues of the organization is transferred to schools. Generally, principals and senior teachers take full responsibility for the school developments and their implementation for which they have been given authority (De Grauwe 2005: 2).

In order to achieve the SBM goal, school leaders should be empowered to critically reinforce their roles and responsibilities in ensuring the high quality of instructions for improved school outcomes. In order to equip school principals with professional development, the MoEYS (2019c) has provided training on the development of school leadership and management skills to ensure that schools are accountable for appropriate decision-making and evaluate their autonomy in utilizing the school resources and assessing students' learning outcomes (p. 26).

Consequently, the Strategic Framework on Decentralization and Deconcentration (D&D) has been adopted as one of the government's priorities for reforming public administrations to establish a foundation for local governance that promotes democracy,

development, and poverty reduction (MoEYS, 2016a: 1).

The role of school principals is now more demanding and involved in facilitating and coordinating policy-level implementations such as national policy documents, education law, and education-administrative divisions at various levels) with policy-level implementations at local schools. These include school management and community participation in school-based development activities so that schools achieve highly effective education reforms (Hang-Chuon, 2017: 10).

As one of the key education management systems that devolve powers to school administrators to make decisions on school development plans, the SBM mechanism enables school administrators/leaders to develop the school development plans and make decisions that are responsive to the local needs of school improvement (Hang-Chuon, 2017: 11).

Besides introducing SBM to the education system, the MoEYS prioritized two main education reforms for schools in 2013, focusing on developing a new standard school model to improve STEM education and the broader education system through CFS implementation (Hang-Chuon, 2016: 462). In 2015, the 'New Generation School' model was introduced by the MoEYS, supported by the Kampuchea Action for Primary Education (KAPE) and the World Education with six elements to raise school quality. These elements include:

1. Providing the model for effective school leadership,

2. Ensuring school accountability,

3. Establishing a professional learning community,

4. Enabling complex management models,

5. Providing highly technological facilities and continuous professional development mechanisms and

6. Promoting active teaching staff

Key reform agents, the school leaders should be fully competent in making school reforms realistic, exercising school leadership through school-based management policy, and decentralizing education. However, the absence of professional and technical support for the school managers will lead to the failure of the reform initiatives (Chhinh & Dy, 2009: 126-127).

2.4.5 Developing the Capacity of School Leaders for Effective School Leadership and Management

Over the past decades, the leadership capacity of school principals has been considered low, which hampers the quality of education improvement. This was due to the lack of formal professional leadership preparation and training (Bush, 2011 as cited in Kheang et al., 2018: 144) and limited professional and pedagogical support (Kheang et al., 2018: 144). There were many challenges to effective school leadership, including the shortage of professional and technical support, financial and physical resource constraints, and little community involvement (Kheang et al., 2018: 158-171).

Moreover, school principals in developing countries generally lack the opportunity to undergo formal professional development on effective school leadership skills needed for carrying out their responsibilities and tasks (Kheang et al., 2018: 59). School principals are usually elevated from class teachers to technical group leaders and deputy school principals without clear leadership criteria for these promotions. They were often based on evaluative components such as strong teaching records, years of teaching experience, and political connections (Kheang et al. 2018: 59-60).

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To address these problems and promote the leadership capacity of educational administrators, the MoEYS introduced a training program for effective school leadership in collaboration with UNESCO/UNDP to a small number of school principals in 1997. However, it lasted for only a short period (Kheang et al., 2018: 134). Since 2002, the MoEYS has mandated a management training program for school principals/deputy school principals after appointment as school leaders. The training program aims to develop the professional leadership capacity and competency, which enable school leaders to deal with a wide range of school leadership and management issues like basic administration, resource management, people leadership, communication, planning, and teaching and learning (Kheang et al., 2018: 134). In addition, the MoEYS implemented a training program as the Cambodian Education Sector Support Project (CESSP) in 2005, funded by the World Bank, which was available to the central officials down to school teachers.

School leaders were provided with short periods of in-service training. The training covered a wide range of topics such as school administration, roles, and responsibilities as school leaders, leadership and management, planning, communication, and teaching and learning (Kheang et al. 2018: 134). A significant impact on the schools' leadership practices was seen after participating in the training programs. Iv and John asserted that: "…*School directors working much harder than before the programme;…working with teachers in technical group meeting; doing more and more formal and informal classroom observations; giving feedback that is more helpful to teachers; building more positive relationships with teachers and community members*" (2011, as cited in Kheang et al., 2018: 135).

With development partners' financial and technical support, 16,981 principals and vice-principals received initial school leadership and management training and other supporting documents for professional development between 2002 and 2016. In addition, to build

school leaders' capacity to carry out their roles effectively, the Teacher Policy and Teacher Policy Action Plan explicitly outlined that the preparation and development of school leaders was a key strategy for policy implementations (MoEYS, 2013, 2015b). The policy documents outlined strategic plans to enhance the principals' and teachers' leadership capacity, including:

1. A base-line research about school principals,

2. School Director Standard,

3. School Management Handbook,

4. Training for School Directors, and

5. Establishing School Principal Association.

As part of the Teacher Policy and Teacher Policy Action Plan in 2017, the School Director Standard was aimed at strengthening the capacity of school leaders to carry out the reform agenda at the level of local implementation. School Director Standard highlighted six standards aiming to strengthen the institutional capacities by increasing the professional qualifications and competencies of school principals/directors and changing the attitudes and behaviors toward teacher development and community involvement (MoEYS, 2017). Further, school principals are required to possess quality instructional leadership characteristics. These characteristics include managing teaching and learning, research, collaboration and communication, professional development, and internal school inspection. Clearly, teaching practices may be determined by the leadership initiatives of school principals. Principals must also clearly communicate the school vision among school members to improve students' learning outcomes by promoting classroom management quality.

As planned, the MoEYS, according to the ESP 2019-2023, has been continuing to

provide more training to around 472 school principals on SBM and plans to provide more training to 2,500 school principals by 2023 to ensure the improvement of school outcomes (MoEYS, 2019b).

2.4.6 Child-Friendly School Policy

In order to ensure that all children can successfully finish a high-quality nine-year basic education, the MoEYS introduced the concept of the Child-Friendly School mechanism and conducted pilot programs in cluster schools in some provinces. The project was supported by the development partners; namely, UNICEF, Save the Children Norway, KAPE, and other local NGOs (Kheang et al., 2018: 118-119; MoEYS, 2007: 3). The adoption of the CFS policy was designed to progress the achievement of the primary schools by ensuring there was an opportunity for a nine-year high-quality basic education for Cambodian children and this was based on the consensus reached by the country members who participated in the meeting of the Southeast Asian Minister for Education Organization (SEAMEO) (Kheang et al., 2018: 119).

The policy on CFS was officially in place in 2007 as a strategic framework to handle the quality issues, which consisted of six core dimensions (MoEYS, 2007) that included:

1. all children have equitable and inclusive access to education,

2. quality of learning,

3. children are safe, healthy, and protected,

4. gender parity and balance,

5. the participation of children, families, local communities in school operations, and

6. supporting and encouraging schools to sustain CFS policy.

The MoEYS has identified the practices and the quality of primary schools across the country using key dimensions and indicators of the Child-Friendly School policy. In 2001, the MoEYS introduced the concept of CFS and officially enacted it as the national policy in 2007, which was subsequently adjusted in 2011. Although the new initiative reform ideas were recently embedded into education policies, questions remain about whether those ideas have been appropriately translated into the reality of school contexts.

The concept of '*Child-Friendly School*' as a strategic response to promote universal primary education and a nine-year basic education program can also be seen as a vehicle for implementing national education goals such as the National Plan of Education for All, the Millennium Development Goals, the Education Strategic Plans, and the Education Sector Support Programme (Kheang et al., 2018: 119), and the Sustainable Development Goals-4 (MoEYS, 2019a).

2.4.7 Using a Cluster School Mechanism for Enhancing School Outcomes

Cluster school is a concept that was introduced to Cambodia's primary school contexts in the early 1990s. School clusters are among the most extensively used mechanism for pursuing education decentralization worldwide (Pellini & Bredenberg, 2015: 420). Basically, cluster schools refer to a group of schools, one of which is the core school while the others are the satellite schools. The number of schools can range from 5 to 7, depending on accessibility and geographical locations (Kheang et al., 2018: 130), and could include kindergartens to lower secondary school levels. In addition, cluster schools functioned to serve educational and administrative purposes (Bray, 1987: 7). Additionally, the cluster school mechanism was aimed at improving resource utilization effectiveness and enabling schools to share scarce resources with each other.

In addition, the MoEYS employed this technique to promote access to education and to improve its quality (Kheang et al., 2018: 130; MoEYS, 2010: 1). In 1996, the MoEYS, with UNICEF and SCN, conducted a pilot program and developed the policy of Cluster School Development for nationwide implementation in 2010.

According to Shaeffer and Abracia (1994 as cited in Pellini & Bredenberg, 2015: 421), the five rationales for forming school clusters are as follows. First, the primary goal of a school cluster is to improve educational management efficiency by allowing for resource sharing in a resource-constrained context. Second, it serves economic reasons as school clusters can maximize central government funds and improve the cost-effectiveness of information and shared resources, including school facilities and trained teachers. Another important motivation is pedagogical, so through professional conversation, exchanging experience, and teaching abilities, school clusters can be used to improve the quality of teachers. In addition, school clusters can support the general administration. Finally, school clusters can increase community participation, impacting children's attendance at school.

CHAPTER THREE: Theories, Practices, and the Roles of School Leadership for

Teaching Quality and School Outcomes

Chapter Three is structured into three main sections. First, it was started by introducing an overview of educational leadership and management by focusing on the literature regarding the important role of school leadership in promoting school autonomy and accountability. The following section reviews the literature on the importance of teaching and monitoring practices on student learning for quality improvement. The final section highlights the literature on school leadership's effective role in promoting teachers' professional development.

3.1 Theories and Practices of School Leadership and Management

Theories of leadership have been studied in various contexts of society. Scholars defined the term '*leadership*' based on their individual perspectives and interest in the surrounding phenomenon (Yukl, 1989: 252). In addition, leadership can be characterized in accordance to individual traits, interaction patterns, role relationships, follower perceptions, the influence over the followers, impact on tasks, influence on organizational culture, and leader behaviors (Yukl, 1989: 252). James Lipham (1979, as cited Smith & Piele, 1996) defined "*Leadership as the behavior of an individual which initiates a new structure in interaction within a social system.*" (p. 1). In the education system, the term 'school principal' may be used interchangeably with the school director and superintendent, which refer to school manager or school leader. Traditionally, despite different terms, '*school leader*' refers to the people whose roles motivate, inspire, influence, and guide others to align with the targeted goals by setting clear and realistic visions, involving other school

members in school development plans, and establishing positive school culture (Gulcan, 2012: 625).

Leadership behaviors and practices have been studied in relation to school effectiveness and improvement (Kheang et al., 2018), including 1. Transformational leadership, 2. Transactional leadership, 3. Instructional leadership, 4. Managerial leadership, 5. Moral leadership, 6. Distributed leadership, 7. Contingent leadership (p. 52).

The role of school leaders is particularly important for schools' quality improvement (Gurr et al., 2005; Hallinger et al., 2015; Louis et al., 2010). School principals as instructional leaders can make significant contributions to school outcomes (Louis et al., 2010: 316), improve school's instructional programs and success (Gurr et al., 2005: 548), assert their leadership roles in strengthening school disciplines, and ensure the evaluation of learning achievement are a school priority (Edmonds as cited in Hallinger et al. 2015: 4). In addition, Weber (1996) conceptualized a model of instructional leadership covered five fundamental domains:

(1) Establishing the school's mission,

(2) Overseeing the curriculum and instruction,

(3) Creating a positive school climate,

(4) Monitoring, and enhancing instruction, and

(5) Evaluating the instructional program (p. 258-277).

Bush (2009) added that a growing body of literature investigates the effectiveness of leadership in the context of effective school in relation to the school outcomes in particular students' achievement. In addition, he claimed a widespread belief about school leadership in making significant changes in school quality and students' learning outcomes. Bush (2009) emphasized that effective school leaders and managers are needed to ensure the

quality of education for their students and learners (p. 375). Wart asserted that:

"*Effective leadership provides higher-quality and more efficient goods and services; it provides a sense of cohesiveness, personal development, and higher levels of satisfaction among those conducting the work; and it provides an overarching sense of direction and vision, an alignment with the environment, a healthy mechanism for innovation and creativity, and a resource for invigorating the organizational culture* "(p. 214).

Over the past decades, the role of school principals has changed, which centered on the instructional leadership to be accountable for the school outcomes (Smith & Andrew, 1989: 9). It means that principals have direct responsibilities to enhance the quality of instructions and learning. Moreover, leadership effectiveness can be related to the outcomes produced by the principals for their followers (teachers and other school members), which include group performance, collective preparedness, group capacity, psychological well-being, personal growth, and others (Kheang et al., 2018: 51-52). School leadership and management affect the quality of school organization and its climate by creating the enabling conditions that transform school inputs into school outcomes. Eight mediating interventions are identified: 1. Effective school leadership, 2. Positive teacher attitudes, 3. Capable teaching force, 4. An organized curriculum, 5. Autonomy in school decision-making, 6. Incentives for academic success, 7. Order and discipline, and 8. Maximized learning time in school (UNHCR, 2001: 96).

Two ways indicate the effective leadership of the instructional leaders: (1) task behaviors and (2) relationship behaviors (Gulcan, 2012: 627). The former concerns how leaders relate to each school member's task and the job responsibilities that target school missions and goals. School leaders who are task-orientation focus on the technical challenges to complete the responsibilities by setting clear goals, arranging the meeting, and monitoring school activities. The latter enhances school members' motivation and

instruction by displaying great communication skills and encouraging other school members (Gulcan, 2012: 627; S. C. Smith & Piele, 1996: 40).

Three key elements can influence school leaders' behaviors: role, expectancy, and adaptive-reactive theory (Smith & Andrew, 1989: 5). Role theorists mentioned that the leadership behaviors of school principals are shaped by what other people want them to behave. For instance, school principals can perform their role as prescribed in the job descriptions or the directions and orders from the upper-level office. Expectancy theorists believe that school principals' behaviors can be influenced by how they perceive the consequences of their own behaviors. This type of leadership behavior focuses on a course of action that is highly achievable. Adaptive-reactive theorists mentioned that principals' behaviors can be predicted by a wide range of factors, including school structure, decision-making, size of schools, and school community (Smith & Andrew, 1989: 5-6).

School principals' leadership has significantly impacted students' achievement (Bush, 2009). Students' learning outcomes improved when instructors believed that their principals were instructionally competent (W. F. Smith & Andrew, 1989: 9). Schools in developed and developing countries also demand effective school leaders and managers to provide a good education for their children (Bush 2009:375). However, there were fewer studies conducted in the school contexts of developing countries to examine the characteristics of school leadership in particular for Asian countries (Kheang et al., 2018: 53). In order to understand the conditions and factors influencing school leadership in developing countries, there should be considered the contextual issues in the education system and how school leadership is prepared for, developed, and supported for effective leadership behaviors and practices (Kheang et al., 2018: 53).

Reviewing previous research studies on leadership roles in improving learning and teaching, Hallinger (2011) conceptualized four dimensions: focus, beliefs and values,

leadership context, and sharing leadership (p. 125). In addition, school principals are characterized by four core principles: resource provider, instructional resource, communicator, and visible presence. These characteristics are essential and achieved through an interactive relationship between teachers and principals and are linked to improvements in student learning (Andrews et al., 1991: 98; Smith & Andrew, 1989: 9).

The effectiveness of school-input management is determined by the institution's organizational structure (Fuller, 1987: 285). The conceptualization of school management can be viewed from a multidimensional aspect. Fuller (1987) categorized school management into four aspects include:

1. How principals enforce a hierarchically power structure for problem-solving,

2. How and how often principals evaluate teachers' classroom performance;

3. The extent to which principals manage the curricula and apply various methods for professional judgment; and

4. Their skills in budget allocations for improving material inputs (p. 285).

3.1.1 The Effective School Leadership for Promoting School Autonomy and Accountability

Understanding the processes and methods of decentralization in the education system is vital when considering school autonomy and accountability. Schools are empowered to hold more autonomy in decision-making in developing and planning effective school outcomes as part of educational decentralization. Therefore, it is necessary to consider the degree of autonomy in decision-making and the level of authority to make decisions. According to the OECD (2018), there are two types of shared decision-making:

(1) full autonomy with prior consultation with other entities at the top level of the education system, and

(2) independent decision-making within a preconditioned framework (p. 2).

Furthermore, the OECD (2018) divided possible decision-making into four important domains to increase school autonomy and accountability in educational decentralization. First, it is about establishing instructional tasks such as instructional time, student grouping, and student enrolment. Second, it is related to human resource management decisions such as hiring and firing teachers and other personnel, service conditions and responsibilities, and pay ranges). The third is linked to planning and structuring the instructions, for instance, instructional program designs and subject content selection. Finally, it is about resource management and allocations, including the utilities and allocation of school resources for teaching and management) (p. 2).

With an increased understanding of the importance of school autonomy, the role of educational practitioners was changed dramatically. By devolving more power to educational stakeholders, schools must be more responsible for the utilities and management of the school resources associated with improved school outcomes. Therefore, school leaders and teachers must ensure accountability and transparency in resource management and learning outcomes (OECD, 2018: 5).

When education systems are centrally driven, schools are demanded to follow or do what the government has written in the national policies. Meanwhile, the influence of internationalization on education significantly impacts the school operation and curriculum implementation, which causes the discrepancy for the local schools to adapt to the changes (Shoraku, 2006: 111). Schools are tasked to report the school's performance to the upper-level education office. This practice can ensure that schools are more accountable for their performance as school principals and teachers are the direct providers of education services

to the children (Shoraku, 2006: 113). More importantly, the government of Cambodia recognized the role of school principals in bringing new changes to the education policy implementation at school, which promote the collaboration of school operation and school outcomes (Shoraku, 2006: 114).

However, schools in the centralized education system are not flexible in modifying and adjusting the national curriculum to comfortably suit the local school settings, which creates more challenges for the school principals and teachers due to the limited support and a lack of local participation (Shoraku, 2006: 114). Moreover, schools are encouraged to develop new research-based methods for improving the quality of learning and teaching (Pont et al. 2008: 16). Nevertheless, Cambodia's government believes in the extension and deepening of the school leaders' tasks, and responsibilities with apparent outstanding leadership abilities are required. There must be strengthened (Pont et al., 2008: 16).

Giving schools greater autonomy in decision-making affect the role of school leaders and teachers to be more accountable for their performance which strengthens the students' achievement (OECD, 2018: 5). It has, however, made the function of the school leader more challenging and complex due to the lack of good enabling conditions and climate and the relationship between school members (OECD, 2018: 5). Although some school leaders reported being satisfied with improved distributed and instructional leadership, the demanding responsibilities of school leadership positions can result in lack of attraction to the leadership positions and also influence the quality of work performance of those school leaders and other local school members and the learning achievement of students (OECD, 2018: 5).

