Doctoral Dissertation

A STUDY OF STUDENT ACHIEVEMENT IN THE FIRST-YEAR OF UNIVERSITY IN CAMBODIA USING MULTI-LEVEL MODELING

HENG KRENG

Graduate School for International Development and Cooperation
Hiroshima University

March 2014

A STUDY OF STUDENT ACHIEVEMENT IN THE FIRST-YEAR OF UNIVERSITY IN CAMBODIA USING MULTI-LEVEL MODELING

D110447

HENG KRENG

A Dissertation Submitted to
the Graduate School for International Development and Cooperation
of Hiroshima University in Partial Fulfillment
of the Requirement for the Degree of
Doctor of Philosophy

March 2014

We hereby recommend that the dissertation by Mr. HENG KRENG entitled "A STUDY OF STUDENT ACHIEVEMENT IN THE FIRST-YEAR OF UNIVERSITY IN CAMBODIA USING MULTI-LEVEL MODELING" be accepted in partial fulfillment of the requirements for the degree of DOCTOR OF PHILOSOPHY.

Committee on Final Examination:

堀田泰司

HOTTA Taiji, Associate Professor
Chairperson

黒田則博

KURODA Norihiro, Professor

吉田和浩

YOSHIDA Kazuhiro, Professor

馬場卓也

BABA Takuya, Professor

北村友人

YUTO Kitamura, Associate Professor
Graduate School of Education, The University of Tokyo

Date: January 23, 2014

Approved:

FUJIWARA Akimasa, Professor
Dean

Date: February 28, 2014

Graduate School for International Development and Cooperation
Hiroshima University

TABLE OF CONTENTS

ABSTRACT

Students' academic achievement has been an important indicator of institutional quality and has been a focus of higher education research for decades. Unfortunately, a plethora of evidence associated with the determinants of student achievement at a university has been disproportionately documented in countries with developed higher education systems. Few studies have been conducted in the developing world like Cambodia. This study addressed this gap by examining what factors were the main contributors to the academic achievement of first-year university students in Cambodia, using the modified concepts of student engagement and faculty behaviors as the guiding framework. Data were based on a survey of 923 first-year university students selected from nine universities in Phnom Penh City and analyzed using a three-level hierarchical linear model (HLM). Supplementary interview data from students' and faculty's perspectives were also considered to provide a deeper understanding of teaching and learning realities in the Cambodian higher education context beyond what would be explained by the survey data.

The HLM analyses, when tested at the student level and after controlling for a host of student characteristics and institutional conditions, revealed that three student engagement factors in educationally purposeful activities—class participation, class preparation, and homework/tasks—added significant values to Cambodian student achievement. At the class and institutional levels, results were mixed. Only the relationship between class participation and student achievement was likely to vary across classes, whereas homework/tasks and time spent doing course-related tasks outside class were the only two

measures that had varying influences on student achievement across institutions. Other student engagement factors appeared to have fixed effects on student achievement. The institutional type where students were enrolled also played a key role in explaining differences in student achievement.

Contrary to the extensive student engagement literature in developed countries, student engagement in peer learning and student-faculty interaction did not make any meaningful impacts on student achievement in the present study when observed in general terms. When taking into account group differences, these two factors, however, had significant, compensatory effects on the academic achievement of female and low-academic profile students and those from the provinces, respectively. A more pronounced effect of class participation was also observed among low-academic profile students and those from the provinces.

Results further indicated that faculty behavior, namely their support and feedback to students, was a unique factor that had a strong and positive influence on students' academic achievement. Its effect was the same for all students regardless of their gender, precollege academic experience, and geographical origin and partially moderated by student engagement in homework/tasks, class participation, and class preparation. Contrary to existing findings from faculty impact studies, no relationships were found for faculty's organization and clarity and class practices to challenge students academically on student achievement.

This study concluded by highlighting critical inputs for the understanding of what constituted effective learning and teaching and its impact on students' desired learning

outcomes through the lens of a college student success perspective. Practical implications for assessment policies and institutional practices are discussed with a call for solid programs to enhance student quality, especially among the academically disadvantaged students.

ACKNOWLEDGEMENTS

Numerous wonderful people have played a key role in helping me to get to this point. Without their kind and patient assistance, I would not have made this academic quest a great success.