In order to promote the quality of school management, schools should be operated by equipping with the four types of school-input factors, including per-pupil spending, specific material inputs, teacher quality, and teaching approaches regardless of the school type

(Fuller, 1987: 285). Despite the importance of these four elements, schools may not operate sustainably and effectively without the fifth component, namely, the school's management and organizational structure (Fuller, 1987: 285). The organizational structure may have different features depending on the goals. These goals can guide the overall management of those organizations. For instance, school leaders may focus on classroom discipline to achieve high-level obedience. In contrast, other school leaders place a premium on motivating teachers to improve classroom practices, supervise staff, plan the school budget and collaborate with students' parents and the community (Fuller, 1987: 285).

School leadership quality must be considered to improve school development and student learning outcomes (Bush, 2009: 375). Quality of school management can be viewed from unilinear and multi-dimensions (Fuller, 1987). Unilinear dimension is that principals should acquire a set of necessary skills and qualifications to be effective leaders. In contrast, from multidimensional perspectives, school leaders differ according to: (1) whether the powers are distributed to teachers for participation, (2) how and which evaluative elements were used for teachers' performance, (3) how much autonomy is provided to teachers on curriculum decisions, and (4) ability in material-input management and budgeting (p. 285). To achieve this, formal leadership preparation and training are essential for school leaders to be effective in their roles. Bush (2009) gives four reasons why school leadership preparation is crucial. These are: (1) the expansion of the role of the school principal, (2) the increasing complexity of school contexts, (3) the recognition that preparation is a moral obligation, and (4) the recognition that effective preparation and development makes a difference (p. 376-378). The role of school leaders is becoming more demanding if they are to provide the best possible educational opportunities for learners (Bush, 2009: 375; Kheang et al., 2018: 52). The role and expectations of schools and school leaders have evolved dramatically as the world has changed (Pont et al., 2008: 16).

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3.1.2 The Effects of School Leadership and Students' Achievement

A plethora of empirical studies in developed and developing countries was conducted to investigate the associations between school principals' leadership and students' achievement (Kythreotis et al., 2010; Louis et al., 2010; Marks & Printy, 2003; O'Donnell & White, 2005; Timperley, 2005). Unfortunately, the findings were inconsistent.

A group of scholars conducted a study in Cyprus using longitudinal data from 22 primary schools to examine the direct and indirect effects of school principals' leadership on students' academic achievement (Kythreotis et al., 2010: 218). Multilevel modeling results indicated that school principals' leadership styles as the school-level data and learning culture as the classroom-level data positively impacted students' academic achievement.

Louis et al. (2010) conducted the study using the National Teacher Survey data in the US in 2005 and 2008. They examined two research questions about the effects of school principals' leadership on teachers' collaboration, classroom practices, and students' achievement. The findings indicated that instructional leadership had direct and indirect effects on teaching practices when principals conducted classroom observations or visits to provide feedback for classroom improvement. In addition, they highlighted that the effects of instructional leadership of principals on teachers' professional community were greater but had less impact on instructions (Louis et al., 2010: 329-330).

Marks and Printy (2003) investigated effective school leadership, both transformational and instructional, on student performances at 24 nationally representative schools in the United States (8 schools from elementary, middle, and high school levels) using hierarchical linear modeling. They found that student achievement improves when school principals demonstrate shared leadership that promotes teachers' work motivation and pedagogical practices (p. 392). In addition, they suggested that transformational leadership was important for fostering teachers' intrinsic motivation and commitment by involving teachers

in sharing leadership responsibility (Marks & Printy, 2003: 393).

In a quantitative correlational study, O'Donnell and White (2005) examined the effects of school principals' leadership on students' achievement at public middle schools in Pennsylvania. The data obtained from 75 principals and 250 eighth-grade students were analyzed. The results showed that school principals who demonstrated the instructional behaviors linked to improving students' achievement when they focus on promoting the school learning climate, which has significant power (O'donnell & White 2005: 61).

Timperley (2005) studied instructional leadership challenges on how student achievement data may improve teaching quality. With technical assistance from consultants and school colleagues, teachers were motivated to use the achievement information to refine the school's programs for better instructional practices and achievement (p. 16-17). However, this requires developing the capacity of individuals and school organizations (Timperley, 2005: 16-17). The capacity development of individuals would be necessary for good teaching practices via mutual reinforcement among school members as a professional learning community which can foster shared values, student learning, and collaboration on curriculum and instruction (Louis et al., 2010: 318-319).

3.2 The Importance of Teaching and Monitoring Practices for Quality Improvement

3.2.1 Quality of Classroom: Teaching Practices and Assessments

Classroom practice is interchangeably used with teaching practice or instructional practice. UNESCO defines classroom practice[2] as *"A set of strategies and instructional methods that characterize the interaction between teachers and students in the classroom,*

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[2] https://policytoolbox.iiep.unesco.org/glossary/classroom-practices/

which are meant to promote learning and develop and manage pupils' behaviors."
Classroom practices include classroom management, pedagogy, learning activities, and students' engagement in learning and the use of instructional time." Le Donné et al. (2016) examined whether teaching practices varied across schools using the 2013 TALIS data for their analysis. A set of twenty-four items focusing on instructional and assessment practices were examined.

As a result, three constructs were extracted as the key underlying teaching strategies: "*Active learning, Cognitive activation, and Teacher-directed instruction*" (p. 20-22). '*Active learning*' attempted to promote the students' involvement in their own learning by (1) engaging in group work, discussions, cooperation, reflection, and support and (2) using ICT to foster a more interactive learning environment. '*Cognitive activation*' focuses on the practices that challenge students to be motivated and stimulated to acquire higher-order skills that promote critical thinking, decision-making, and problem-solving. These practices can enable students to be more creative and engage more actively in thinking processes with their peers and teachers. '*Teacher-directed instruction*' refers to the practices that depend heavily on teachers' ability to lead classroom learning. These practices did not promote or encourage students to be active in learning but rather absorb the knowledge from the teachers directly (Le Donné et al., 2016: 23-24).

These three teaching strategies are widely used across the participating countries regardless of their economic status (Le Donné et al., 2016: 26). Moreover, these practices are not exclusively implemented. For instance, teachers may employ various strategies for their classroom, which include active learning to teacher-directed instruction (Le Donné et al., 2016: 26). They found that teachers seem to demonstrate similar frequency levels of using active learning strategies if they are from the same schools (p. 28).

In addition to the teaching strategies, assessments are vital for the educational processes,

focusing on what matters most for students' learning and performance (OECD, 2013: 140). Assessments can be divided into two categories: formative and summative. The former refers to the frequencies of the interactive process of students and learning conducted to identify students' learning needs and modify the teaching practices. The latter focuses on what students have learned from the school curriculum, which serves various purposes, for example, promoting students to the next level of education (OECD, n.d.-a: 1, 2013: 140).

The assessment and evaluation framework is less valuable when it does not link to the improvement of classroom teaching practices and foster students' learning (OECD, n.d.: 2). Assessment can be utilized for different purposes depending on the grades, teachers, and the goals for assessments, aim to modify and inform the planning and management of the classroom to improve the teaching and learning in primary schools. Understanding the advantages and disadvantages of assessment practices is useful for teachers and students. In addition, it is essential for the policymakers, curriculum developers, and teachers' education and training programs to integrate these aspects into the core values to realize the final goal of education, which is the improvement of students' achievement and learning motivation (OECD, 2009: 89).

3.2.2 Beliefs and Attitudes of Teachers toward Classroom Teaching Practices

Teachers are no doubt the key actors in the education system. What teachers bring to the classroom may be influenced by their beliefs about how knowledge is constructed or developed. It can be closely related to instructional practices (OECD, 2009: 89). In addition, it can associate with their understanding and knowledge gained from their experience, training, and life, which is valuable to examine the beliefs and practices in relation to types of training and professional development received (OECD, 2009). Furthermore, it is necessary to investigate how particular beliefs and behaviors are related to teachers' and

classroom practices to understand better their prevalence (OECD, 2009: 89-90).

Traditionally, the nature of teaching and learning is rooted in two different perspectives: direct transmission and constructivism (OECD, 2009). Direct transmission refers to the knowledge that can only be transmitted from one person to another through the clear and organized structure of teaching and knowledge in the solving of problems. In contrast, the constructivist view believes that learning can be obtained or acquired through active participation in the learning process and generating solutions to the problems (OECD, 2009: 92). These perspectives are entirely contradictory. Therefore, pedagogical and cultural values shaped the beliefs and practices of teaching and learning (OECD, 2009: 93).

Understanding teachers' attitudes toward classroom practices may improve educational processes (OECD, 2009: 89). Wang and Degol (2016) mentioned that identifying elements of the school environment that can be changed to improve student outcomes is a critical goal of effective school reform (p. 317).

3.2.3 Challenges in Improving Teaching Practice in Cambodian School Contexts

One of the policy reforms is to improve classroom practice (Ogisu, 2015: 59). The MoEYS of Cambodia collaborated with the development partners to develop a new framework of teaching and learning pedagogy, namely, 'Child-centered pedagogy' which moves beyond traditional teaching practices namely "Chalk-and-talk." The new concept was incorporated and integrated into the national curriculum and schools through the Child-Friendly School policy framework (Ogisu, 2015: 59). However, due to the strong embedded culture and practices in the Cambodian classroom, it is challenging for the education system to shift from conventional ways of teaching (teacher-oriented approach) to a newly introduced pedagogy (child-centered methods) (Ogisu, 2015: 60). In addition, it is

concerned with how local practitioners understand and practice pedagogy in the local school settings. As noted in her book, Ogisu (2015) mentioned that "*Pedagogy—both theory of knowledge and the act of teaching—cannot be separated from political, social, and cultural contexts because the latter contain fundamental assumptions about education.*" (p. 60).

In some schools, only conventional approaches are applicable due to constraints such as school or classroom facilities, teachers' pedagogical and content knowledge, school support, and community involvement (Keng, 2007). Two aspects hamper teaching practices that were promoted by the curriculum reforms. First, it is necessary to consider the circumstances and conditions that caused local schools to implement the reform programs differently and inconsistently (Keng, 2007: 10). Another point is that in order to realize the objective of curriculum reforms, it is necessary to know how many teachers understand these and the pedagogy required to implement them for students' learning.

However, despite the school support, teachers remained struggling to adapt the full implementation of child-center pedagogy to their classroom for two reasons: superficial understanding and complex classroom constraints (Song, 2015: 36). For instance, teachers may not be able to apply child-centered approach into classrooms with large numbers of students even though the schools gives overwhelming support because of the constraining classroom realities and their vague understanding of new child-centered pedagogical principles (Song, 2015). However, teachers may use specific approaches or methods in their classroom practices that respond to the local situations of their classes, schools, and subject disciplines. With a supportive environment, effective teachers can change or influence how students learn in the classroom despite the difficulties and challenges and make efforts to prepare and manage the classroom by, for example, assigning regular homework and learning-related activities, which create learning opportunities for students to grow and develop (Benveniste et al., 2008: 71). The quality of teaching practices in Cambodian public

schools is still generally considered low (Prigent et al., 2016).

3.2.4 Effects of Teaching Practice and Students' Achievement

As defined earlier, teaching practices are related to teachers' beliefs about teaching and learning. Many empirical studies have examined the associations between teaching practices and students' achievement. Scheerans and Bosker (1997, as cited in OECD 2009: 97) claimed that the characteristics of classroom instruction had a large effect on students' achievement compared to the effect of the school environment. Wenglinsky (2002) conducted a study in the US using the National Assessment of Educational Progress data in 1996 to examine the effects of teacher classroom practices on students' achievement. The results showed that classroom practices significantly affected students' learning outcomes, which is comparable to other factors (p. 1).

Cauley and McMillan (2010) reviewed the role of teaching practices that focus on formative assessment of students' motivation and achievement. Teachers can identify specific problems in students' learning, provide students with timely feedback to correct their mistakes, adjust their teaching, and improve achievement when using formative assessments in teaching (p. 1).

Olina and Sullivan (2002) examined the impact of classroom evaluation approaches on students' achievement and attitudes on 189 high school students and six teachers. By way of experimental design, teachers were assigned to three types of treatments: (1) no evaluation, (2) teacher evaluation, and (3) self-evaluation plus teacher evaluation. The results found that students who studied with a group of teachers who used the 'teacher evaluation' and 'self-plus-teacher evaluation' obtained significant improvement compared to the 'no evaluation' group (p. 61). Their findings suggested that teachers use the evaluation and feedback during

the formative stage of students' learning can enable students to correct possible mistakes in the learning process, which in turn improves their performances (p. 73).

Bietenbeck (2011) conducted a study using the Trend in International Mathematics and Science Study data to examine the effects of teaching practices on students' academic achievement. The author categorized teaching practices into two categories: practices to be decreased and practices to be increased. These two practices were based on traditional and modern teaching pedagogy concepts. The findings showed that the effect of modern-teaching practices was much smaller and insignificant. However, the traditional teaching practices significantly substantially affected students' achievement.

Fuller (1987) highlighted that the instructional process, school's social organization, and teaching practices were consistently related to improving student achievement (p. 257). In addition, teaching practice or classroom organization is a school-input quality that includes the length of instructional programs, homework assignments, engaging students in learning, teachers' expectations of pupil performance and teachers' time spent on class preparation (Fuller, 1987: 258). Fuller (1987) reviewed the school factors that determined students' academic achievement by analyzing the empirical research which observed the effects of the length of time of instructions. The result was that 12 out of 14 research papers indicated a positive relationship between the instructional hours and pupils' learning achievement. There are concerns about the inconsistencies in defining and measuring the time of instructions in each case study, although the relationship was positive (p. 283).

According to Heyneman and Loxley (1983, as cited in Fuller, 1987: 284), teaching hours in reading subjects were linked with improving science subjects in Chile and India. More importantly, the quality of instructional hours depended on the management practices in determining which areas of the curriculum should be covered and how efficiently teachers used those instructional hours in the classroom. Therefore, efficient use of the

instructional hours in developing countries is beset by the quality of classroom management and teachers' skills. At the same time, there was also a lack of classroom materials (Fuller, 1987: 283).

3.3 Building Teaching Quality through Internal School Inspections and Professional Development

Bruns and Luque (2015) conceptualized the comprehensive framework of incentives for motivating teachers in the teaching profession by categorizing them into three broad aspects:

(1) Professional rewards (intrinsic satisfaction, recognition and prestige, professional growth, intellectual mastery, and pleasant working conditions);

(2) Accountability pressure, encompassing feedback from parents, students, peers, and supervisors, as well as the threat of demotion or dismissal; and

(3) Financial incentives include salary level and differentials, pensions and other benefits, and bonus pay (p. 224).

Apart from managing the school operations, principals have a role as a mentor and coaches, leading to professional learning and collaboration among the school members, especially the teachers. Louis et al. (2010) suggested that principals' leadership behaviors have both direct and indirect impacts on the quality of classroom teaching through classroom observations; this allows teachers to learn via hands-on teaching experiences and provides the opportunities to become involved in professional learning activities and collaborations (p. 329-330).

School principals are responsible for conducting classroom observations on a formal and informal basis to provide feedback and support. These classroom observations can be

weekly or monthly, depending on teachers' needs. Principals can use their expertise, knowledge and experience of teaching gained as both a teacher or technical group leader before being appointed to a school leadership positions. Moreover, school principals can provide constructive feedback to further improve the school's work by explicitly identifying the challenging issues for teaching, listening to the needs of teachers and their students, and proposing solutions. In addition, teachers must receive regular institutional support to enrich their professional competencies to deliver effective teaching. Teachers may fail to take full responsibility for their teaching tasks without regular supervision and guidance.

Teachers are concerned about their teaching quality when their principals observe (Weber, 1996: 271). As part of their duties and responsibilities, instructional leaders conduct classroom observation in order to monitor the instructional quality, ensure the standard of classroom practices, and solve the problem related to teaching and learning behaviors (Weber, 1996: 271). School-based professional support is necessary for teachers unless they trust the observers in three ways: (1) Observation causes no harm, (2) Be convinced of the observation criteria and evaluation procedures, and (3) Should believe in the information to improve teaching (Weber, 1996: 271).

The internal inspectors and school leaders should function as more than just managers but be mentors who provide constructive feedback and comments to improve instructions and individual growth; as Weber (1996) stated, *'For instructional leaders and for teachers, then, observations are opportunities for professional interactions, which means giving and taking information.'* (p. 271). Furthermore, evaluating the instructional program is a mechanism for knowing clearly about the schools (Weber, 1996: 272). Ongoing, timely, and insightful assessments and evaluations should be conducted by instructional leaders who intend to change the quality of the school program, of which the strengths and weaknesses can be identified (Weber, 1996: 272-273).

Overseeing the curriculum and instruction are vitally important. Curriculum and instruction are the most visible manifestations of a school's mission. School leaders play a key role in building a bridge between the core curriculum objectives and the actual practices of the instructions. In addition, instructional leaders and teachers should clearly understand the goals to define and analyze teaching practices more effectively. In order to successfully implement the curriculum and develop appropriate instructional processes, there needs to be a collaborative and collegial community of teachers and principals in the school. Therefore, curriculum and instruction management can be strengthened through a process involving team development that incorporates divergent viewpoints (Weber, 1996: 260).

Hardman (2011) asserted that "*Effective principals take the time to communicate changes, answer questions and work toward a pragmatic system of allocating scarce resources to help teachers cope" (p. 127)*. However, teachers whom a principal mistreated may be discouraged, resulting in severe psychological and emotional problems affecting personal and professional work life (Blase & Blase, 2002: 714-715).

School leaders should have a clear plan to prioritize the quality of teaching by allocating school resources to enable teachers to gain new knowledge and skills. By so doing, it is encouraging teachers to invest extra efforts and commitments toward the art of teaching. In addition, school leaders can schedule regular plans for observing and inspecting teaching performance to ensure that teachers are making good progress and improvement and provide sufficient and timely support if they have limited professional teaching capacity or knowledge. These engagements can promote the quality of teaching and increase the teachers' motivation. The shortage of school resources is often reported as the major problem for the quality of teaching and learning. In this case, teachers can be involved in discussions to create trust and produce collaborative learning environments where each member can share their expertise and knowledge to promote the school's professional

learning community. Teachers often have innovative ways to overcome the lack of resources. However, none of this can be done until there is strong coordination among the school leaders who see their role as instructional school leaders. Suppose open and trustworthy communication among and between the school members is not created. In that case, they may continue to act as individuals who take on different tasks but do not share the missions to achieve the school's long-term vision.

School leadership of principals matters for the quality of teaching. The working environment plays a vital role in teachers' work-life, influencing their professional development and motivation. Fullan (1993, as cited in Shoraku, 2006) emphasized that *"principals' responsibility is building learning organizations where people continually develop themselves to understand the complexities of the educational change occurring around and within their schools" (p.* 116). One way to improve the quality of teachers and teaching effectiveness is to upgrade the professional competency of the school principals in terms of effective school management and leadership.

Teachers need professional development and should upgrade their teaching capacity by enhancing their personal and professional competencies such as pedagogical development, teaching skills, and attitudes. The enhancement and development of these competencies could positively affect their beliefs and practices of teaching and thus improve classroom learning. Schools are an open social system; the organizational culture shapes the interactions and behaviors of the school members in the context of teaching and learning (Hang-Chuon, 2017: 10). In the meantime, schools should enable teachers to absorb the benefits produced from the formal structure of the education management reforms. Therefore, when school organizations are conducive, teachers and other school members can take advantage of the opportunity from social support in the learning community (Hang-Chuon 2017: 19). Because teaching takes place in the school, the role of the principal

in teachers' professional development is critical. School principals must provide school places and supportive organizational routines for the teachers' learning by creating teacher social networks (Hang-Chuon, 2017: 25).

In order to improve instructional practices, teachers should be proactive and involved in professional activities to enhance the quality of instructions, the learning environment, and students' learning. The professional activities include team collaboration, creating a professional learning community, involvement in the school development plan, and assessing the working conditions (Darling-Hammond et al., 2005 as cited in OECD, 2009: 90).

Support mechanisms can have many forms, such as increased economic standing, professional growth, and school-based support from school colleagues such as senior teachers and school principals. These elements are critical in ensuring the quality of their service. Teachers and school principals are responsible for ensuring that children know how to learn and study successfully in school (Dy et al., 2019: 71). In addition, Pont and his colleagues (2008) mentioned that teachers' motivations, competencies, and working environment are influenced by school leaders, who thus determine classroom practice and student learning (p. 19).

Motivation can be a factor in promoting teachers' professional learning and collaboration and thus improve teaching practices. With a strong and effective school leadership that develops their classroom teaching conditions, teachers may find this useful resource that motivates them to improve classroom practice. School principals may provide the necessary support to enable teachers to cope with the challenges that hinder the feasibility of introducing new classroom approaches. These practices may motivate teachers' performance and encourage them to collaborate with their teaching peers for instructional improvement. School principals, as instructional leaders, can prioritize the quality of

classroom practices for effective teaching and learning. One of the principals' main responsibilities is collaborating with teachers on the curriculum and teaching methods. (Hallinger & Murphy, 1985: 22). This can be supported by the theory that the role of instructional leaders covers three key areas of academic management: instructional supervision and evaluation, curriculum coordination, and students' progress monitoring.

It is necessary to reflect on the country's social and cultural contexts to enable collaborative work between principals and school members, particularly teachers. The socio-culture of the school may change the relationship between the principals and teachers, and it may be difficult to work collaboratively to achieve the school vision and goals due to the constraints of the hierarchical social systems of the country (Shoraku, 2006: 136). As technical meetings are conducted monthly; however, some schools organized different meetings among teachers more than once a month depending on the leadership initiatives of school leaders and the needs of the school teachers. These school-level meetings are important because it is linked to improving student achievement (Tandon & Fukao, 2015: 127).

Another thing that should be considered is the role of school principals in promoting the culture of professional collaboration among school members in the school context. Song (2015) suggested that teachers' competencies should be strengthened to improve classroom practices that promote child-centered pedagogy. A strong professional development program must be established to assist teachers in dealing with challenges in the classroom, such as improving the classroom environment by reducing class size, which is a major challenge in implementing new pedagogy in Cambodia (p.43). Moreover, principals may assume a mentorship role in promoting the instruction and leading a professional learning community. Principals function as senior people in the teaching profession as leaders and mentors to support teachers with little subject expertise or teaching skills. By scaffolding, teachers can

acquire more hands-on experiences at work.

Despite the fact that there is school-based in-service training, principals are crucial in directing it so that teachers can advance their pedagogical and professional expertise and foster school collaboration in determining teaching practices and student results (King, 2018: 7). Since in-service teacher training is not regarded as successful and efficient in Cambodia; this mentorship support is likely a valuable source of encouragement for the educational system there (Bo et al., 2019: 30). A positive school culture can be built to support the collaboration and collective power among school members by establishing a safe social communication at school in achieving the school's vision and goals and are committed to attaining school improvements. In the context of primary schools in Cambodia, the role of the school principals in enhancing the classroom's learning assessment and monitoring has been stressed since the early 2000s (Shoraku, 2006: 130-131). Despite limited professional learning opportunities for teachers at primary schools, these school-based training opportunities should be ensured to enhance teachers' pedagogical and professional knowledge and promote school collaboration to shape the teaching practices and student outcomes (King, 2018: 7).

It is the only way to promote teacher quality and performance through the practices of school principals. Some structural and cultural constraints are the key obstacles for principals. However, conditions should enable school principals and teachers to achieve these leadership practices and initiatives. Although the leadership style of Cambodian school principals was characterized as non-participatory, it did not mean that school principals possessed poor leadership capacities. However, due to the cultural and social structures of the system, school principals cannot fully exercise their leadership potential as effective instructional leaders as defined in the Western contexts (Shoraku, 2006: 138).

CHAPTER FOUR: Research Methodology

This chapter presents an overview of the research methodology for the current study, including the research design used for the investigations, conceptual framework, analytic methods, research site, data collection procedures, research instruments, data description and research ethics of the study.

4.1 Research Design, Conceptual Framework, and Proposed Analytic Approaches

4.1.1 Research Design

The mixed methods research design was employed for the current study in order to gain a better understanding of the research problem under investigation (Cresswell, 2012: 535). Survey questionnaires were used for data collection, consisting of closed-ended and open-ended responses. This method requires the researcher(s) to collect the necessary data and information and then merge, integrate, and link the two strands of data. It is worth noting that the data collected in a convergent parallel design means that the research participants were asked to complete both closed-ended and open-ended questionnaire forms simultaneously. The data obtained from the quantitative and qualitative forms can be complemented each other (strengths and weaknesses) and provide a rich understanding of the research problems (Cresswell, 2012: 540). The mixed methods research design in this study aims to investigate the influences of school principals' leadership on teaching quality and thus affect the school's learning outcomes of the students in primary schools in Phnom Penh, Cambodia.

4.1.2 Conceptual Framework

School management and leadership have been extensively studied concerning improving students' achievement (Louis et al., 2010; Marks & Printy, 2003; O'Donnell & White, 2005; Timperley, 2005). Effective school leadership was associated with improved teachers' instruction and student's achievement. However, few empirical studies were found in developing countries like Cambodia. Principals as school leaders characterized by instructional quality tend to promote teachers' teaching quality and students' learning using a more constructivist approach or child-centered pedagogy (OECD, 2009: 199). Principals with a high level of understanding of the content-based curriculum can provide constructive feedback for teachers to improve the quality of teaching in formal school contexts (Louis et al. 2010: 317). In addition, to understanding the curriculum-based instructions, school leaders should support the instructional process for better quality and seek ways to stimulate teaching behaviors for innovative teaching and learning in the classroom (Louis et al., 2010: 317). More importantly, school principals should understand their responsibilities and know how to exercise their role to promote instructional practices by supervising and tracking teaching and learning (Harris et al., 2017: 207). The quality of school leadership matters because the school's organizational capacity is directly influenced by effective school leaders who can influence student learning and achievement by creating trust and collective power among school members (Youngs & King, 2002: 645). Teachers can be enabled to expand the professional learning community and create effective and fulfilling schools by understanding the nature of school principals' leadership from followers' viewpoints (Smith et al., 2008: 1). Therefore, teachers' perceptions of school principals' leadership may influence teachers' motivation and performance, which determine the quality of classroom instruction, thus either improving or even diminishing students' learning and achievement.

Figure 1 Conceptual Framework
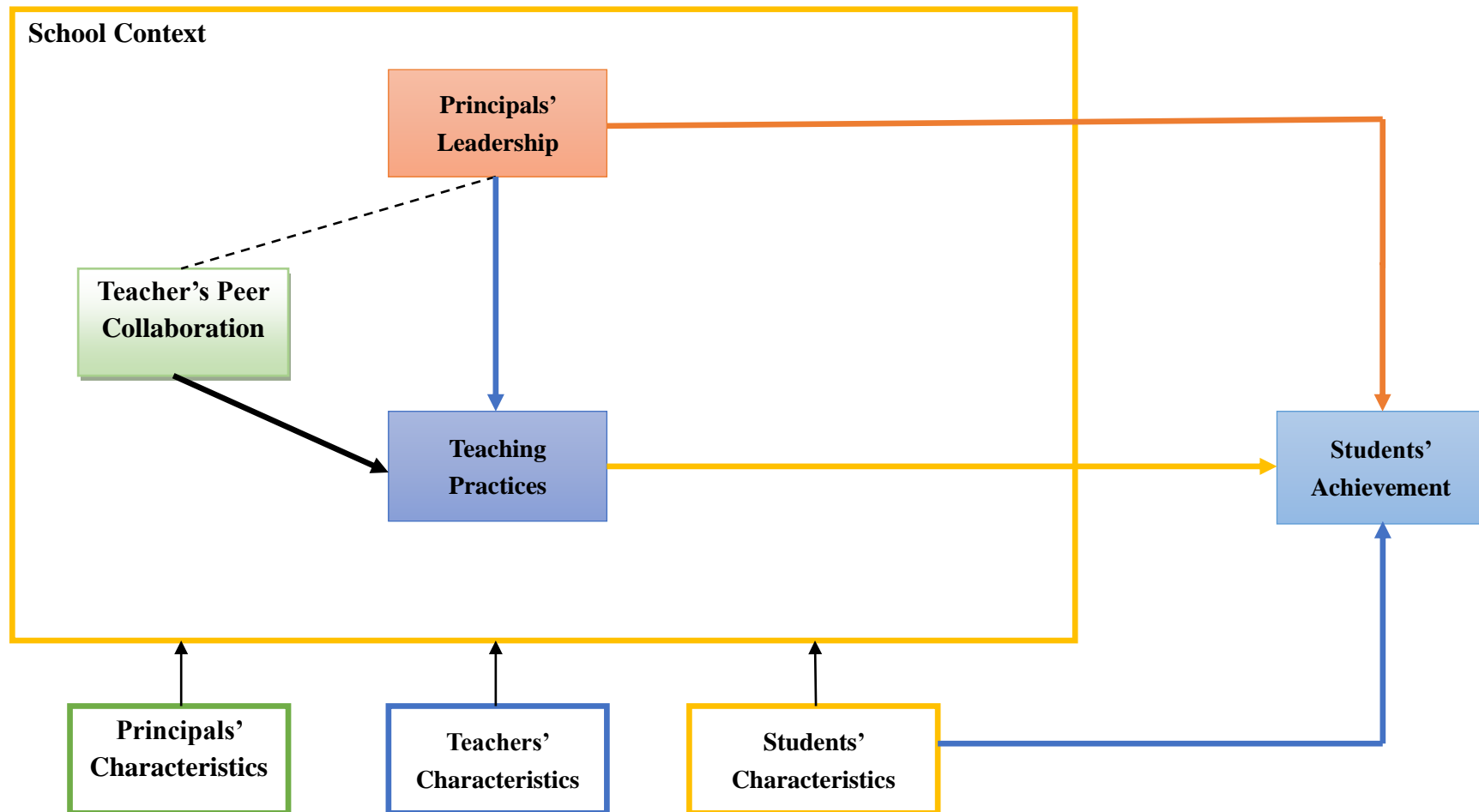
Source: Elaborated by the author using
multiple sources

Figure 1 presents the study's conceptual framework, which highlights the relationships among various factors that may influence students' achievement.

4.1.3 Analytic Approaches

This section describes the proposed analytic methods or strategies for analyzing the data that answer the study's research questions. As indicated earlier, this study examines the effects of school principals' leadership and teachers' teaching practices on students' achievement when controlling for other variables. In order to examine the extent of which the effects of these factors on the outcome variable, it is necessary to take into account the nature of the data (students' achievement) that are nested or structured into different levels (students are nested in class, and classes are nested in school). In this case, students' achievements are not independent observations. Fortunately, the Multi-level Modeling (MLM) analysis is one among many developed to address non-independence observation issues.

Therefore, this study employed the MLM to examine the relationships between school principals' leadership and teachers' teaching practices on students' achievement. In addition, multiple linear regression, thematic analysis, and document review methods were employed to analyze the third research question of how school principals influenced teachers' teaching quality in primary schools of Phnom Penh, Cambodia.

The detail of each analytic method will be presented in Chapters 5 and 6 accordingly.

4.2 Research Site

In this section, the selection of the research site will be presented. Phnom Penh was purposefully chosen as the research site for this study. The study focuses on the sixth-grade

level, the final year of primary education. First, Phnom Penh, Cambodia, is seeing a new urbanization trend. Due to this trend, the city's population expanded from 2,614,027 in 2008 to 6,135,194 in 2019, with Phnom Penh being the one with the highest population density (Ministry of Planning 2020: 14). Increased urbanization and industrialization have made emigration increasingly complicated. This complicated social and economic development picture may impact the country's educational development, affecting both the supply and demand for education spending.

Another rationale is that access to, and quality of education becomes more challenging and competitive among students who reside in and migrate to cities. The socio-economic growth of households in this city has altered dramatically, resulting in a disparity in learning opportunities and investment in their children's education. While there was declined in the Net Enrolment Rate at public primary schools, particularly in the urban areas, the number of children enrolled in private primary schools increased (No & Sok, 2022: 32), which may also affect educational development in primary education. Diverse students from various backgrounds characterize schools, and this complex picture may, to some extent, explain the learning and achievement of primary school students.

Finally, due to the limited timeframe and financial constraints for data collection, the researcher chose this capital city as the research site.

4.3 Sampling Techniques

A multi-stage random technique was used to determine the research participants. Firstly, the list of primary schools used in this study was obtained from the Department of Education Management Information System (EMIS) of MoEYS. This informed the sampling, which was targeted at the primary school population. Random selections were

conducted in two stages. This study included 38 primary schools out of 164 as the first random selection (**Table 1**) (MoEYS, 2017b). The Probability Proportionate to Population Size was utilized as the selection criteria by calculating each district's school proportion against the overall school population and treating it as the baseline (Network Afrobarometer 2017: 30). This sampling approach gave the researcher a more precise picture of the diversity of school features.

Table 1 Results of Two-stages Random Sampling Selections

No.	District	No. of schools per district	No. of selected schools per district	No. of selected sixth-grade classes per district
			1st stage	2nd stage
1	7 Makara	4	1	1
2	Chamka Mon	13	3	5
3	Chba Ampov	20	5	6
4	Chroy Changva	17	4	5
5	Dangkor	25	6	7
6	Daun Penh	8	2	4
7	Mean Chey	9	2	4
8	Po Sen Chey	30	7	8
9	Prek Phneuv	13	3	5
10	Reusey Keo	7	1	1
11	Sen Sok	10	2	4
12	Tuol Kok	8	2	4
	Total	164	38	54

Source: Author's Calculation.

The entire proportions of the random selections of the sample schools accounted for around 23% of the entire population of primary schools in the capital city of Phnom Penh. The second stage involved selecting two sixth-grade classes from each school using a basic random selection technique. However, where the school had only one sixth-grade class, it was automatically chosen.

4.4 Research Instruments

This study employed questionnaires as the main tool for the investigation. A survey questionnaire is often used in the research, which can be administered by mail or face-to-face (Cresswell, 2012). In addition, this study's survey questionnaires consisted of closed-ended and open-ended questions aimed at understanding the patterns resulting from statistical findings and how these findings can be complemented with the qualitative data.

In the closed-ended questions, the researcher collected the background characteristics of the respondents, school-related information, and their perceptions of school principals toward the leadership, teaching practices, and peer collaboration of which the main targeted groups to answer these scales are teachers. Besides these closed-ended question item scales, some open-ended questions were developed to acquire the perspectives of teachers and school principals on what factors contribute to improving the quality of teaching and teachers' development. The details of each instrument can be found in the appendices of the dissertation (**Appendices D, E, and F**).

4.5 Data Collection

The survey's data collection was conducted from February 26 to March 14, 2020. After obtaining approval from the dissertation committee, the researcher contacted the officials at the MoEYS of Cambodia to submit the official request for school visits. The researcher obtained permission to conduct the instrument pilot test at one public primary school in Phnom Penh. A slight modification of the instruments was made. In addition, the researcher contacted the school administrators (principals) in advance to confirm the days of the official school visits to make them ready for participation and avoid any uninformed absence. Then, the official data collection was started. The researcher and one enumerator

invited the targeted respondents from each school (sixth-grade teachers and school principals to complete the survey questionnaires. In addition, students who presented during the school visit were also invited to complete a separate survey questionnaire. The instrument for teachers and school principals took about 30-35 minutes, while the students' survey questionnaire took about 20-25 minutes.

All targeted primary schools were visited for data collection. Fifty-four sixth-grade teachers from 38 sample schools participated in the survey. **Table 2** presents the characteristics of sample schools. As shown, the numbers of student enrolment and the teaching staff varied from school to school. These gaps in student enrollments may be critical issues contributing to the learning environment and school management at the primary schools in Cambodia.

Table 2 Sample Schools' Characteristics

Variables	Description	Mean	Std	Min.	Max.
Schools (N = 38)					
Total classes	Number of classes per school	18.95	18.048	6	86
Enrolled students	Total student enrollment from Grade 1 to 6	796.45	825.731	100	3720
Total teaching staff	Number of teaching staff per school	20.16	19.928	5	98

Source: Author's Calculation.

4.6 Data Description and Measurements

In the following sub-sections, data description and measurements will be presented as (1) Quantitative data analysis and (2) Qualitative data analysis.

4.6.1 Quantitative Data

The following sections present the variables that were included in this research study.

4.6.1.1 Students' Achievement

The '*Achievement*' in this study refers to the outcomes of students' learning assessment at the classroom level, which was conducted monthly. The classroom-based learning assessments measured the students' knowledge and ability that reflect on the subject matters in the curriculum. These monthly test achievements are a necessary means for teachers and schools to gauge the progress of students' learning and are used to modify the instructional practices of the teachers and schools' development and planning. It results from the accumulated cognitive knowledge acquired from the previous learning experience. It can be an indicator that reflects commitment and motivation in students' learning. In addition, the test achievement from the monthly assessments could be vital evidence used by the teachers to evaluate students' learning progress, reflecting the standard of the school curriculum.

The researcher obtained the monthly test achievements of the students of the teachers who participated in this study. In addition, these monthly test scores were used as a dependent variable (continuous variable). These test results mainly assessed the students' knowledge of the subject studies of the primary school curriculum, including Khmer language, Mathematics, Social studies, Science, and other minor subjects. They were developed and designed by the sixth-grade teachers to assess their students' learning.

4.6.1.2 Students' Characteristics

This study involved sixth-grade students at the primary schools in Phnom Penh, Cambodia. The students' background information, characteristics, and basic learning attitudes were collected.

The age of students is important. Although all children must be enrolled in grade 1 of primary education by age 6, some children, particularly those from disadvantaged or poor

socioeconomic status families, tended to enroll late and were likely to repeat grades or drop out of school at a young age.

Late school enrolment and multigrade repetition are typical in primary education in many developing countries like Cambodia, which negatively impacts student performance and achievements later in education (MoEYS, 2016b: 19-21; Song, 2012: 84).