First and foremost, I would like to express my heartfelt thanks to my supervisory committee for their guidance and support. Their commitment to critically review my dissertation and to provide detailed and constructive feedback has expanded my understanding of global educational issues and academic research significantly. Special thanks go to my main academic advisor, Dr. Hotta Taiji, who has constantly encouraged and supported me to follow my own path and has guided me throughout this academic process to accomplish it. I am greatly indebted. I would like to express sincere thanks to Dr. MURASAWA Masataka in the Research Institute for Higher Education (RIHE) of Hiroshima University for providing me with practical tips about using multi-level modeling in the data analysis and to Dr. KURODA Norihiro and Dr. YOSHIDA Kazuhiro in the Center for the Study of International Cooperation in Education (CICE) of Hiroshima University, Dr. YUTO Kitamura of the University of Tokyo, and Dr. BABA Takuya, the Dean of the Division of Educational Development of the Graduate School for International Development and Cooperation (IDEC) of Hiroshima University for their critical feedback on my analysis of the research results and its conclusions.

My deepest gratitude goes to my parents, who have supported me both spiritually and financially. Their unconditional sacrifices and pure love for education have greatly inspired me to pursue this biggest academic dream. My heartfelt thanks go to my wife, Chy

Vanmony, who has been a constant supporter and a great motivator throughout this long academic journey. Thank you for your care and endurance. I am also grateful to my in-laws, who have been encouraging and supporting me to accomplish this academic quest. I really appreciate their support throughout these years.

Next, I would like to thank administrative and support staff in the Graduate School for International Development and Cooperation and Hiroshima University for their assistance and support, without whom my academic life would have been difficult. I am also particularly indebted to the academic staff and students in Cambodia who participated in this research. Without their participation and contribution, this research would not have been possible.

Last but not definitely least, I would like to thank Cambodian friends in Saijo for keeping me company over the years (2008-2014). Having been befriended by them has been a wonderful add-on to my academic journey. My regards and profound thanks also go to all of the international friends at Hiroshima University from far and wide who have supported me in any respect throughout my study. I definitely will miss you all.

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Cambodia is among the developing nations in Asia, with a relatively recent development of higher education system (Pit & Ford, 2004). It was not until Cambodia made a surprising move from a socialist, centralized system to a capitalist, free-market economy model in the early 1990s that the emphasis on the role of higher education in producing a skilled labor force for socio-economic development has gained momentum ever since in the history of Cambodia's higher education. Since then, the higher education system in Cambodia has experienced historic reforms toward both the quantitative and the qualitative expansions (Chet, 2006, 2009). However, while Cambodia's effort to expand its higher education system has been applauded by significant progress in student enrollment as evidenced by a rapidly increasing number of students enrolled at university from just about 10,000 in 1997 to 240,000 in 2012, the quality of Cambodian higher education has remained under scrutiny and doubt (Ford, 2003, 2006, 2013). Over the years, student quality has, in particular, remained a chief national policy concern (MoEYS, 2005). Low student achievement is a case in point. Therefore, as higher education has been viewed worldwide as an indispensable impetus to the nation's socio-economic development, an attention swift from the quantity to the quality within the current higher education development landscape is needed if Cambodia is not to sacrifice its injected financial resources to produce human resources with less quality.

To improve student quality in higher education, the Royal Government of Cambodia has placed a strong commitment and has launched a number of approaches to increase student achievement in national policy (MoEYS, 2005). One of the immediate approaches is to enhance the quality of teaching and learning. Nonetheless, despite this policy promulgation, there is a substantial gap between policy and practice. In recent years, while the Ministry of Education, Youth and Sport (MoEYS) has placed improving teaching and learning quality at the core of the national policy as a counter-measure to raise student achievement (MoEYS, 2005), higher education teaching and learning quality assessment has yet to exist institution- and nation-wide. Throughout the years, the government's commitment has been predominantly placed on the establishment of the national accreditation body, i.e. the Accreditation Commitment of Cambodia (ACC) in order to put the institutional accreditation in place. Since its inception in 2003, the ACC has played a key role in promoting an institutional assessment and diffusing a quality assurance policy that are, in principle, expected to raise the performance of Cambodian higher education institutions (HEIs) (Chet, 2006, 2009). However, although the establishment of the ACC has signaled a turning point toward the improvement of quality in higher education in Cambodia, the ACC has done little in terms of student quality assessment. Empirical research associated with effective teaching and learning assessment, in particular, remains absent.