Despite the improved gender parity in primary education, the achievements of male and female students in the assessments were not consistent (Song, 2012: 81). In addition, the results of the National Assessment in Grade 6 indicated that female students tended to outperform in the test assessment compared to their male counterparts, particularly in Khmer language (MoEYS, 2016b: 19).

Parental education was a variable used to represent a family's socio-economic status characteristics, which highly correlated to family incomes (Sirin, 2005: 419). Parental education is an element of the student characteristics that reflects the family's attitudes and beliefs towards schooling, which affects student achievement (Ma & Klinger, 2000: 51).

Besides, students' attitude toward reading is also included in this study. Reading or independent reading can be called differently as "*voluntary reading, spare time reading, reading outside of school, leisure reading and recreational reading*"(Cullinan, 2000: 1). Reading can happen depending on personal interest, available time, places to read, using different sources, and their preference of what to read (Cullinan, 2000: 1). The self-reported frequency of reading may not be accurate, but it could be useful for understanding the students' attitudes towards reading which might be an important indicator for learning.

Therefore, this study included five indicators representing the students' characteristics as subjects to be included in the analysis as the controlled variables.

4.6.1.3 Teacher Quality

Teacher quality refers to teacher education, experience, professional development, and self-efficacy (Nilsen & Gustafsson, 2016: 5), and these variables of teacher quality are not always measured in one study. There is no clear relationship between teacher quality and students' achievement in various school contexts. Hence, this study included two teacher quality variables as covariants of school characteristics for analytical purposes. Teachers' education was measured using the last educational qualifications teachers obtained from accredited educational institutions and treated as a dummy variable (1 = College education or above; 0 = Otherwise). Teaching experience refers to the number of years teachers stayed in a teaching position at a particular primary school.

4.6.1.4 School Principals' Leadership

Effective principals are the critical and central components of school effectiveness. The characteristics and behaviors of school leadership are the influential factors that directly and indirectly affect the quality of teaching and students' learning and achievement. In addition, the leadership and management of school principals may be the key catalyst in promoting teachers' motivation and ensuring the quality of instructional practices, thus enhancing students' learning opportunities and outcomes. Principals who demonstrate high levels of leadership competencies emphasize their commitment to achieving the goals to promote learning outcomes by improving students' performance in the standardized test scores and consequently lowering the risk of student disengagement (Wang & Degol, 2016: 326). Therefore, it is necessary to understand how school principals effectively use their leadership to change the school quality and outcomes in the context of primary school in Cambodia.

Six-item variables were developed and designed using 4-point Likert scale format (1 = Strongly Disagree; 2 = Disagree; 3 = Agree; 4 = Strongly Agree) to measure the principals' school leadership from teachers' perspectives.

4.6.1.5 Teaching Practices

Classroom teaching and monitoring practices cover various aspects of the teaching cycles. Understanding how teachers perceive their teaching practices is important. The Frequent Monitoring of Student Progress scale was partially adapted from the Teacher Effectiveness Survey in Thomas Stacy Doyal's dissertation (2009: 112). The Frequent Monitoring of Student Progress scale was developed as a School Effectiveness Questionnaire and originally consisted of eleven items written on the 5-point Likert scale. However, in this study, the researcher modified the scales of the survey instruments from 5-point Likert scales to 4-point Likert scales to fit the contexts of primary schools in Cambodia. Thus, being able to capture three areas of classroom practices, including (1) *How student performances are monitored:* the frequencies and methods used to assess and evaluate the progress of student learning (items: 1; 2; 8); (2) *How assessment data was utilized for teaching improvement:* refers to the usage of the assessment and evaluation results for improving the instructions (items: 3; 5; 7); and (3) *How relevant stakeholders are informed about the learning progress of their classroom* refers to the connection between classroom instructors with key agents such as the student themselves, school members, parents or community (items: 4; 6).

4.6.1.6 Peer Collaboration

'Peer collaboration' is one of the important indicators that represents how much

teachers are actively involved in the professional learning and engagement among their teaching peers at schools. Teachers were asked to rate themselves for the frequency of engagement among their peers in collaborative work over the last month before completing the survey. This question consisted of five answer choices (1 = Never, 2 = Once a month, 3 = 2-3 times per month, 4 = 4-5 times per month, and 5 = More than 5 times per month).

4.6.1.7 Class Size

Class size is an important indicator of school inputs used to measure the quality of learning environment at schools which impacts the quality of classroom instructions and student achievement. In Cambodian primary schools, class size has long been the issue hindering the quality improvement of primary education. For instance, Cambodian classrooms have the largest average number of students compared with other countries in East Asia at 51:1 (Benveniste et al., 2008: iv). Despite the government's initiatives to improve the classroom environment, the pupil-teacher ratio in 2017-2018 was 61:1 and was reduced to 44.8:1 by 2020-2021. The urban primary schools experienced a lower ratio than the rural schools (Benveniste et al., 2008). This study used class size as one of the controlled variables for data analysis.

4.6.1.8 School Principals' Characteristics

Gender and years of leadership experience of principals were included in the current study. The leadership positions in primary schools in Cambodia are male-dominant. According to Benveniste et al. (2008), in 2004, female school principals comprised only about 7.5 percent of primary education, slightly increasing from the 6.5 percent in 1998. The small proportions of female leaders were most likely to be in urban areas.

This study measures the gender of the school principal as the dummy variable (1 = Male; 0 = Otherwise). Another indicator of school principals' characteristics is the number of years in a leadership position.

Table 3 presents the description of the variables in this study.

Table 3 Description of the Key Variables

Variables	Description	Measure
Students' Achievement	Monthly test achievement is assessed based on the primary school curriculum	Scale
Student-level variables		
--Student's Age	In year	Scale
--Students' Gender	1 = Male	Nominal
	0 = Female	
--Repetition Experience	1 = Repeated in any grade	Nominal
	0 = Otherwise	
--Parental Education	Latest Education Level of Students' Parents (Father or Mother)	Nominal
--Reading habit at home per week	Frequency of reading at home	Nominal
Class-level Variables		
--Teacher Education	1 = College certificate	Nominal
	0 = Otherwise	
--Teacher Experience	In year	Scale
--Class Size	Number of students per class	Scale
--Teaching Practices	Teachers' Teaching Practices (Eight items)	Four-point Likert scale (Ordinal)
--Principals' Leadership	School Principals' Leadership (Six items)	Four-point Likert scale (Ordinal)
--Peer Collaboration	Frequency of teachers' interaction with peers for professional purposes	Scale
School-level Variables		
--School Principal's Gender	1 = Male	Nominal
	0 = Otherwise	
--School Principals' Year of Experience	In years	Scale

Source: Author.

4.6.2 Qualitative Data

Within the survey questionnaire, the researcher also includes some open-ended questions to understand further the school-related factors that influence the quality of teachers' teaching practices in primary schools in Phnom Penh, Cambodia. In addition, policy documents and regulations were also analyzed and reviewed to enrich the understanding of the research interest.

4.7 Research Ethics

This section presents the ethical consideration for the research. Before beginning to collect data from research participants, the researcher sought official authorization to collect field data from the academic committee, educational officials from Cambodia's central office of education, and permission from school managers (school principals, teachers, and students). Second, it assured that all participants and educational institutions involved were willing to participate on a volunteer basis. Furthermore, their names and identifiers were not underlined or revealed throughout the dissertation report. More crucially, the sixth-grade students participated in the survey with the approval of their school principals and teachers and their voluntary participation. Furthermore, the survey questionnaires were explicitly shown to the research participants about the purposes of data collection and how they would be used to write the research study.

The following chapters present the data analyses, results, findings, discussion, and concluding remarks.

CHAPTER FIVE: Effects of School Principals' Leadership and other School Factors on Students' Achievement

This chapter presents the results of data analyses using the multi-level model (MLM) strategy to address the issues of nested data (students' achievement) in relation to an array of factors ranging from individual characteristics of the samples, classroom environment and particularly the effects of school leadership and teaching quality from the perceptions of primary school teachers in Phnom Penh, Cambodia. As the nature of the students' achievement data is highly nested with institutional and household variables, the MLM technique appeared to be the most appropriate method to address the effects of the grouping issues and provided a straightforward way to partition the variance components into different levels. MLM analysis provides a comprehensive understanding of the relationship between a group of independent variables and the outcome variable, particularly when the data are partitioned into three levels which can avoid the overestimation in variance components and the problem of aggregation bias and statistical issues (Palardy & Rumberger, 2008: 115). The following sections provide the details of the descriptive results, analytic methods, results, and discussion.

5.1 General Descriptive Results

The details of the descriptive results of the data are presented in **Table 6** (**p. 84-85**).

Monthly test scores represented students' achievements in the classroom, which the teachers conducted every month. Fundamentally, teachers developed the test assessments to measure the students' learning ability which reflects what students learn based on the objectives and expectations of the curriculum. The overall scores of these monthly test achievements range from 0 to 10, meaning that students who get zero scores are considered poor and far behind the other students, while those who get ten can be identified as good

performers in the class. This study collected the classroom's monthly test achievements of students from their schools which were used as the dependent variable for this study. In total, 1878 students participated in the survey, and their average scores on the monthly tests ranged from 3.30 to 9.77 ($M = 6.7035$; $SD = 1. 2773$). The test assessments varied from teacher to teacher; however, the test developments may not be very different in difficulty levels since the gaps in students' achievement did not vary greatly as shown by the standard deviation. Nevertheless, in order to make a comparable gridline, these monthly test scores were standardized across schools and then used for the analyses ($M = 0$; $SD = 1$). This standardizing method would give us the grounds for school comparison because the test scores were collected as the raw data.

The descriptive results from 1,878 sixth-grade students involved in the survey showed that the ages of students ranged between 10 to 17 ($M = 12.54$; $Std = .986$). In addition, the results also revealed that 46.7 percent ($N = 869$) were male, with 53.3 percent female ($N = 1006$). Among those students, almost 20 percent had experienced repetition in previous grades before reaching grade 6. About 75 percent of the students' parents have completed their lower secondary education. The data showed that about half of the sampled students reported that they read books at home more than three times per week.

Among the 54 sixth-grade teachers, 55.6 percent ($N = 30$) were male and 44.4 percent ($N = 24$) were female. More than sixty percent of the sample teachers completed their latest education at Grade 12 or below, while the rest finished their education at the graduate level or above. According to the data, the teacher's average years of teaching experience was 16.50 ($SD = 10.320$), ranging from 1 to 36. Class size was ranged from 14 to 60 ($M = 38.85$; $SD = 10.526$).

Teachers reported their frequency of teacher engagement in professional collaborations in the sample schools. As the results indicated, 17 percent of the samples engaged with other teaching colleagues '*Once a month*' to discuss the student's learning difficulties and

teaching tasks. In comparison, 41.5 percent, 18.9 percent, and 22.6 percent participated in this activity '*2-3 times*', '*4-5 times*', and '*More than 5 times*', respectively.

In total, 38 principals representing the selected primary schools participated in the survey, of which 78.9 percent ($N = 30$) were male, and 21.1 percent ($N = 8$) were female. More than sixty percent of the sample principals had their education at Grade 12 completion, while nearly 40 percent held higher education degrees and above. According to the data, school principals' average years of leadership experience was 9.87 ($SD = 10.092$), ranging from 1 to 39.

Table 4 Mean, Standard Deviation, and Level of School Principals' Leadership

Variable/Statement	Mean	SD	Level
1. Principal has clear plans and a vision for enhancing the quality of teaching and learning.	3.51	.638	Very Positive
2. Principal allows teachers to take part in planning and evaluating the professional development activities.	3.49	.638	Positive
3. Principal is highly involved in the instructional process.	3.33	.615	Positive
4. Principal assumes leadership for improving the instructional program.	3.37	.624	Positive
5. Principal's leadership and ways of managing the school inspire the teachers.	3.33	.650	Positive
6. Principal has high initiatives on school activities that respond to student learning and achievement.	3.32	.635	Positive
Total	**3.39**	**.583**	**Positive**

Source: Author's Calculation.

As shown in **Table 4**, teachers rated the perception scale of the school principals' leadership behaviors items with variations in frequency. Overall, the mean of each item ranged from a high of 3.51 to a low of 3.32. Among these items, the most frequent rating item is No. 1 "*Principal has clear plans and a vision for enhancing the quality of teaching and learning*" ($M = 3.51$, $SD = .638$). The second highest rated score follows is No. 2

"*Principal allows teachers to take part in planning and evaluating the professional development activities*" (*M* = 3.49, *SD* = .638). However, the lowest rated item is No. 6 "*Principal has high initiatives on school activities that respond to student learning and achievement*" (*M* = 3.32, *SD* = .635). The interpretation of the school principals' leadership behaviors was based on the criteria proposed by Pornel et al. (2011 as cited in Pornel & Saldaña, 2013: 18), and the interpretation criteria for the four-point Likert scale were categorized into four groups: Very positive (M = 3.50-4.00), Positive (M = 2.50-3.49), Negative (M = 1.50-2.49), and Very negative (M = 1.00-1.49).

Figure 2 Scree Plot Representing the Eigenvalue of School Principals' Leadership
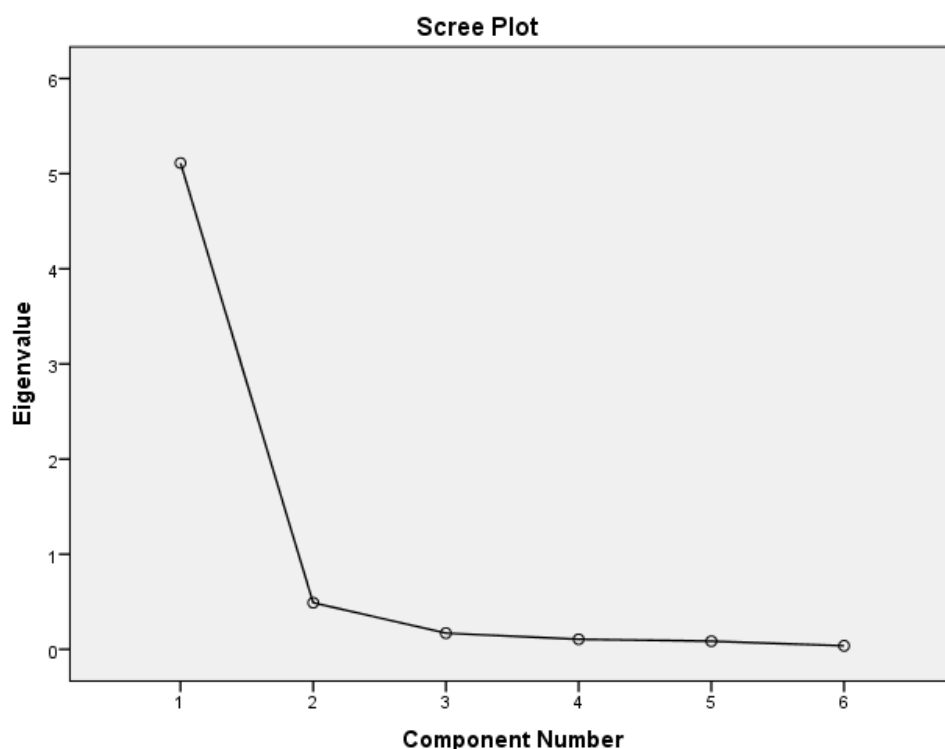
Principal Component Analysis (PCA) was used to obtain the factor(s) that explain the school leadership construct. The PCA's results indicated that these six items of school leadership behaviors were, therefore, loaded into one latent factor/component as shown in the scree plot (**Figure 2**) with the Kaiser-Meyer-Olkin Measure of Sampling Adequacy

at .855, X^2 = 16597.718, df = 15, $p <=$ .001. In addition, the initial eigenvalues equal 5.112, which the variance explains about 85.2 percent. Furthermore, Cronbach's alpha of the scale of the school leadership behaviors was .965. Finally, the factor score was obtained and used for data analysis.

As revealed in **Table 5**, teachers rated the perception scale of the frequent monitoring of student progress items with variations in frequency. The mean of each item ranged from a high of 3.56 to a low of 3.33. The most frequent rating item was no. 8, "*Students' works are assessed fairly.*" (M = 3.56, SD = .525).

Table 5 Mean, Standard Deviation, and Level of Teaching Practices

Variable/Statement	Mean	SD	Level
1. Student performance is regularly monitored.	3.49	.560	Positive
2. Student performance is monitored in a variety of ways.	3.33	.551	Positive
3. Assessment data are used to improve the school's program.	3.40	.588	Positive
4. Student progress is regularly reported to parents/guardians.	3.49	.528	Positive
5. Student assessment data are monitored to modify the instruction to promote learning	3.44	.524	Positive
6. Students are regularly informed of their progress.	3.51	.533	Very positive
7. Students are taught to apply basic skills in real life.	3.40	.533	Positive
8. Students' works are assessed fairly.	3.56	.525	Very positive
Total	**3.45**	**.561**	**Positive**

Source: Author's Calculation.

Two more items with the second highest scores were No. 4, "*Student progress is regularly reported to parents/guardians.*" (M = 3.49, SD = .528), and No. 6, "*Students are regularly informed of their progress*." (M = 3.51, SD = 524). However, the lowest rated item is No. 2, "*Student performance is monitored in a variety of ways*." (M = 3.33, SD = .551). In order to interpret the levels of perception, the criteria proposed by Pornel et al. (2011 as cited in Pornel & Saldaña, 2013: 18) were used as the standard condition for understanding

the four-point Likert scale. This was categorized into four groups: Very positive (M = 3.50-4.00), Positive (M = 2.50-3.49), Negative (M = 1.50-2.49), and Very negative (M = 1.00-1.49).

These items were analyzed using the Principal Component Analysis (PCA) to obtain the factor scores. The PCA's results showed that these eight items of teacher perception of Frequent Monitoring of Student Progress were loaded into one latent factor/component as shown in the scree plot (**Figure 3**) with the Kaiser-Meyer-Olkin Measure of Sampling Adequacy at .895, X^2 = 16616.633, df = 28, p <= .001. In addition, the initial eigenvalues equal 6.214, where the variance explains about 78 percent. Furthermore, the Cronbach's alpha of the Frequent Monitoring Student Progress scale was .959. The final factor scores of the Frequent Monitoring of Student Progress represented the "Teaching Practices" and were used for regression analysis.

Figure 3 Scree Plot Representing the Eigenvalue of Teaching Practices
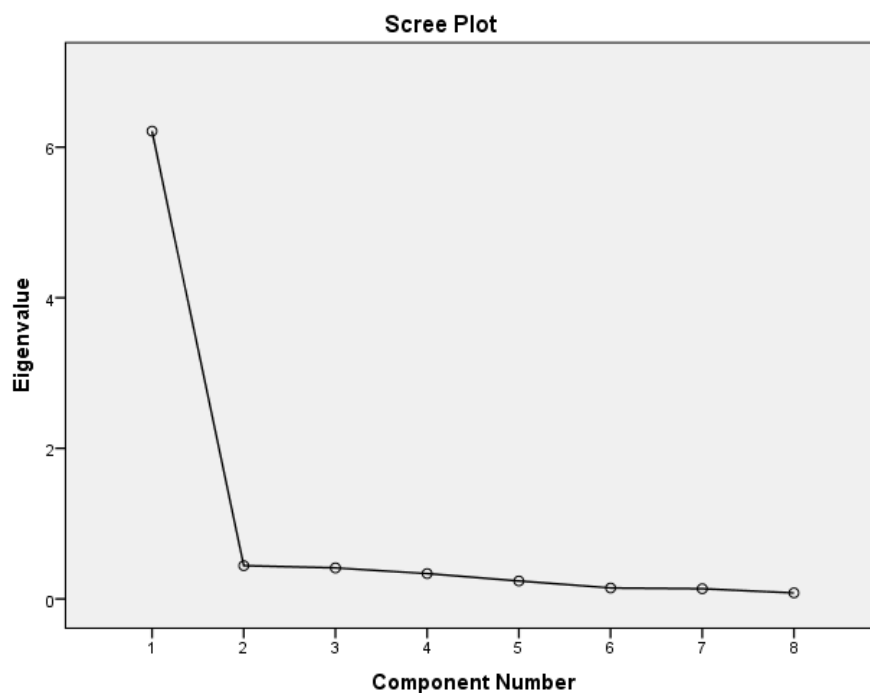
Table 6 Description of the Key Variables

Variables	Description	N	Mean	SD
Students' Achievement	Standardized scores of monthly test achievement		.000	1.000
Student-level Variables				
--Student's Age	In year		12.54	.984
--Students' Gender	1 = Male	(46.3%)		
	0 = Female	(53.7%)		
--Repetition Experience	1 = Repeated in any grade	(18.5%)		
	0 = Otherwise	(81.5%)		
--Parental Education	1 = No education	(3.9%)		
	2 = Attended primary school	(28.8%)		
	3 = Completed primary school	(17.9%)		
	4 = Attended lower secondary school	(13.0%)		
	5 = Completed lower secondary school	(10.2%)		
	6 = Attended upper secondary school	(8.7%)		
	7 = Completed upper secondary school	(13.7%)		
	8 = University education	(2.0%)		
--Reading habit at home per week	1 = Never	(4.5%)		
	2 = 1 to 3 times per week	(48.1%)		
	3 = 4 to 5 times per week	(24.8%)		
	4 = More than 5 times per week	(22.7%)		
Class-level Variables				
--Teacher Education	1 = College certificate	19 (37.3%)		
	0 = Otherwise	32 (62.7%)		
--Teacher Experience	In year		16.50	10.320
--Class Size	Number of students per class		38.85	11.526
--Peer collaboration	Frequency of teachers in engaging in teaching collaboration with their peers			
	1 = Never	0%		
	2 = Once a month	(17%)		
	3 = 2-3 times per month	(41.5%)		
	4 = 4-5 times per month	(18.9%)		
	5 = More than 5 times per month	(22.6%)		
--Teaching Practices	Principal component variable constituted of 8-item Likert scales (*Details*		.000	1.000

	explained in Chapter 4)			
--Principals' Leadership	Principal component variable constituted of 6-item Likert scales (*Details explained in Chapter 4*)		.000	1.000
School-level Variables				
--School Principal's Gender	1 = Male	44 (81.5%)		
	0 = Otherwise	10 (18.5%)		
--School Principals' Year of Experience	In years		11.17	10.386

Source: Author's Calculation.

5.2 Data Analytic Methods

5.2.1 Multi-level Modeling Technique

This section presents the analytic method that answers research objectives 1 and 2. First, the Multi-level Modeling (MLM) technique is also known as Hierarchical Linear Modeling (HLM) or multilevel regression models, or linear mixed-effects models (Pituch & Stevens, 2016). Students' achievement is the outcome of the students' learning which results from the interactive process between students and teachers. Students who share the class/teacher with others in the same school tend to have similar learning performance or achievements compared to those who study in different classes with different teachers or even in different schools. Therefore, the current study employed the MLM strategy to examine the factors that explain students' achievement at primary schools in Phnom Penh, Cambodia, which may address the problem of nonindependence of observation (students being nested in class and classes are nested in school). Comparing students' learning achievements from different socio-economic backgrounds and classes and school contexts may provide a complex but interesting picture of what factors determine performance in different school contexts. In addition, the data can measure the relationship of the variables at different levels and observe the mean differences in students' achievement (Tan, 2018: 28). This approach is the most applicable to model the nonindependence of observation directly; for example, where students are selected from classes or schools. The following models were developed to

examine the variance in students' achievement explained by the variables at different levels. However, using a single-level regression to estimate students' achievement may be misleading and produce biased estimation results (Flora, 2018: 164-165; Raudenbush et al., 2004 as cited in Kreng, 2014: 113-114) and disregard the importance of group-level variables (Pike et al., 2011 as cited in Kreng, 2014: 114).

5.2.2 Identification Strategy

When analyzing the data using the MLM technique, it starts with the estimation of the variability attributes to individuals (Level 1), classes (Level 2), and schools (Level 3) by testing the null/unconditional model on students' achievement as the outcome variable. In this null model estimation, no predictor was allowed to enter the model, and only the "Intercept" of the variances in students' achievement at the three levels was observed. In addition, by evaluating the chi-square tests of the between-class and between-school variance components of Level 2 and Level 3 in students' achievement, it was necessary to employ the Hierarchical Linear Modeling (HLM) for the model estimations (Raudenbush et al., 2004 and Pike et al., 2011 as cited in Heng, 2014: 115). Intra-class Correlation Coefficient (ICC) was calculated to examine the extent to which cluster variances exist in this hierarchically structured data. The more the variance estimation of the ICC, the more it increases the necessity to use the MLM technique (Meyers et al., 2013: 226; Pituch & Stevens, 2016: 540). The current study used students' achievement as the outcome variable to examine the functions of groups or cluster variations between students, classes, and schools when there is no predictor variable. The following equations (1), (2), and (3) represented the null model.

Level-1 (1)
$$Y_{ijk} = \pi_{0jk} + \varepsilon_{ijk}$$
Level-2 (2)
$$\pi_{0jk} = \beta_{00k} + r_{0jk}$$
Level-3 (3)

$$\beta_{00k} = \gamma_{000} + \mu_{00k}$$

where Y_{ijk} represents the academic achievement of student i in class j and school k; π_{0jk} refers to the intercept for students in class j and school k; ε_{ijk} is the residual of student i's deviation from π_{0jk}; β_{00k} refers to the average intercept across classrooms, r_{0jk} refers to classroom j's deviation from β_{00k}; γ_{000} is the average intercept across schools, and μ_{00k} refers to the school k's deviation from γ_{000}.

Building on the results of the null model, six subsequent model estimations were specified by including the class-level and school-level contextual factors to examine the effects on students' achievement.

Model 1 observed the changes in student achievement variance when considering the effects of the students' characteristic variables. **Model 1** was developed to evaluate the effects of student-level information (students' age, gender, repetition, parental education, and reading habit) on students' achievement. This is represented by the following equations (4), (5), and (6).

Level-1 (4)

$$Y_{ijk} = \pi_{0jk} + \pi_{1jk} \text{ (Age)} + \pi_{2jk} \text{ (Gender)} + \pi_{3jk} \text{ (Repetition)} + \pi_{4jk} \text{ (Parental education)} + \pi_{5jk} \text{ (Reading habit)} + \varepsilon_{ijk}$$

Level-2 (5)

$$\pi_{0jk} = \beta_{00k} + r_{0jk}$$

Level-3 (6)

$$\beta_{00k} = \gamma_{000} + \mu_{00k}$$

Model 2 examined the effects of school principals' leadership on students' achievement when considering the effects of students' characteristic variables. This model was represented by the following equations (7), (8), and (9).

Level-1 (7)

$$Y_{ijk} = \pi_{0jk} + \pi_{1jk} \text{ (Age)} + \pi_{2jk} \text{ (Gender)} + \pi_{3jk} \text{ (Repetition)} + \pi_{4jk} \text{ (Parental education)} + \pi_{5jk} \text{ (Reading habit)} + \varepsilon_{ijk}$$

Level-2 (8)

$$\pi_{0jk} = \beta_{00k} + \beta_{01k} \ (PL) + r_{0jk}$$

Level-3 (9)

$$\beta_{00k} = \gamma_{000} + \mu_{00k}$$

Note: PL = School principals' leadership

Model 3 estimated the effects of class-level factors (school principals' leadership, teacher education, teaching experience, squared teaching experience, and class size), and school-level factors (gender of school principals, years of leadership experience principals, and squared years of leadership experience of principals) by controlling for student-level variables. This model was constructed based on the following equations (10), (11), and (12).

Level-1 (10)

$$Y_{ijk} = \pi_{0jk} + \pi_{1jk} \ (Age) + \pi_{2jk} \ (Gender) + \pi_{3jk} \ (Repetition) + \pi_{4jk} \ (Parental \ education) + \pi_{5jk} \ (Reading \ habit) + \varepsilon_{ijk}$$

Level-2 (11)

$$\pi_{0jk} = \beta_{00k} + \beta_{01k} \ (PL) + \beta_{03k} \ (T\_Edu) + \beta_{04k} \ (T\_Exp) + \beta_{05k} \ (T\_Exp\_Square) + \beta_{06k} \ (Class\_size) + r_{0jk}$$

Level-3 (12)

$$\beta_{00k} = \gamma_{000} + \gamma_{001k} \ (SP\_Gender) + \gamma_{002k} \ (SP\_Exp) + \gamma_{003k} \ (SP\_Exp\_Square) + \mu_{00k}$$

Note: PL = School principals' leadership; T_Edu_dummy = Teacher's education level; T_Exp = Years of teaching experience; T_Exp_Square = Square of years of teaching experience; SP_Gender = Gender of school principal; SP_Exp = Years of leadership experience of school principal; SP_Exp_Squ = Square of experience of the school principal in the leadership position.

Model 4 examined the effects of teaching practices on students' achievement when considering the effects of students' characteristic variables. This model was represented by the following equations (13), (14), and (15).

Level-1 (13)

$$Y_{ijk} = \pi_{0jk} + \pi_{1jk} \ (Age) + \pi_{2jk} \ (Gender) + \pi_{3jk} \ (Repetition) + \pi_{4jk} \ (Parental \ education) + \pi_{5jk} \ (Reading \ habit) + \varepsilon_{ijk}$$

Level-2 (14)

$$\pi_{0jk} = \beta_{00k} + \beta_{01k} \ (TP) + r_{0jk}$$

Level-3 (15)

$$\beta_{00k} = \gamma_{000} + \mu_{00k}$$

Note: TP = Teaching Practices

Model 5 predicted the influences of class-level factors (teaching practice, teacher education, teaching experience, squared teaching experience, and class size), and school-level factors (gender of school principals, years of leadership experience principals, and squared years of leadership experience of principals) by controlling for student-level variables. Model 4 was represented by the following equations (16), (17), and (18).

Level-1 (16)

$$Y_{ijk} = \pi_{0jk} + \pi_{1jk} \text{(Age)} + \pi_{2jk} \text{(Gender)} + \pi_{3jk} \text{(Repetition)} + \pi_{4jk} \text{(Parental education)} + \pi_{5jk} \text{(Reading habit)} + \varepsilon_{ijk}$$

Level-2 (17)

$$\pi_{0jk} = \beta_{00k} + \beta_{02k} \text{(TP)} + \beta_{03k} \text{(T\_Edu)} + \beta_{04k} \text{(T\_Exp)} + \beta_{05k} \text{(T\_Exp\_Square)} + \beta_{06k} \text{(Class\_size)} + r_{0jk}$$

Level-3 (18)

$$\beta_{00k} = \gamma_{000} + \gamma_{001k} \text{(SP\_Gender)} + \gamma_{002k} \text{(SP\_Exp)} + \gamma_{003k} \text{(SP\_Exp\_Squ)} + \mu_{00k}$$

Note: TP = Teaching practices; T_Edu = Teacher's education level; T_Exp = Years of teaching experience; T_Exp_Square = Square of years of teaching experience; SP_Gender = Gender of school principal; SP_Exp = Years of leadership experience of school principal; SP_Exp_Squ = Square of experience of the school principal in the leadership position.

5.3 Results and Discussion

5.3.1 Grouping Effects

Table 7 presents the results of the null model on students' achievement to see the variability in student achievement that was attributable between students, classrooms, and schools.

The null model's results indicated that all variance components were statistically significant in which the variance at the between-student was about 87 percent ($SE = .0287$; $p < .001$), between-classes about 6 percent ($SE = .0286$; $p < .05$), and between-schools about 7 percent ($SE = .0366$; $p < .05$).

Table 7 Variability in Students' Achievement

Unit of analysis	Variance Explained	Proportion of the Variance Explained %
Between-students variance (N =1878)	.869793	87[A]
Between-classes variance (N = 54)	.063113	6[B]
Between-schools variance (N = 38)	.073260	7[C]

Note: A. Proportion of the variance explained = .869793/(.869793+.063113+.073260);

B. Proportion of the variance explained = .063113/(.869793+.063113+.073260);

C. Proportion of the variance explained = .073260/(.869793+.063113+.073260)

Source: Author's calculation.

The Intra-class Correlation Coefficient (ICC) of the null model showed that students' achievement was largely explained by the learners' contributions, which is not surprising. Nevertheless, the percentage of the variability combined between class and school was about 13 percent, which falls into a percentage that requires further investigation of the higher level of factors (class and school) that may affect students' learning achievement. The results of the null model analysis in the current study provided substantial evidence that the proportions of variances combined between class and school levels mattered in explaining the differences in students' achievement. The substantial group observations within Level-2 and Level-3 units can be justified using the multi-level model technique.

The following subsections present the findings based on the results of the MLM on students' achievement.

5.3.2 Effects of Students' Characteristics on Students' Achievement

As **Table 11** (**p. 104-105**) indicates, students' age, gender, and repetition negatively correlate with students' achievement.

First, older students tended to perform poorly in the tests compared to younger ones [Model 1 (π_{1j} = -.133, p <= .001); Model 2 (π_{1j} = -.135, p <= .001); Model 3 (π_{1j} = -.118, p <= .001); Model 4 (π_{1j} = -.133, p <= .001); and Model 5 (π_{1j} = -.115, p <= .001). In addition, younger students performed better in classroom tests than older ones. In Cambodia, students

are mandated to enroll in primary schools at 6. However, according to the National Statistics on Education, almost 9 percent of children enrolled at primary schools in Phnom Penh alone in the academic year 2018-2019 were identified as over-age children (MoEYS, 2019c: 20).

The experience of grade repetition is linked to poor performance in the test so compared to those who had never repeated any grade level [Model 1 (π_{3j} = -.273, p <= .001); Model 2 (π_{3j} = -.272, p <= .001); Model 3 (π_{3j} = -.285, p <= .001); Model 4 (π_{3j} = -.274, p <= .001) and Model 5 (π_{3j} = -.286, p <= .001).

Moreover, this finding was aligned with Cambodia's Sixth-grade Students' National Learning Assessment results. It indicated that students who have experienced repetition get lower scores on achievement tests compared to those who did not (MoEYS, 2016b: 57). Marshall et al. (2012) suggested that the age of students should be interpreted carefully (p. 124).

Grade repetition and school dropout are a great concern in Cambodian primary schools (Shuttleworth & Shuttleworth 2017: 8). The SEAPLM report showed that school repetitions among children in four of the six countries surveyed negatively affected learning performance (UNICEF & SEAMEO, 2020: 65).

Regarding gender issue in learning achievement, female students seemed to outperform their male peers [Model 1 (π_{2j} = -.495, p <= .001); Model 2 (π_{2j} = -.496, p <= .001); Model 3 (π_{2j} = -.499, p <= .001); Model 4 (π_{2j} = -.495, p <= .001) and Model 5 (π_{2j} = -.500, p <= .001). As suggested by the findings, female students outperformed their male counterparts in test achievement, which is consistent with previous research, for example, Song (2012). Promoting student enrollment, particularly for female students, has been given greater attention recently, and these students may pay more attention to their studies. However, Song (2012b) added that despite the high performance of female students compared to males, these girls, unfortunately, seemed to quit school at an early stage.

However, parental education positively and significantly predicted student achievement [Model 1 ($\pi_{4j} = .030$, $p <= .05$); Model 2 ($\pi_{4j} = .029$, $p <= .05$); Model 3 ($\pi_{4j} = .033$, $p <= .05$); Model 4 ($\pi_{4j} = .030$, $p <= .05$) and Model 5 ($\pi_{4j} = .034$, $p <= .05$). Parental education is an important home resource for children's learning and achievement. This study's finding showed that the higher the parents' education level, the better the students' achievement. Parents who understand the value of education may provide a more supportive home environment for their children's learning with lots of encouragement. As a result, pupils may be more likely to stay in school, gain greater knowledge, perform well in class, and be less likely to drop out (No et al. 2012: 578). In addition, higher-educated parents tend to engage more in their children's education (Guryan et al., 2008: 23).

Finally, the self-reported reading attitudes of students revealed a positive relationship to students' achievement [Model 1 ($\pi_{5j} = .171$, $p <= .001$); Model 2 ($\pi_{5j} = .171$, $p <= .001$); Model 3 ($\pi_{5j} = .175$, $p <= .001$); Model 4 ($\pi_{5j} = .170$, $p <= .001$) and Model 5 ($\pi_{5j} = .174$, $p <= .001$). Reading is a learning-related activity that is important for mastering the concepts, knowledge, and classroom instructions. Students need to master their reading in order to answer the homework or assignment and to read the instructions in the textbook. In order to complete the homework, students need to read to understand what was assigned to do as the homework. Students who reported engaging in reading frequently seemed to increase their test scores. To put it simply, the more students read books at home, regardless of the types of reading, the better students perform in their test exams.

The goodness-of-fit test of all model estimations were indicated as well fitted except model 4 (-$2LL = 3341.549$; $\chi^2 = 1.402$; $p > .05$).

In conclusion, these findings highlighted the significant gaps in students' achievement that reflect the learning inequality among students with different background characteristics. Therefore, school interventions are needed to reduce the learning inequality and promote inclusive and equitable quality of learning for students in primary education.

5.3.3 Effects of School Principals' Leadership on Students' Achievement

Positive and significant effects of school principals' leadership on students' achievement were discovered in three consecutive **Models 2** and **3** (**Table 11, p. 104-105**). **Model 2** indicated that school principals' leadership significantly affects students' achievement ($\beta_{01k} = .125$; $p <= .05$) when the model was not controlled for class- and school-level variables. **Model 3** incorporated three-level controlled variables while observing the effects of school principals' leadership. The result revealed that school principals' leadership significantly predicts students' achievement ($\beta_{01k} = .188$; $p <= .01$).

The results of the two models indicated that the class's average students' achievement for teachers who scored high in school principals' leadership was relatively higher than those teachers who rated low on the school leadership scale, holding other variables constant. The goodness-of-fit test indicated that this model worked well ($-2LL = 2967.152$; $\chi^2 = 365.24$; $p <= .001$). These findings suggested that an increase in the school leadership behaviors scale was positively associated with improved average student achievement at class- and school levels. This means that improving school leadership would bring better students' achievement.