At the individual level, neither empirically based assessment of teaching and learning quality and its relation to students' academic achievement has been adequately evaluated. The small body of previous assessment research that has looked into student achievement

has been disproportionately focused on such indicators as teachers' background characteristics (e.g., teachers' teaching experience and content knowledge) and some limited features of pedagogical processes such as teaching skills and pedagogical content knowledge (e.g., Chhinh, 2003; Chhinh & Tabata, 2003; Marshall et al., 2009; Ngo, 2013). The emphasis has been little related to what determines student achievement from the behavioral perspective of teaching and learning, a conceptual lens that has been widely documented as a critical input to enhance the understanding of effective teaching and learning in higher education (Kahu, 2013). Not only that, those studies have been confined to the context of teaching and learning at the basic education level. With greater attention being paid to improving teaching and learning in basic education, the scholarship of teaching and learning quality that links to desired student achievement has not been widely researched in the higher education context. Although higher education teaching and learning discourse may share a similar trend with that of the basic education where a teacher-centered approach is being superseded or supplemented by the modern approach of student-centeredness, the two education tiers may not necessarily share similar teaching and learning contexts.

Due to the lack of teaching and learning quality assessment data in higher education, very little work has extensively explored the nature of teaching and learning practices/behaviors as the proxy indicators to predict students' academic achievement among university students. When done, previous studies only employed a descriptive survey method to explain teaching and learning practices and constraints (e.g., Chen, Sok, & Sok, 2007). Chen et al. (2007), for example, conducted a descriptive survey and found

that certain behavioral aspects of teaching and learning such as the limited amount of interaction/consultation with teachers was among the influencing factors conceivably linked to the quality of university student learning in Cambodia. Yet, their study did not go into detail to provide empirical evidence as to the extent to which and how specific teaching and learning attributes were significantly related to university student achievement. With data not widely available from individual universities in Cambodia, the critical assessment of teaching and learning practices at university and its predictive relationships with students' academic achievement is almost invisible. The understanding of what constitutes effective teaching and learning and how particular attributes speak volumes for student achievement, especially during the first year of university, is, thus, a needed area of research. The potential lack of the empirical investigation into this research area renders the present research indispensable for enhancing policy and practice. The findings from this study will provide a fresh and critical perspective toward effective university teaching and learning practices in Cambodia and its linkages to student achievement and practical implications for policy makers, university leaders, and faculty members in similar development and education settings to improve their university teaching and learning as well as student achievement.

1.2 Purpose of the study and research questions

This study was aimed at addressing the gaps in higher education research in Cambodia by exploring what teaching and learning factors, as viewed through the notions of student engagement and faculty behaviors, would make a difference in the academic

achievement of first-year university students in Cambodia. The notions of student engagement and faculty behaviors will be discussed in detail in the later sections (see Conceptual framework and Chapter Three). Multi-institutional samples and the behavioral perspective were used as the data and the conceptual lens for this study, respectively. To achieve this prime objective, the survey questionnaire was designed to address the following research questions:

Effects of student engagement

1. What types of student engagement are significantly related to students' academic achievement, net of students' background and demographic characteristics and institutional characteristics?
2. Is there any evidence that the effects of student engagement factors on academic achievement vary at the class and institutional levels?
3. Do the effects of student engagement factors on academic achievement vary in magnitude by students' gender, pre-university academic experience, and geographical origin?

Effects of faculty behaviors

1. What types of faculty behaviors are significantly related to students' academic achievement, net of students' background and demographic differences and institutional characteristics?
2. Is there any evidence that the effects of faculty behaviors on academic achievement vary at the institutional level?

3. Is the relationship direct or indirect relative to student engagement in academically purposeful activities?
4. Do the effects of faculty behaviors on academic achievement vary in magnitude by students' gender, pre-university academic experience, and geographical origin?