More importantly, the variations in students' achievement were reduced when the models incorporated additional class-level and school-level factors.

In addition, a pairwise correlation was analyzed and explored which types of leadership of school principals are likely to influence students' achievement in the context of primary schools in Phnom Penh, Cambodia. The results of the correlation are shown in **Table 8.**

Table 8 Correlation Matrix of the Each Dimension of Principals' Leadership and Students' Achievement

Variable	Students' Achievement
1. PL_1 Principal has clear plans and a vision for enhancing the quality of teaching and learning.	.043
2. PL_2 Principal allows teachers to take part in planning and evaluating the professional development activities.	.014
3. PL_3 Principal is highly involved in the instructional process.	**.046***
4. PL_4 Principal assumes leadership for improving the instructional program.	**.052***
5. PL_5 Principal's leadership and ways of managing the school inspire the teachers.	.032
6. PL_6 Principal has high initiatives on school activities that respond to student learning and achievement.	.034

Note: $* p <= .05$
Source: Author's Calculation.

"*Principal assumes leadership for improving the instructional program*" has a positive and statistical relationship with students' achievement ($r = .052$, $p <= .05$) (**PL4 in Table 8**). The correlation was small but subtle for consideration because it reflects school principals' leadership's significant contribution to students' learning outcomes. This suggests the significant influence of school leadership of principals in improving school's learning outcomes. It is justifiable when principals pay more attention to improving their schools' teaching quality. Improving school learning outcomes has been the focus of primary education through the practices of CFS policy. In addition, in the CFS policy, "Effective school leadership and management" are one of the key objectives for promoting the quality of education at primary schools in Cambodia. In order to promote the quality of school leadership, the MoEYS of Cambodia has recently issued the guidelines in the Child-Friendly School Operational Manual for School Management Committee (MoEYS, 2019c). These guidelines are aimed at providing a clear framework for leadership responsibilities

and tasks in order to promote the quality of learning through enhancing the curriculum implementations, including tracking this teaching quality, classroom materials, learning assessments, and student achievement (MoEYS, 2019c: 76-79), which in turn relate to achieving the school vision and the goals of the national education system. With these guidelines, school principals may have the ability and confidence to strengthen the quality of the schools' operations in response to the needs of the educational stakeholders, particularly the teachers and students.

Another leadership behavior that positively correlated with student achievement was the *"Principal is highly involved in the instructional process"* ($r = .046$, $p <= .05$) (**PL3 in Table 8**). As clearly identified in the school self-assessment and development tools, school principals should actively participate in classroom teaching and learning. The involvement of school principals in the instructional process may take two forms: formal and informal. The formal involvement in the instructional process may be mandatory classroom observation and inspections. Classroom observations or visits may allow school principals to understand better what support is needed and become aware of the challenges that teachers face. The leadership practices for improving the quality of the classroom experience in primary schools in Cambodia include internal quality improvement by conducting classroom inspections. This is a core activity to evaluate a teacher's performance and use the school-based in-service program as the key platform for teachers' professional development and learning. By conducting classroom observation and inspection, teachers can receive constructive feedback for improvement and identify their strengths as the key motivators (Jones, 2020: 163). The discussion and feedback from the school principals with teachers may gradually enhance their knowledge and their teaching and classroom management skills, ultimately improving the quality of students' learning and achievement. Therefore, it is an essential part of the role of school principals to promote teachers' reflection on their teaching and promote professional growth and development, which change teachers' attitudes and behaviors, and this directly links to the quality of

classroom instructions and, in turn, improve students' learning (Blasé & Blasé, 1999: 373-374). In addition, these practices conducted by principals make teachers and schools more accountable for their performances and outcomes (Benveniste et al., 2008: 82). However, a more systematic and consistent way of monitoring school progress is needed to provide teachers with professional development opportunities.

School principals may significantly impact students' achievement by overseeing and leading the curriculum coordination and planning process, thus promoting teachers' effectiveness (Robinson, 2007). School leaders can make a huge difference in students' achievement; as Robinson says, *'...the closer leaders are to the core business of teaching and learning, the more they are likely to make a difference to students.'* (p. 21).

Though only two school leadership variables were positively correlated with students' achievement, these two variables were positively and highly correlated with other dimensions of school leadership components. The correlation ranged from a highly moderate ($r = .670$) to high ($r = .955$). These variables may mutually reinforce each other.

In conclusion, as confirmed by Louis et al. (2010), principals' leadership behaviors that focus on classroom instructions may directly affect the quality of teaching but indirectly influence students' achievement through modifying teachers' classroom behaviors and creating a professional learning community (p. 329-330).

5.3.4 Effects of Teaching Practices on Students' Achievement

Teaching practices had no significant effect on students' achievement in **Model 4** (β_{02k} = .064; $p >= .05$) but positively predicted the class's average student achievement in **Model 5** ($\beta_{02k} = .129$; $p <= .05$) holding other variables constant (**Table 11, p. 104-105**). This means that the class's average students' achievement for teachers who scored high in teaching practices was .129 points higher than those who rated low. The results of the goodness-of-fit test showed there were statistically significant improvement (*-2LL* =

2968.962; $\chi^2 = 372.587$; $p <= .001$).

This current research's findings suggested that increasing the one-point scale of teaching and monitoring practices was positively associated with an improved average students' achievement. In addition, the coefficient of teaching practices seemed to be improved and significant when considering other class- and school-level factors, particularly school principals' leadership experience. Correlation analysis was further conducted to clarify which teaching practices affect students' achievement. As a result, four out of the eight-item variables were identified to be statistically correlated with student achievement, as shown in **Table 9**.

"*Students' progress is regularly reported to parents/guardians (**TP4 in Table 9**)*" was positively correlated with student achievement ($r = .076$, $p <= .001$). This practice was commonly used by Cambodian school teachers, particularly at the basic education level. Involving students' parents in the instructional process can be an effective practice that probably enhances not only the teacher-parent relationship and help parents/guardians pay more attention to their children's learning progress and increases teacher accountability. Reporting the students' progress to parents may be a practical strategy for School-Based Management policy and promote parental involvement to enhance school governance in primary schools. Teachers can also use the results of the assessments and monitoring of student learning and communicate this to the individual student and their parents. They are the key actors (demand sides) for quality improvement.

"*Assessment data are used to improve the school's program*" was positive with student achievement gains ($r = .065$, $p <= .01$) (**TP3 in Table 9**). Assessment data on students' learning progress and achievement can be a useful tool for helping school principals and teachers make strategic decisions and implement improved classroom instruction. School principals and teachers should cooperate in conducting regular learning assessments (formative and summative assessment forms), which will enable them to identify the

specific interventions that are the most appropriate and should be provided promptly.

"*Student performance is monitored in a variety of ways*" was also found to be positively correlated with student achievement ($r = .058$, $p <= .05$) *(TP2 in Table 9)*. Though there was no standard of monitoring and evaluation practices on students' learning at Cambodian primary schools, using one method to fit all students may not work and is recommended since students' ways of learning are different. Research shows that using multiple techniques to assess learning performance improves student achievement (Benveniste et al., 2008; MoEYS, 2016b; Song, 2015). Song (2015) observed the sixth-grade classes of primary schools in urban and rural areas to examine how teachers practice their teaching in the classroom. He found that where various methods were used in the class to present the lessons and classroom tasks, there were improved learning outcomes, particularly in classes where active student interaction was promoted (p. 152). Multiple teaching methods were associated with improved scores on Khmer language and Math tests (Benveniste et al. 2008: 72; MoEYS 2016b: 47). In addition, most teachers claimed they set homework and assignments for their classes for at least 3 to 4 days per week or even more than that (p. 71). Although giving students homework and assignments was regularly practiced, it may not work or stimulate students' learning interests or motivation. Instead, teachers should understand which methods or techniques best fit their student's learning needs and the situations of their classroom teaching. If not, students may become bored and lead to passive learning if teachers make the assessments in a poorly designed format that is unattractive or engages students in teaching.

"*Student assessment data are monitored to modify the instruction to promote learning*" was positively correlated with student achievement ($r = .053$, $p <= .05$) *(TP5 in Table 9)*. This result indicated a connection between the utilities of assessment data and students' achievements. This means that not only students who benefit from the diversity of learning assessment but also teachers who are the main practitioners may benefit greatly from the assessment data on teaching preparation and planning. OECD (2013) pointed out four

strategies of using a formative assessment that enable teachers to identify learners' learning needs and provide them with necessary learning support, which is believed to link to improved learning outcomes, including (1) To give feedback to students on a timely basis, (2) To support students to learn from mistakes and take risks in learning, and (3) To identify the needs of learners and modify the teaching, and (4) To engage students in the learning process more actively (p. 155). OECD (2013) highlighted that '*Assessment may support or diminish student motivation and performance depending on the way it is designed, implemented and used*' (p. 144).

Table 9 Correlation Matrix of Each Dimension of Teaching Practices and Students' Achievement

Variable	Students' Achievement
1. TP_1 Student performance is regularly monitored.	.023
2. TP_2 Student performance is monitored in a variety of methods.	.058*
3. TP_3 Assessment data are used to improve the school's program.	.065**
4. TP_4 Student progress is regularly reported to parents.	.076***
5. TP_5 Student assessment data are monitored to modify the instruction to promote learning.	.053*
6. TP_6 Students are regularly informed of their progress.	.027
7. TP_7 Students are taught to apply basic skills in real life.	.040
8. TP_8 Students' work is assessed fairly.	.075

* $p <= .05$, ** $p <= .01$; *** $p <= .001$
Source: Author's Calculation.

These results may conclude that teachers with positive attitudes towards their teaching practices will improve their students' learning and achievement at primary schools in

Phnom Penh, Cambodia. Positive attitudes and beliefs can lead to improved learning outcomes, but teachers must be flexible about which teaching practices are most appropriate for their classroom environment.

Therefore, it is necessary to be aware of what factors may enable teachers to promote their teaching quality and whether their teaching practices could be enhanced through school principals' leadership. Chapter 6 will be discussed the associations of school principals' leadership in promoting teachers' teaching practices in primary schools in Phnom Penh, Cambodia.

5.3.5 Effects of Teacher Quality on Students' Achievement

The following paragraphs will present the results on the effects of teacher quality on students' achievement. According to the MLM results in **Table 11** (**p. 104-105**), when controlled for other factors teachers' educational background was positive but insignificant [**Model 3** (β_{03k} = .028, p > .05)] and negative but also insignificant [**Model 5** (β_{03k} = -.032, p > .05)] in influencing students' achievement. This result indicates no discernible difference in students' achievement between teachers with lower- and higher-level education credentials. OECD (2014) argued that teaching at the primary school level might not require the specialized subset of subject knowledge but holistic professional development and education (p. 34).

Teaching experience, another variable of teacher quality, was also examined with students' achievement. Teachers' teaching experience was detected to have no significant effect on students' achievement. In addition, it should be noted that teaching experience was found to have a non-linear relationship with students' achievement. To interpret these results, both the coefficient of teaching experience (b_1) (β_{04k} = .024) and squared teaching experience (b_2) (β_{05k} = -.0008), were calculated using the formula [-b_1/(2*b_2)] or [-.024/(2*-.0008)], for example. A continuous year in the teaching profession ranged from 1 to 36

among the participants. As a result, teachers gradually improved their teaching effectiveness until they had been in post for **15** years when it began to decrease.

However, both the years of experience and squared years of experience in this study did not show co-efficiency with students' achievement. It implies that teachers gain more skills and knowledge through their teaching experience, thus raising students' learning performances. However, their effectiveness gradually declines when teachers reach a certain point in their teaching careers (in this case, 15 years).

The OECD (2014) reviewed research studies on the relationship between years of teaching experience and student achievement and found that years of teaching experience were crucially important for teachers during the first five years in the profession (p. 35). Prigent et al. (2016) conducted the focus group discussion with their research participants. They found that older teachers seemed reluctant to adopt changes proposed in the INSET program, remarking that "*In teachers' perception, long-experienced teachers are less inclined to apply the new things they learned. They are lazy to change*" (p. 52).

With lower pedagogical content knowledge, Tandon and Fukao (2015) found that teachers in the service struggled to identify the fundamental learning mistakes, which was the key to effective teaching (p. 105). Moreover, it is necessary to provide qualification upgrading programs for teachers with lower education levels, which limit their understanding and knowledge of curriculum and pedagogy.

Table 10 Correlation between teacher education and years of teaching experience

Variable	Years of Teaching Experience
Teacher's Education Level	-.074

Note: $p > .1$

Source: Author's Calculation.

As shown in **Table 10**, the correlations between teacher education and experience also supported the notion that teachers with longer experiences held a lower education level than

the younger ones. Many years in the teaching profession with a lower level of education may not contribute much to teaching and learning quality. Furthermore, back to the teacher training scheme over the last decades, senior teachers with lower education may find it difficult to master new concepts in the current educational and pedagogical theories and practices and be unable to overcome the challenges and constraints in the actual classroom.

5.3.6 Effects of Class Size on Students' Achievement

Larger class size seemed to correlate with a negative students' achievement **Model 3** ($\beta_{06k} = -.012$, $p <= .05$) and **Model 5** ($\beta_{06k} = -.010$, $p <= .1$) **(Table 11, p. 104-105)**. Apart from the school principals' leadership, class size significantly and constantly predicted student achievement, although the magnitude of the coefficient was small. Even though pupil-teacher ratios have been significantly reduced recently, class size remains a key challenge in enabling students to learn, affecting students' achievement. It may affect the teachers' classroom management, practices, and motivation toward teaching and learning. By conducting a meta-analysis on the effects of class size reductions on student achievement, Shin and Chung (2009) found that reducing class size has great significance in the primary sector (p. 3). In conclusion, class size may directly or indirectly influence the quality of classroom organization and environment, thus influencing the students' learning and achievement.

In chapter 6, there will be a discussion on the relationship between class size and teaching practices which can be the factors that directly influence students' learning outcomes.

5.3.7 Effects of School Principals' Characteristics on Students' Achievement

The characteristics of the school principals are important as they influence school

quality. This study observes the effects of two background characteristics of school principals on students' achievement in **Models 3** and **5 (Table 11, p. 105-106)**. Holding Level 2 and Level 1 factors constant, the gender of the school principal did not significantly predict student achievement.

However, the years of experience in school leadership positively influenced student achievement. It should be noted that years of experience in leadership initially exhibited a nonlinear effect on students' achievement; therefore, it was necessary to use quadratic regression or squared terms to tackle the issue. To interpret the non-linear effects as mentioned above, the researcher calculated the coefficients of both variables [years of leadership experience (b_1) (γ_{002k} = .073) and squared years of leadership experience (b_2) (γ_{003k} = -.002)] to apply using the formula [$-b_1/(2*b_2)$] or [$-.073/(2*-.002)$]. The results suggest school principals seemed to be most effective until they had achieved **18** years in service, and then there was a gradual decline; nevertheless, they may still perform better than the less experienced ones. School principals may lose motivation and commitment after being in the management post for quite a long time. Moreover, the lack or limited access to professional leadership training may affect the sustainability of their effectiveness in improving school outcomes.

More importantly, when introducing the school-level factors to the model estimations, the between-school variance in student achievement was reduced significantly. These findings may shed light on the discussions among educational policymakers about the effects of school quality factors on students' learning outcomes. School principals may be less effective since they have been appointed to the post for many years. Those years of experience mainly addressed school management issues on physical infrastructure rather than managing and leading teaching staff development and instructions.

Table 11 Results of Multi-level Models on Students' Achievement as the Outcome Variable

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Fixed effect					
Intercept	1.467(.353)**	1.490(.353)**	1.389(.454)**	1.468(.352)***	1.275(.454)**
Student-level variables					
--Age (π_{1j})	-.133(.027)***	-.135(.027)***	-.118(.028)***	-.133(.027)***	-.115(.028)***
--Gender (1 = Male) (π_{2j})	-.495(.048)***	-.496(.048)***	-.499(.051)***	-.495(.049)***	-.500(.051)***
--Repetition (1 = Repetition) (π_{3j})	-.273(.064)***	-.272(.064)***	-.285(.068)***	-.274(.064)***	-.286(.068)***
--Parental Education (π_{4j})	.030(.012)*	.029(.012)*	.033(.013)**	.030(.012)*	.034(.013)**
--Reading Habit (π_{5j})	.171(.027)***	.171(.027)***	.175(.028)***	.170(.027)***	.174(.028)***
Class-level variables					
--Principal's Leadership (PL) (β_{01k})		**.125(.054)***	**.188(.067)****		
--Teaching Practices (TP) (β_{02k})				**.064(.053)**	**.129(.056)***
--Teacher's Education (1 = College or above) (β_{03k})			.028(.095)		-.032(.107)
--Teacher's Teaching Experience (β_{04k})			.009(.019)		.016(.020)
--Teacher's Squared Teaching Experience (β_{05k})			-.0005(.0005)		-.0007(.0005)
--Class Size (β_{06k})			**-.012(.005)***		**-.010(.005)[#]**
School-level variables					
--School Principal's Gender (1 = Male) (γ_{001k})			-.004(.153)		.029(.150)
--School Principal's Years of Leadership Role (γ_{002k})			**.073(.023)****		**.069(.023)****
-- School Principal's Squared Years of Leadership			**-.002(.0006)****		**-.001(.0006)****

Experience (γ_{003k})

Random effect

--Between-Student Variance	.7023(.028)**	.7022(.028)**	.6998(.029)**	.7025(.028)***	.6997(.029)***
--Between-Class Variance	.0711(.035)*	.0473(.027)#	.0206(.020)	.0715(.036)*	.0314(.023)
--Between-School Variance	.0841(.045)*	.1015(.043)*	.0727(.035)*	.0764(.045)	.0617(.035)#

Model fit

--Deviance (-2LL)	3342.951[A]	3338.236[B]	2967.152[C]	3341.549[D]	2968.962[E]
--χ^2	1819.558***	4.715*	365.24***	1.402	372.587***
--AIC	3360.951	3358.236	3001.152	3361.549	3002.962

Note: N (Schools = 38; Classes = 54; Students = 1878); Cell value (Regression coefficient and standard error in brackets); # $p <= .1$, * $p <= .05$, ** $p <= .01$; *** $p <= .001$

'A'   Provided an improved model fit compared to the null model;
'B'   Provided an improved model fit compared to Model 1;
'C'   Provided an improved model fit compared to Model 2;
'D'   Provided an improved model fit compared to Model 1;
'E'   Provided an improved model fit compared to Model 4;

Source: Data collected, analyzed and calculated by the author.

5.4 Chapter Summary

The findings indicated that several major key factors influenced students' achievement at primary schools in Phnom Penh, Cambodia, including school principals' leadership, teaching practices, class size, and years of leadership experience of school principals. It can be concluded that students' achievement can be improved when considering the effects of the classroom environment and school contextual factors. In the next chapter, the results of how school principals' leadership influences teaching practices from quantitative and qualitative data are reported and then discussed.

CHAPTER SIX: Influences of School Principals' Leadership on the Quality of Teacher's Teaching Practices

This chapter examines the associations of school principals' leadership with teachers' teaching practices, which influence students' achievement in primary schools in Phnom Penh, Cambodia, based on quantitative and qualitative evidence. The following sections present each approach and are followed by the results and discussion.

6.1 Data Analytic Methods and Results

6.1.1 Quantitative Data Analysis

A multiple regression analysis was employed to analyze the quantitative data to examine the associations between school principals' leadership and teaching practices. Teaching practices were treated as the dependent variable in this analysis. Three model estimations were developed with the following equations.

Model 1 was created to observe the effects of school principals' leadership on teaching practices as the outcome variable held teacher's characteristics constant.

$$Y_1 = \beta_0 + \beta_1 \text{ (Teacher Education)} + \beta_2 \text{ (Teaching Experience)} + \beta_3 \text{ (PL)} + \varepsilon \qquad (19)$$

where Y_1 represents teaching practices; β_0 refers to the intercept; ε is the residual of teacher i's deviation from β_0.

Model 2 predicts the impacts of peer collaboration on teaching and monitoring practices when controlling for teacher qualities and school principals' leadership.

$$Y_1 = \beta_0 + \beta_1 \text{ (Teacher Education)} + \beta_2 \text{ (Teaching Experience)} + \beta_3 \text{ (PL)} + \beta_4 \text{ (Peer} \qquad (20)$$
$$\text{Collaboration)} + \varepsilon$$

Model 3 calculates the effects of class size on teaching practice while holding teacher

qualities, school principals' leadership, and peer collaboration constant.

$$Y_1 = \beta_0 + \beta_1 \text{ (Teacher Education)} + \beta_2 \text{ (Teaching Experience)} + \beta_3 \text{ (PL)} + \beta_4 \text{ (Peer} \quad (21)$$
$$\text{Collaboration)} + \beta_5 \text{ (Class Size)} + \varepsilon$$

Table 12 indicates the results of three models which measured the effects of school

principals' leadership on teaching practices.

Table 12 Standardized Regression Coefficients on Teaching Practice as the Outcome Variable

Variables	Model 1	Model 2	Model 3
Intercept	-.184(.253)	-1.507(.423)***	-.853(.483)#
--Teacher Education (1 = College) (β_1)	.085(.249)	-.094(.246)	-.074(.234)
--Teaching Experience (β_2)	.075(.012)	.063(.011)	.038(.011)
--Principals' Leadership (β_3)	.547(.126)***	.541(.113)***	.594(.109)***
--Peer Collaboration (β_4)		.436(.115)***	.489(.111)***
--Class Size (β_5)			-.260(.009)*
R-square	**.352**	**.496**	**.556**

Note: # $p <= .1$; * $p <= .05$; ** $p <= .01$; *** $p <= .001$
Source: Authors' Calculation.

First, school leadership was statistically significant in predicting teaching practices

when controlled for teacher education, teaching experience, peer collaboration, and class

size ($\beta_3 = .594$; $p <= .001$). This means that increasing one scale in school leadership was

linked to increasing a one-point scale of teaching practice. These findings suggested a

considerable effect of school principals' leadership on teaching practices from this study's

perceptions of primary teachers.

Second, peer collaboration was statistically significant and positively affected teaching

practices ($\beta_4 = .489$; $p <= .001$) holding other variables constant. This indicates that the

peer's collaborative work may positively affect the quality of teaching practices in the classroom. Regardless of how it is done, teachers who work collaboratively with others may benefit from their profession and professional development.

Finally, class size significantly but negatively predicted teaching practices ($\beta 5 = -.260$; $p <= .05$) while other variables were controlled. This means that larger class size would adversely affect the quality of teaching practices.

6.1.2 Qualitative Data Analysis

Thematic Qualitative Data Analysis was used in this chapter to explore how school principals' leadership influences the quality of teachers' teaching practices which was found in the quantitative results. By looking for patterns and themes in the qualitative data, thematic analysis is an analytical technique that is widely used for comprehending and elaborating the meaning of the study's topic (Braun & Clarke, 2006: 77). By doing so, the data may offer a wealth of information, though complex account, which can add more values and senses to the conclusions from the quantitative data that address the third study purpose (Braun & Clarke, 2006: 78). In this regard, the associations between school principals' leadership and teaching practices were examined using the research participants' responses during the data collection. The qualitative data were obtained from the open-ended survey questions asking school principals from the thirty-eight primary schools about the factors associated with improving teaching quality. The varied responses were based on their experiences and social-cultural environment at schools, which may provide more information to understand how school principals' leadership may affect teaching quality at primary schools in Phnom Penh, Cambodia.

The open-ended responses obtained from the survey were analyzed which followed the

six steps/phases of thematic analysis proposed by Braun and Clarke (2006: 87). These include (1) Becoming familiarized with the data, (2) Coding, (3) Looking for the possible themes, (4) Examining the themes, (5) Defining and naming the themes, and (6) Writing up the results. It is advisable to consider the patterns or themes based on the theories or concepts connected to the topic of interest to understand and interpret the qualitative data correctly (Braun & Clarke, 2006). In addition, a researcher must constantly revisit the mutual relation of themes or sub-themes that answer key research questions and not depend on the number of quantifiable measures (Braun & Clarke, 2006: 82).

Besides, the researcher also reviewed and analyzed the policy documents that focus on what practices of school principals promote the quality of teaching and learning in primary education. Consequently, thematic analysis and document reviews entail two critical aspects related to how school principals promote the quality of teachers' teaching practices in primary schools in Phnom Penh, Cambodia. Those themes included: (1) School principals maintain and promote the practices of learning assessments for instructional improvement, and (2) School principals enhance the practices of Teacher Professional Standards.

The following sections will discuss the influential factors on teaching practices.

6.2 Discussion

6.2.1 Influences of School Principals' Leadership on Teachers' Teaching Practices

The quantitative empirical findings proved that school principals positively impacted teachers' teaching practices. Below is the discussion of how school principals' leadership influenced teaching practices in primary schools.

6.2.1.1 School Principals Maintain and Promote the Practices of Learning Assessments for Instructional Improvement

Learning assessment is a major key component of teaching processes. Teachers commonly use various assessments to measure how much students have learned from the curriculum in an academic year, which is vital for the quality of teaching and learning. The data from the learning assessments are important for teachers in classroom instructional planning and preparation and for principals in evaluating the success of the curriculum implementation. As stated in the 2019 MoEYS's directive (MoEYS, 2019c):

"*Learning assessment is the collection and analyses of students' learning performances which reflect what students can do in various steps of learning and teaching. Through these processes, teachers can fully understand what their students have learned, which allows them to make the right decisions in their teaching preparation...In addition, formative assessment is part of the teaching and learning processes that allow teachers to modify the instructional planning and know the progress of their students' learning*" (p. 30-31).

In addition, learning assessments can serve two main functions: (1) Measure the progress of students' learning and modifying the instructional planning and preparation (formative assessments), and (2) Compare the successful implementation of curriculum (summative assessments) (MoEYS, 2019c: 30-31). In this sense, school principals should comprehend and maintain the learning assessments as the school practices. It is required that school principals should ensure that teachers regularly implement learning assessments. To do so, principals should conduct classroom observation and crosscheck whether teachers conduct learning assessments as the core of their teaching responsibilities.

6.2.1.2 School Principals Enhance the Practices of Teacher Professional Standards

In order to promote the practices of Teacher Professional Standards, it requires the effective school leadership of principals. Internal school inspections are key tasks of school principals. Ideally, at the beginning of the academic year, principals play a main role in ensuring that teachers provide a good quality of teaching and learning which follows the Teacher Professional Standard. This role requires school principals to be the internal school inspector for quality improvement by conducting classroom observations. As the senior school members who experience teaching for many years before their appointments, principals can support the novice teachers with guidance and advice regarding what they should do and what to avoid to promote the quality of teaching. In addition, classroom inspections and observations may be both formal and informal, which is expected at least four times per month by school principals or the technical group leaders of teachers assigned to supervise and oversee teaching tasks (MoEYS, 2019c).

Based on the directive from the MoEYS of Cambodia, principals should lead the teaching and learning process by providing a clear orientation of which learning assessment is one of the important tasks that each teacher must follow (MoEYS, 2017a). For instance, the directive said that:

"*Assigning assistant teachers to provide the orientation to new teachers by focusing on classroom management and preparation, lesson planning and preparation, learning assessments, and other tasks. Each teacher must be accountable for (in a small school, the principal is the one who is responsible for these tasks)*" (p. 7).

Principals should ensure that teachers apply various teaching methods and approaches that respond to the actual learning needs of individuals. Weber (1996) stated that "*To benefit, a teacher who is observed must be able to trust the observer in at least three ways: First, the teacher must believe that the observer intends no harm; second, the teacher must be*

convinced that the criteria and procedures of evaluation are predictable and open; and third, the teacher must have confidence that the observer will provide information to improve the nut-sand-bolds of his or her teaching." (p. 271).

Besides monitoring and evaluating teachers' performance in relation to school's learning outcomes, school principals are the facilitators to provide the learning opportunities for teachers to gain more knowledge and skills that enhance teachers' assessment practices and teaching improvement. School principals are responsible for organizing and arranging the regular monthly meeting called "*Monthly Technical Meeting*" at their own or cluster schools. The technical meeting, an existing school-based training, allows teachers to communicate, share, learn and disseminate information and knowledge among school staff. As indicated in the MoEYS's directive, technical meetings should serve as the platform for experience sharing among teachers and school staff that cover a wide range of expected outcomes, including teaching methods, assessment practices, and the results of national learning assessments (MoEYS, 2019c). The internal school inspection process at schools is vital for the quality of teaching and learning, which is an element of school leadership and management (No & Heng, 2017: 45).

Additionally, one female school principal[3] from the sample primary schools whose school is in an urban area has shared her experience of how she reinforced teachers' practices through classroom inspections. She claimed that:

"*the quality of teaching is much dependent on the leadership behaviors of school principals. Principals play a key role as the permanent school inspector who provides*

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[3] The interview was made on the day of the field research. Currently in her 40s, she has been working as school director for about five years and can be considered as young school leader compared to the previous generation. But before her official appointment, she had served as a deputy director for about five years.

regular supervision and inspection to ensure the orderly learning climate of the classroom instruction to achieve the goals of the curriculum though sometimes the support from principals is little but subtle in making changes in the ways teachers did their job".

Consequently, principals can communicate the results of assessments with teachers and other school members to make strategic plans to promote better learning assessment practices that provide students with new learning experiences.

6.2.2 Influences of Teacher's Peer Collaborations on Teaching Practices

The effect of peer collaboration on teaching practices was statistically significant. This study indicated that more than 80 percent of the research participants had experienced collaborative work with their teaching peers more than once a month. However, twenty percent said they interacted with others only once a month, which means they may meet or work with others only on the day of the school's staff meeting. Some teachers were not active in working with others, making it difficult to foster a professional learning community where teachers can grow together at schools. Peer collaboration among primary school teachers should be fostered to promote effective student learning and achievement results. The collaboration practices among peers may vary based on the conditions, environments, and school leadership culture, including team collaboration, involvement in the school development plan, and assessing the working conditions (Darling-Hammond et al., 2005 as cited in OECD, 2009: 90).

In addition, teachers should be more proactive in getting involved in formal or informal and regular or irregular professional learning platforms that can enhance their professional capacity and thus improve the teaching, learning environment, and students' learning and achievement. In addition, the informal dialogues may not be limited to the same age, gender,

educational background, years in teaching services, grade level, or even the subjects. However, some of these conditions may be challenging for teachers in primary school contexts due to the constraints of a socially hierarchical culture that is deeply embedded among Cambodian people (Shoraku 2006; C. Tan & Tee Ng, 2012). The more collaboration, the better the professional learning community. Consequently, teachers may feel more secure in their job, likely resulting in improved motivation and satisfaction.

Technical meetings (TM) are the core of school-based on-site activities in Cambodian primary schools. They are typically conducted at schools to enable teachers to work with their colleagues to share their experiences as a learning community. Though they are organized in schools regularly, previous studies have criticized their effectiveness. It was said they did not extend the teacher's professional knowledge, skills, and capacity in teaching. Despite the criticism of the quality of these school-based on-site activities, some teachers acknowledged the usefulness and impacts on their teaching careers. Therefore, teachers perceived that the current school-based on-site training could allow them to learn and collaborate with others, enabling them to learn the best practices for their classroom interests. School administrators should enhance the opportunity for teachers through school-based on-site training to allow teachers to seek informal conversations, discussions, and meetings to identify the needs, difficulties, and challenges in their daily teaching activities.

Teachers' collaboration may not happen without clear plans and interventions. Therefore, school organizations should be a conducive and enabling environment where teachers and other school members can take advantage of the opportunity to socially support each other for growth within the learning community (Hang-Chuon, 2017: 19).

6.2.3 Influence of Class Size on the Quality of Teaching Practices

Class size was a negative impact on teaching practices. This finding was not surprising

as the class size remains a major issue that hinders the quality of classroom teaching and learning at Cambodian primary schools. The larger the class size, the poorer the students perform in the learning assessment. However, the average class size of the schools in the current study was nearly 40 students per class, which was considerably smaller than the national average. It reflects the efforts of the government to improve the classroom environment for Cambodian students, particularly in the primary schools in Phnom Penh. Some schools still have large class sizes in the sample, at a maximum of 60. Although the class size was not the main objective of the investigation, this effect deserves more attention as it affected the quality of teaching practices and students' achievement.

This finding was consistent with previous empirical research, which showed that high numbers of children in the classroom are a workload burden that affects the teacher's motivation and the quality of classroom management and practices. Almulla (2015) conducted a study on teachers' perceptions of the effects of class size on teaching in Saudi Arabian primary school teachers. He found that teachers reported that their teaching was limited to using more teacher-centered approaches for their classes when the numbers of students are large (p. 33). In addition, teachers found it challenging to manage the lesson time, obtain good student behavior, and effectively assess the student's learning (Almulla, 2015: 33). Similarly, Cakmak (2009) surveyed student teacher's perceptions of the effects of class size on the teaching process and found that class size was perceived to have a negative impact on teachers' motivation, management, teaching methods, assessment, student behavior and student's achievement (p. 401-404). In contrast, when the class size is reduced, teachers become more motivated and productive and interact with students more frequently (Çakmak, 2009: 404).

Shapson et al. (1980) compared the teacher's perspective on evaluating students' work concerning class sizes. The results suggested that teachers with smaller class sizes tended to

efficiently and effectively manage the evaluations and assessments compared with the large class size, which consumed more time (p. 146). Class-based evaluation becomes the central method of evaluation rather than individual-based evaluation. With the high number of students in the classroom, teachers may be overwhelmed by the heavy workloads, leading to ineffective classroom management and a lack of attention to the individual's learning progress.

Bourke (1986) examined the relationship between the effects of smaller class sizes on teaching practices and student achievement. He found that the smaller the class size, the better the teaching practices (p. 569). However, the practices may also depend on the beliefs and attitudes of teachers toward the classroom's learning environment and the personal background and teachers' perception of their responsibility for the whole teaching and learning process.

6.3 Chapter Summary

This chapter concludes that school principals' leadership positively impacts teachers' teaching practices for two main reasons: (1) School principals maintain and promote the practices of learning assessments for instructional improvement, and (2) School principals enhance the practices of Teacher Professional Standards. By so doing, the professional teacher standards can be ensured by the school leadership practices of the principals. Besides, peer collaborations and class size were important predictors to consider when improving classroom teaching practices. The next chapter will provide the concluding remarks of the study, the recommendations, and the limitation of the research.

CHAPTER SEVEN: Conclusions and Research Implications and Recommendations

This chapter comprises three sections, including the concluding remarks for the study (**Section 7.1**), the research recommendations (**Section 7.2**), and the limitation of the research study (**Section 7.3**).

7.1 Concluding Remarks

This chapter summarizes the previous chapters' key findings of the dissertation. This new piece of paper may contribute to the scarcity of literature on school leadership and management of principals in Cambodian primary education. School principals' leadership remained vital for the education reform agenda, which recently received significant attention from the Government. This study investigated the effects of school principals' leadership on teaching quality and students' learning achievement by examining how teachers perceived principals' school leadership practices. This is a new way to look at the issues from a different angle from the teacher's perspective, contradicting previous studies that evaluated school leadership from principals' self-reported data. In addition, using the MLM analysis approach to examine the nested or hierarchical data would prove the relationships of the key variables more sophisticatedly.

The following paragraphs summarize the key findings of this study. Based on the model specifications, the MLM results highlighted several key findings. First, school principals' leadership statistically significantly influenced students' achievement. School principals influenced students' achievement when they tended to focus on the quality of teaching by (1) improving the instructional program and (2) involving in the instructional process.

Second, teaching practices positively and significantly affected students' achievement

after controlling other variables. Teachers may influence students' achievement when they pay more attention to the following four indicators: (1) Student progress is regularly reported to parents, (2) Assessment data are used to improve the school's program, (3) Student assessment data are monitored to modify the instruction to promote learning, and (4) Student performance is monitored in a variety of methods.

In addition, the researcher examined whether school principals' leadership influences teachers' teaching practices using multiple regression, thematic analysis, and document reviews to understand these relationships. The results revealed that school principals significantly influenced teachers' teaching practices from both quantitative and qualitative findings. The relationships existed in two ways: (1) School principals should maintain and promote the practices of learning assessments for instructional improvement, and (2) School principals should ensure and enhance the practices of Teacher Professional Standards.

The class size remained the issue affecting the quality of teaching and students' learning outcomes. Large class sizes can disrupt the instruction processes, including the selection of teaching methods and the practices of learning assessments which negatively influence the quality of teaching and thus students' learning outcomes. However, teacher quality did not significantly affect teaching practices and students' achievement. What should be noticed is that school principals' years of leadership experience positively affected students' achievement, but the relationship was non-linear.

7.2 Research Recommendations

This section provides the current study's recommendations for policy formulation and school implementations in order to promote the quality and the effectiveness of primary schools in Cambodia and beyond concerning the leadership of school management in

achieving the desired education reforms.

Ensure that school principals prioritize instructional effectiveness, focusing on learning assessments for quality improvement. Assessments of, in, and for learning are all important for students' learning and performances. In addition, these assessment practices can be very useful for teachers and school management (principals) to strengthen their schools' instructional effectiveness. Since the early 2010s, the MoEYS has set a clear roadmap and right directions for school reforms by enhancing the local capacities of school agents such as principals, teachers, and other school committees to carry out the reforms more independently and accountably. One of the key mechanisms to ensure accountability and transparency is that each school should clarify what kinds of assessment data can be utilized to improve instructional planning and development.