1.3 Originality of the study

This study was designed and conducted to fill the gaps in the scholarship of teaching and learning in the Cambodian higher education context with an attempt to explain students' learning quality, as measured in terms of their academic achievement. First, this study was the first of its kind to assess student achievement utilizing the behavioral concepts of higher education teaching and learning in Cambodia. It was a study aimed at introducing a new perspective to rethink the necessity of student quality assessment for the improvement of quality in Cambodia's higher education. This study was unique in both measures and context compared to other college achievement studies that have applied the widely tested Tinto's integration model (Tinto, 1975, 2007) or the so-called student engagement model (Kuh, 2001, 2003) when it comes to the examination of teaching and learning practices in higher education. Despite broadly researched, studies that have explored the student engagement model as the determinants of the academic achievement of university students have not extensively incorporated teaching and learning tenets into analysis and have been arguably limited to the context of higher education in developed countries or countries with developed higher education systems. Given the absence of empirical evidence in countries with a later emergence of higher education, as is the case

of Cambodia, the extent to which those previous research findings could be applied to the Cambodian higher education setting was largely unknown. The current study was designed to fill these gaps, expanding this line of research into a country that has been underrepresented in global higher education research by utilizing the dual concept of the student engagement model through the inclusion of both learning and teaching behaviors in the investigation.

Second, this study differentiated itself in that it was a multi-institutional survey designed to examine the predictors of students' academic achievement, mainly emphasizing the role of learning and teaching from the behavioral perspective as the main antecedents, a measurement lens of which previous studies in Cambodia have lacked. More importantly, this present research was a highly empirically tested study that centered on the associations of learning, teaching, and student achievement, independent of the subjects' prior judgements of the hypothesized relationships to which previous research in Cambodia has been limited, as was the case of Chen et al. (2007). Noteworthy was the utilization of multi-level modeling to enhance the understanding of learning and teaching practices and its predictive relationships with student achievement at different data levels, i.e., student, class, and institutional levels. The use of multi-level models added a meaningful addition to this study given the critical lack of an empirical and sophisticated investigation into this line of higher education research in Cambodia. The multi-level modeling not only provided a solution to a conventionally practiced single-level multiple regression method when applied to the nested data in educational research by treating data at their respective levels to cancel out the inflated standard errors (Type I errors), but also

offered different pieces of evidence that can be estimated due to both the individual-level and group-level differences, a method that is limited in the single-level analysis (Beretvas, 2007).

1.4 Significance of the study

The present research is important in a few critical respects. First, the findings from this study contribute significantly to our understanding of theories that link to university students' success and their utility in the context beyond that of its existing literature. This study adds important evidence of effective teaching and learning models that are key contributors to university students' academic achievement in a country with a later emergence of higher education to the growing body of college impact literature by helping to illuminate the extent to which previous theoretical models may work to explain differences in student achievement beyond its original educational settings. This study also highlights the critical role of social and cultural context of higher education teaching and learning in which previous university impact research has often overlooked by locating social and cultural explanations directly from students' and teachers' perspectives.

Second, results from this study have important and practical contributions to the government of Cambodia, the Ministry of Education of Cambodia, and particularly first-hand stakeholders to increase student achievement by highlighting the extent to which student and teacher assessments can contribute to the improvement of teaching and learning and students' academic achievement. The results also offer critical evidence as well as useful tips for higher education policy and practice in Cambodia to improve the

student quality assessment at the institutional level. By identifying what teaching and learning behaviors are of much importance to student achievement, this study can shed light on how current so-called educational practices pertaining to the student quality assessment among HEIs in Cambodia can be reconsidered. This present research offers policy makers, educational leaders, and faculty members a critical perspective on how to promote the probability of student success from teachers' and learners' behavioral perspectives beyond the traditionally conceived influences of student characteristics and institutional characteristics, the factors that, as many critics have long argued, take much more time and energy and financial toll to change. More importantly, considering the focus of this study further placed on the class and institutional levels and the effects of student engagement and faculty behaviors by some important student characteristics, the results appear to provide a pragmatic knowledge base for policy and practice that may fit specific institutional contexts better and to suggest specific intervention programs or some sorts of actions to increase student learning at particular institutions, especially among those that highly enroll students with academically disadvantaged backgrounds such as rural and first-generation students. The results will showcase the unique characteristics of particular institutions and student subpopulations that should be given more attention so as to bring them to parity in terms of institutional performance and student achievement. Such understanding has important contributions to first-year university student learning in Cambodia and their academic achievement, while still allowing the current expansion of student access to university education to boost human resources development for the country.