Promote schools' instructional leadership among principals and teachers. First, to promote the quality of teaching, it is equally important to consider how teachers perceive, believe, and trust the leadership practices of principals in leading and managing schools to deliver the best quality of education and promote students' learning outcomes. School principals should prioritize the involvement of teachers in the process of school instructional planning to understand whether teachers buy into what they plan to achieve and what makes them involved in or deny those proposed activities. Without their participation, the school's overall goals and vision would be ruined and under-achieved. When teachers understand and are convinced, school principals will be able to engage and encourage teachers to improve their teaching practices which promote the quality of instruction, raise students' achievement, and ensure good governance and accountability. *In addition*, classroom teaching practices should be discussed among school members. Principals' leadership should promote the quality of teaching practices, while teachers must ensure that their classroom practices reflect the Teacher Professional Standards. *More*

importantly, school-based on-site training remains important for teacher development and classroom practices. In this regard, teachers could leverage their understanding, knowledge, and practices to strengthen the quality of the services, including teaching, learning assessments, and planning and preparation. *Last but not least*, school principals should adhere to their roles and duties as the internal school inspection to ensure the quality of teachers' performance by providing regular feedback based on school management handbooks and the Teacher Professional Standards (Sot et al., 2022). Additionally, school principals should promote teaching quality by making use of the necessity of the assessment data, which may enhance the quality of instructional planning and school outcomes. In so doing, when school principals could enhance their accountability and responsibilities for their tasks and duties, the anomalies caused by teachers' irrational absences and the crucial loss of instructional time may be minimized (No & Sok, 2022: 51).

7.3 Limitation of the Study

Like any research, this study has some limitations as follows. Firstly, this study targeted only randomly selected primary schools in Phnom Penh, Cambodia. Due to the country's different geographical locations and socioeconomic developments, the contexts of these primary schools may not reflect the country-wide picture, so this study cannot be generalized to primary schools in other areas of the country.

Secondly, students' achievements were the monthly test scores collected from the respective primary schools. These achievement tests represented the overall students' achievements and the aggregated scores of several subjects of the primary education curriculum, including Khmer language, Mathematics, Social studies, Science, and other minor subjects. Due to the lack of standardized tests in the context of Cambodia's primary schools, the criteria of assessment and evaluations might be biased from teacher to teacher.

Thus, this study cannot infer the students' overall cognitive abilities but only test the relationship among the variables of this study.

Thirdly, the tools used for this study were limited to understanding the leadership practices of school principals from the perceptions of primary school teachers while not collecting the self-reported leadership practices from school principals themselves. Using the data from teacher perceptions to understand the principal's leadership is paramount because the data obtained from the teachers can be more reliable and accurate, reflecting the objectivity of the data on the leadership practices (Bellibas & Liu, 2017: 63). In addition, the six-item variables of school leadership, for example, are not directly targeted to measure any specific leadership types of school principals. Regarding teachers' teaching practices item scales, teachers conducted self-report assessments; therefore, these practices cannot be measured completely and accurately from the questionnaire items, which require actual classroom observations and in-depth interviews for future research.

Fourth, this paper attempted to examine the influential relationships between school principals' leadership, teachers' teaching practices, and students' achievement using the multi-level model method; however, the conclusions may not imply causality.

Lastly, in order to add a more concrete and sophisticated understanding of the associations between the variables, future research may require the inclusion of a qualitative approach to data collection and analysis to gain more insights into how principals' leadership relates to other schools' learning outcomes and what are the school contextual factors may mediate or moderate the relationships in the context of primary schools in Cambodia or other educational levels.

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APPENDICES

A. Approval from Academic Advisor for the Data Collection

NAGOYA UNIVERSITY
Graduate School of
International Development (GSID)

Furo-cho, Chikusa-ku, Nagoya 464-8601, Japan
Phone: 81-52-789-4968   Fax: 81-789-4051

February 7th, 2020

Letter of Endorsement for Mr. CHIN Sam Ath's Field Survey in Cambodia

To whom it may concern:

This letter is provided in order for me to introduce Mr. CHIN Sam Ath, a doctoral student in the Education and Human Resource Development Program at Graduate School of International Development (GSID), Nagoya University, Japan, to you. I have known him since he entered in GSID as his main academic supervisor.

GSID, Nagoya University is the first graduate institution established in 1993 by the government of Japan in order to pursue development research and produce human resources for the global development community.

Mr. Sam Ath is conducting the research on the Factors, Relationships of School Climate, and Its Effects on Student Achievement in Cambodian Primary School for his Doctoral dissertation. His research would contribute to improving the school outcomes (achievement), the relationship among actors involved in the teaching-learning process at both classroom and school level, and enhancing the well-being of school members.

In this conjecture, he will be conducting a field survey in primary schools in the greater Phnom Penh area in Cambodia. His research will request teachers and students to answer questionnaires. Also, he will be collecting the school-level data such as the enrolment rate, number of pupil-teacher ratios and so on.

Throughout his field survey, he will strictly follow your guidance on necessary anonymity and on the handling of collected pieces of information. The findings and outcomes of Mr. Sam Ath's field research will be utilized only in his academic dissertation writing. With your kind understanding of the nature of his study in Cambodia, I will be most grateful if you could extend your generous support to him.

Sincerely,

Shoko Yamada
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Graduate School of International Development, Nagoya University
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B. Approval from the Director of the Primary Education for the Data Collection

ព្រះរាជាណាចក្រកម្ពុជា

ជាតិ សាសនា ព្រះមហាក្សត្រ

ក្រសួងអប់រំ យុវជន និងកីឡា

អគ្គនាយកដ្ឋានអប់រំ

នាយកដ្ឋានបឋមសិក្សា

លេខ...ៃៃៃ........បស.

សូមជម្រាបជូន
លោកប្រធានមន្ទីរអប់រំ យុវជន និងកីឡារាជធានីភ្នំពេញ

កម្មវត្ថុ៖ ការអនុញ្ញាតឱ្យលោក ជិន សំអាត ចុះប្រមូលទិន្នន័យសាកល្បង និងទិន្នន័យផ្លូវការសម្រាប់ការ
ស្រាវជ្រាវបញ្ចប់ថ្នាក់បណ្ឌិត។

យោង៖ សំណើសុំរបស់លោក ជិន សំអាត ចុះថ្ងៃទី១៣ ខែកុម្ភៈ ឆ្នាំ២០២០។

តាមកម្មវត្ថុ និងយោងខាងលើនេះ ខ្ញុំសូមជម្រាបលោកប្រធានថា៖ នាយកដ្ឋានបឋមសិក្សាបាន
អនុញ្ញាតឱ្យលោក ជិន សំអាត ចុះប្រមូលទិន្នន័យសាកល្បង នៅសាលាបឋមសិក្សាព្រះនរោត្តម និងប្រមូល
ទិន្នន័យផ្លូវការ នៅសាលាគោលដៅចំនួន៣៨ (បញ្ជីឈ្មោះ:ជូនភ្ជាប់) ក្នុងខណ្ឌទាំង១២ នៃរាជធានីភ្នំពេញ
ចាប់ពីថ្ងៃចន្ទទី១៧ ខែកុម្ភៈ ឆ្នាំ២០២០ ដល់ថ្ងៃទី២៥ ខែមីនា ឆ្នាំ២០២០។

អាស្រ័យហេតុនេះ សូមលោកប្រធានមេត្តាជ្រាបព័ត៌មាន និងអនុញ្ញាតឱ្យលោក ជិន សំអាត
បានចុះប្រមូលព័ត៌មាននៅតាមសាលាគោលដៅខាងលើ ដោយក្តីអនុគ្រោះ។

សូមលោកប្រធាន ទទួលនូវការរាប់អានដ៏ស្មោះស្ម័គ្រអំពីខ្ញុំ។

ថ្ងៃសុក្រ ១៣កើត ខែមាឃ ឆ្នាំកុរ ព.ស.២៥៦៣
រាជធានីភ្នំពេញ ថ្ងៃទី២១ ខែកុម្ភៈ ឆ្នាំ២០២០

ប្រធាននាយកដ្ឋានបឋមសិក្សា

ចាន់ សុគា

កំណត់ចំលង៖

-អគ្គនាយកដ្ឋានអប់រំ
-មន្ទីរអប់រំ យុវជន និងកីឡារាជធានីភ្នំពេញ
  -ដើម្បីជូនជ្រាបជាព័ត៌មាន-
-កាលប្បវត្តិ
-ឯកសារ នា.បស.

C. Consent Forms for the Research Participation

<u>**CONSENT FORM FOR SCHOOL PRINCIPALS**</u>

This is Mr. Chin Sam Ath, a doctoral student at the Graduate School of International Development, Nagoya University. Recently, I am conducting a research study on the Effects of School Factors for Improving Students' Achievement: A Case Study of Primary Schools in Phnom Penh, Cambodia. This research would enhance the quality of teaching and learning and thus improve school outcomes (achievement).

I request you to participate in this research by completing the survey questionnaire. You may be allowed to stop answering the questionnaire if you do not want to continue. All your answers to the questions will be used only for writing the dissertation study. I am responsible for all the answers, and I assure you that this participation in this study will not affect or harm you by any means to you. Your participation is voluntary. You can decide whether you would participate in this survey. Would you agree to join it?

☐ Yes, I agree to join the survey.

☐ No, I would not join it. (Please specify the reasons:

_____)

If you have any questions regarding the research, please kindly ask me directly.

D. Questionnaire for School Principals

Section A: School Information

A01. School name: ....

A02. School location: ☐ 1 = Urban   ☐ 2 = Rural

A03. School Address:

Village: ....   Commune/Sangkat: ....

District/Khan: ....   Province/Capital: ....

A04. Number of students enrolled in SY 2019-2020 by grade:

Gender	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Total
Male							
Female							
Total							

A05. Number of classroom and grade level:

Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Total

A06. Number of staffs in your school:

Gender	Teaching staff	Non-teaching staff (Exclude principal)	Principal	Total
Male				....
Female				

Section B: School Principal Characteristics

B01. Gender of interviewee   ☐ 1 = Male   ☐ 2 = Female

B02. What is your age? ....

B03. How long have you been working as a school principal? ....

B04. What was the last grade or level of school that you completed? *Please specify your major course subject.*

    ☐ 1 = Bac II

    ☐ 2 = Associate's Degree (in...)

    ☐ 3 = Bachelor's Degree (in..)

    ☐ 4 = Master's Degree (in..)

    ☐ 5 = Ph.D. (in..)

    ☐ 6 = Others (specify)...

Section C: Factors Influencing Teaching Quality

C01. What are the determining factors that work for good cooperation among teachers to improve the teaching job?

C02. How do you describe the relationship among the teachers in your school?

C03. Does improving relationships or cooperation among teaching staff lead to enhancing the quality of student's learning?

Thank you so much for your valuable time participating in this research project.

E. Questionnaire for Classroom Teachers

Section A: School Information

A01. School name: ....

A02. School location: ☐ 1 = Urban   ☐ 2 = Rural

A03. School Address:

Village: ....   Commune/Sangkat: ....

District/Khan: ....   Province/Capital: ....

A04. Your telephone number: ....

Section B: Teacher Characteristics

B01. Gender of interviewee   ☐ 1 = Male   ☐ 2 = Female

B02. What is your age? ....

B03. How long have you been working as a teacher? ....

B04. How long have you been working as a teacher at this school? ....

B05. What is your last education level? *Please specify your major course subject.*

☐ 1 = Bac II

☐ 2 = Associate's Degree (in...)

☐ 3 = Bachelor's Degree (in...)

☐ 4 = Master's Degree (in...)

☐ 5 = Ph.D. (in...)

☐ 6 = Others (specify)...

B06. Where did you get your last training as a teacher? Please tick (√) only one in the box for your answer.

□ 1 = RTTC

□ 2 = PSTTC

□ 3 = Others...........................

B07. *Please indicate the period of the last teacher training by month.* Months =..................

Section C: Teacher's Workloads

C01. What subjects do you teach this school year? *Please check all that apply.*

□ 1 = Khmer language   □ 2 = Mathematics

□ 3 = Science   □ 4 = Social studies

□ 5 = English   □ 6 = Others (specify)................

C02. What grades do you currently teach? *Please check all that apply*

□ 1 = Pre-Kindergarten.   □ 2 = Grade 1   □ 3 = Grade 2

□ 4 = Grade 3   □ 5 = Grade 4   □ 6 = Grade 5

□ 7 = Grade 6   □ 8 = Others (specify)................

C05. Are you a head teacher in this school? □ 1 = Yes   □ 2 = No

C06. Do you think you can manage your instructional time effectively in your classroom?

□ 1 = Yes   □ 2 = No   □ 3 = Not sure

Section D: Teacher Perception towards Principal's Leadership

D01. To what extent do you agree or disagree with the following statement about *Principal's Leadership*? *Please tick (√) one for each statement.*

Statement	Strongly Disagree	Disagree	Agree	Strongly Agree
1. Principal has clear plans and a vision for enhancing the quality of teaching and learning.	☐1	☐2	☐3	☐4
2. Principal allows teachers to plan and evaluate the professional development activities.	☐1	☐2	☐3	☐4
3. Principal is highly involved in the instructional process.	☐1	☐2	☐3	☐4
4. Principal assumes leadership for improving the instructional program.	☐1	☐2	☐3	☐4
5. Principal's leadership and ways of managing the school inspire the teachers.	☐1	☐2	☐3	☐4
6. Principal is highly initiated on school activities that respond to student learning and achievement.	☐1	☐2	☐3	☐4

D02. What are the determining factors that work for good collaboration among teachers to improve teaching performance?

D03. How do you describe the social interaction among the teachers in your school?

D04. Does improving social interaction among teaching staff lead to enhancing the quality of student's learning?

D02. Does your principal support the development of teaching competency?

    ☐ 1. Yes   ☐ 2. No

D03. If yes, please list three activities the school principal supported within the last six months.

1...

2...

3...

D04. How much does your principal support to teaching and learning process?

□ 1. No support □ 2. Little support □ 3. Some support

□ 4. Strong support □ 5. Very strong support

Section E: Teacher Attitudes towards the Frequent Monitoring of Student Progress

E01. To what extent do you agree or disagree with the following statement about *Frequent Monitoring of Student Progress*? *Please tick (√) one for each statement*.

Statement	Strongly Disagree	Disagree	Agree	Strongly Agree
1. Student performance is regularly monitored.	□1	□2	□3	□4
2. Student performance is monitored in a variety of ways.	□1	□2	□3	□4
3. Assessment data are used to improve the school's program.	□1	□2	□3	□4
4. Student progress is regularly reported to parents/guardians.	□1	□2	□3	□4
5. Student assessment data are monitored to modify instruction to promote student learning.	□1	□2	□3	□4
6. Students are regularly informed of their progress.	□1	□2	□3	□4
7. Students are taught to apply basic skills in real life.	□1	□2	□3	□4
8. Students' works are assessed fairly.	□1	□2	□3	□4

Thank you so much for your valuable time participating in this research project.

F. Questionnaire for Sixth-grade Students

Section A: Student Characteristics

A01. What is your gender? ☐ 1 = Male ☐ 2 = Female

A02. What is your age? ....

A03. Number of siblings (exclude yourself) ☐ 1 = Do not have ☐ 2 = One

☐ 3 = Two ☐ 4 = Three

☐ 5 = Four ☐ 6 = More than four

A04. Have you ever repeated the school? ☐ 1 = Yes ☐ 2 = No

A05. Have you experienced preschool learning? ☐ 1 = Yes ☐ 2 = No

A06. At what age did you enroll in grade 1?

☐ 1= 5 years old

☐ 2= 6 years old

☐ 3= 7 years old

☐ 4= 8 years old

☐ 5= More than 8 years old

A07. What is your father's education? *Please tick (√) only one in the box for your answer.*

☐ 1. No education ☐ 2. Attended Primary school
☐ 3. Completed Primary school ☐ 4. Attended Lower secondary school
☐ 5. Completed Lower secondary school ☐ 6. Attended Upper secondary school
☐ 7. Completed Upper secondary school ☐ 8. Others.........................
☐ 9. Don't know

A08. What is your father's occupation? *Please tick (√) only one in the box for your answer.*

☐ 1. Farmer ☐ 2. Doctor/Medical Officer
☐ 3. Seller ☐ 4. Soldier/Police officer
☐ 5. Staff of private company ☐ 6. Staff of NGOs
☐ 7. Teacher ☐ 8. Others...................

A09. What is your mother's education? *Please tick (√) only one in the box for your answer.*

☐ 1. No education ☐ 2. Attended Primary school
☐ 3. Completed Primary school ☐ 4. Attended Lower secondary school
☐ 5. Completed Lower secondary school ☐ 6. Attended Upper secondary school

☐ 7. Completed Upper secondary school   ☐ 8. Others.............................
☐ 9. Don't know

A10. What is your mother's occupation? *Please tick (√) only one in the box for your*

answer.

☐ 1. Farmer   ☐ 2. Doctor/Medical Officer
☐ 3. Seller   ☐ 4. Soldier/Police officer
☐ 5. Staff of private company   ☐ 6. Staff of NGOs
☐ 7. Teacher   ☐ 8. Others....................

Section B: Student's Learning Behaviors and Attitudes

B01. What are learning-related activities that you do at school within the last month? *Please*

tick (√) in the box for the answer as much as apply to you.

☐ 1. Doing textbook-based exercises   ☐ 2. Being called by teachers to the whiteboard for doing exercises.

☐ 3. Raising hands to answer the questions.   ☐ 4. Storytelling with friends in the classroom

☐ 5. Helping friends to do learning tasks or doing homework   ☐ 6. Reading books in the library

☐ 7. Participating in sport competitions   ☐ 8. Planting the vegetables at the schoolyard

☐ 9. Others......................................

B02. What are learning-related activities that you do at home within the last month? *Please*

tick (√) in the box for the answer as much as apply to you.

☐ 1. Doing homework (assigned by teacher)   ☐ 2. Reading textbooks

☐ 3. Helping other siblings to do learning tasks   ☐ 4. Storytelling

☐ 5. Others..

B03. How often do you read textbooks at home per week during the last week? *Please tick*

(√) only one in the box for your answer.

☐ 1. Never   ☐ 2. 1 to 3 times

☐ 3. 4 to 5 times   ☐ 4. More than 5 times

B04. How much time do you spend on reading textbooks at home per day within the last

week? *Please tick (√) only one in the box for your answer.*

☐ 1. 01 to 05 minutes   ☐ 2. 06 to 10 minutes

☐ 3. 11 to 20 minutes   ☐ 4. 21 to 30 minutes

☐ 5. More than 30 minutes

B05. Is the library available in your school?

☐ 1 = Yes

☐ 2 = No (If no, please skip questions 06-07)

B06. Is the library opened every school day? 1 = Yes   ☐ 2 = No   ☐ 3 = Don't know

B07. How often do you spend time reading the books in the library? *Please tick (√) only one in the box for your answer.*

☐ 1. Never   ☐ 2. Once a week

☐ 3. 2 to 3 times per week   ☐ 4. 4 to 5 times per week

☐ 5. More than 5 times a week

B08. Do you like reading books?   ☐ 1 = Yes   ☐ 2 = No

B09. To what extent do you satisfy or dissatisfy with your teacher's way of teaching?

Please tick (√) only one in the box for your answer.

☐ 1. Strongly dissatisfy   ☐ 2. Dissatisfy

☐ 3. Satisfy   ☐ 4. Strongly satisfy

Thank you so much for your valuable time participating in this research project.