1.5 Conceptual framework

University students' academic achievement has been and still is a complex area of research in higher education. One of the greatest challenges to the understanding of university students' academic achievement has been the development of explanatory conceptual models. Over the last few decades, researchers have proposed a number of theories and perspectives to explain possible factors that impact students' academic achievement. A review of the literature reveals that success in learning, especially in terms of academic achievement, is either tacitly or explicitly linked to multiple factors, including sociological, organizational, psychological, and economic ties (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2007; Perna & Thomas, 2008; Van Den Berg & Hofman, 2005). An examination of these perspectives, however, shows that most explanations shared a common theoretical perspective in college impact literature in that desirable learning outcomes are primarily a result of successful integration, both academic and social, into the learning environment of a college or university (Jansen & Bruinsma, 2005; Keup, 2006; Kuh et al., 2007; Pike & Kuh, 2005; Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996). The central proposition of this perspective lends strong support to Tinto's (1975) integration theory, which posits that successful learning at university lies in how well students' various pre-entry attributes are integrated into the academic and social systems of the institution. Within this perspective, the degree of fit between individual students and the college learning environment plays a crucial role in explaining desired learning outcomes. Tinto's (1975) theory has been the one that has been most widely tested and has played a pivotal role in framing college impact theoretical perspectives. Although Tinto's

theory was originally designed to identify risk factors that determined students' departure decision from college, a large and growing body of research has observed that students' integration into the academic and social systems of the institution has also been significantly and positively linked to various forms of students' academic outcomes.

Research on student achievement in college that was framed within Tinto's integration theory, either implicitly or explicitly, falls into two main streams. The first stream concentrates on the predictive relationships between student engagement in educationally purposeful activities and students' learning outcomes. Student engagement is a widely studied and theorized concept in college impact literature. Among the more prominent models that emphasize engagement as a core part of successful learning are Astin's (1984) involvement model, Pace's (1990) student development model, and Kuh's (2001, 2003) engagement model. Although these scholars used different terms to describe students' learning behaviors, the central premise of their notions primarily emphasizes student engagement as the key antecedent of student achievement. Astin (1984), for example, suggested that students' active role in the learning process greatly influenced student integration and learning development. According to Astin, students' mental and physical engagement in the academic experience (e.g., involvement in class activities, relations/contact with peers and teachers, and extra-curricular activities) represents a critical asset that largely links to desired learning outcomes. Similarly, Pace (1990) noted that the quality of learning is favorably enhanced through student efforts devoted to learning following college entry. While student backgrounds and institutional conditions may affect learning outcomes to a certain degree, what students do in college is a more

important predictor of academic outcomes. According to Pace, three forms of student engagement (student–faculty contact, cooperation among students, and active learning) speak more resonantly to impact students' learning outcomes. In revisiting students' role in explaining college success, Kuh (2001, 2003) emphasized five areas of engagement in academically driven activities during college (level of academic challenge, active and collaborative learning, student–faculty interaction, enriching educational experiences, and supportive campus environment) that are thought to embrace good educational practices.

Of all the conceptual models, the student engagement model has been the one that has provided a framework for a large body of research. Predominantly framed within the behavioral perspective, student engagement has been defined as the amount of time and energy students invest in educationally purposeful activities (Kuh, 2001, 2003). Student engagement factors have been empirically linked to a variety of desired college outcomes (e.g., Carini, Kuh, & Kleint, 2006; Davis & Murrell, 1993; Greene, Marti, & McClenney, 2008; Kuh & Hu, 2001; Pike & Kuh, 2005). Recent literature that has examined the relationships between student engagement and academic achievement has further indicated that the effects of student engagement on students' learning outcomes may be somewhat conditional for different student subpopulations. Many measures of student engagement such as active learning and cooperation among students were, for instance, found to have more substantial effects on the academic achievement of academically challenged students (Carini et al., 2006), students of color (Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008), and first-generation students (Pascarella, Pierson, Wolniak, & Terenzini, 2004). Of these conditional relationships, the emphasis has been particularly placed on the extent to which

student engagement may have compensatory effects on the academic achievement of students from educationally disadvantaged backgrounds.

A second stream of research looks into how institutional practices/experiences influence student learning and development in college. The underlying premise of this connection is that students' level of engagement in academic activities can be differently shaped by the given learning conditions and opportunities universities are to offer. Such differences influence how much students learn or achieve from the university accordingly. Coates (2006) asserted that the commitment of the institution to offer stimulating conditions is a prerequisite for student learning and engagement to occur. This line of research takes our understanding of student engagement research to the next level, offering a variant concept of student engagement by additionally highlighting the importance of institutional practices in enhancing student engagement and its linkage to successful learning (Kuh et al., 2007). Among the more important aspects of institutional practices, the role of faculty's classroom teaching practices has been a prime focus of higher education research for decades. Umbach and Wawrzynski (2005) postulated that faculty behaviors, in different ways, represent a critical class experience that determines how much students learn and grow accordingly.

The behavioral perspective has been one of the main modalities in understanding effective teaching in higher education (Kahu, 2013). Within this perspective, the role of faculty behaviors has been the one that has been extensively researched for decades. The underlying notion of this perspective lies in a simple logic that what faculty do/exhibit in the classroom determines the class climate that either positively or negatively influences

student learning and development. The behaviors in which faculty exhibit in class will either reinforce students' experiences in the academic systems of the institution and, therefore, strengthen their levels of engagement in academic activities and academic performances, or lead to negative experiences that, in turn, result in disengagement and below-par academic performances.

From the behavioral perspective, faculty behaviors have been conceptualized to encompass multi-dimensional classroom teaching practices that influence how much students learn and grow. Among the more important components of faculty behaviors that have been widely researched in the faculty impact literature and have emerged as the outstanding predictors of student learning are faculty's instructional organization and clarity, behaviors towards collaborative learning, and the level of interaction with and feedback provided to students (e.g., Bjorklund, Parente, & Sathianathan, 2004; Bray, Pascarella, & Pierson, 2004; Cabrera, Colbeck, & Terenzini, 2001; Pascarella, Edison, Nora, Hagedorn, & Braxton, 1996; Pascarella, Salisbury, & Blaich, 2011; Pascarella, Seifert, & Whitt, 2008; Sheehan & Duprey, 1999). These factors have also been hypothesized to be indirectly associated with college students' academic achievement. The few studies that examined faculty impact from the student engagement perspective particularly suggested that the role of college faculty behaviors in explaining student learning has been more directly related to student engagement in educationally purposeful activities (Umbach & Wawrzynski, 2005), a link that highly attributes to Tinto's integration theory (as cited in Berger & Lyon, 2005). In addition, studies on faculty impact have hypothesized that faculty practices may have had differential influences on the

learning outcomes of student subpopulations, especially among those with varying precollege academic abilities/experiences (e.g., Pascarella et al., 2008, 2011). While results have been mixed, particularly depending on the context in which teaching and learning was situated, research evidence has generally suggested the compensatory effects of good educational practices on the academic outcomes of economically and academically challenged students (Kuh et al., 2008; Pascarella et al., 2004). Taken together, while academic success is largely determined by student efforts devoted to academic activities, faculty practices also play a critical role in fostering a learning condition desirable for enhancing students' learning experience and their academic achievement. Guided by these two main streams of research, this study conceptualized the determinants of students' academic achievement as follows:

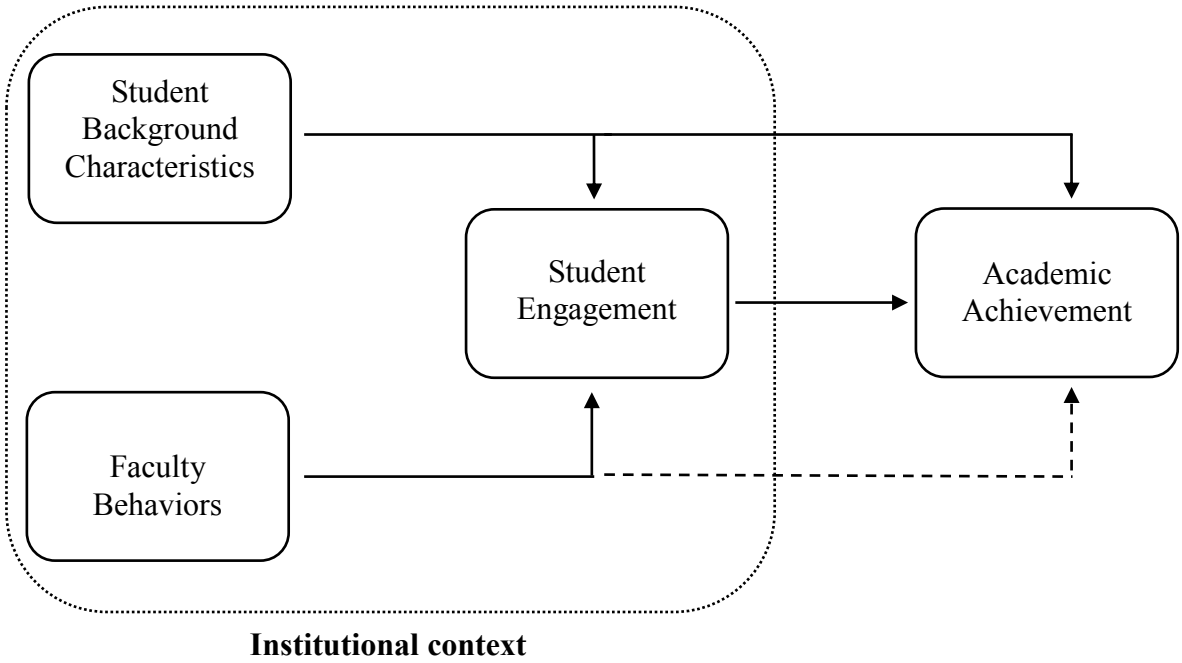


Figure 1 A conceptual model for the present research

The conceptual model in the diagram above in principle depicts interlinking relationships among students' individual factors, faculty-related factors, and institutional factors and their influences on student achievement. However, because the focus of this study was only placed on the pursuit of the empirical knowledge base that linked to the understanding of what and how teaching and learning practices determined desired learning outcomes, the conceptual lens for this study mainly centered on the associations of student engagement, faculty behaviors, and student achievement. Other displayed factors were only incorporated into this study as the controls for confounding influences beyond what would be accounted for by the variables under consideration within this study. The framed conceptual model, thus, dictated the following hypotheses to be tested, while student characteristics and institutional factors were taken into account as the controlled factors:

H1: Student engagement in educationally purposeful activities had significant and positive effects on student achievement.

H2: The effects of student engagement on student achievement were not the same for all classes and institutions and for all the student subpopulations examined.

H3: Faculty behaviors had indirect effects on student achievement.

H4: The effects of faculty behaviors on student achievement were different across institutions and by student subpopulations examined.

1.6 Definitions of key terms

1.6.1 College/university

"College", "institution", and "university" were used interchangeably throughout this study, referring to HEIs that offer four-year undergraduate programs in Cambodia. Non-degree specialized/ vocational training HEIs were not incorporated into this study.

1.6.2 Student achievement

While "student achievement" has been defined to varying degrees in the college impact research such as exam scores, grades, credits earned during the required academic period, progress from one grade to another, completion rates, and post-college employment and income (Kuh, Pace, & Vesper, 1997), this study limited itself to a more conventional definition based upon the notion of academic achievement by utilizing students' test scores as the outcome indicator. Academic achievement, as it stands, was measured by the end-of-semester test scores and used as a lone indicator of students' academic outcome—the dependent variable used in this study. The scores represented students' academic performance in one core subject (Core English). "Core English" is commonly considered a prime subject of an English language degree program offered at Cambodian universities. This subject embraces a wide array of language inputs, such as grammatical structures, language expressions, vocabulary, and reading skills. Student achievement in this study is, thus, a measure that holistically represents these language inputs.

1.6.3 Student engagement

Kuh (2001) defined student engagement as "both the time and energy students invest in academically purposeful activities", including both academic and extra-curricular activities. For this study, student engagement was operationally defined as the amount of time and energy students devote mainly to academic activities, both on- and off-campus. No extra-curricular activities were taken into account in this study. Thus, the meaning of student engagement was limited to the academic activities observed and tested in this study only. Student engagement variables consisted of students' time on task, active and collaborative learning, and interaction with their teachers. These variables were represented by latent, scale variables adapted from the National Survey of Student Engagement (NSSE) (Kuh, 2001, 2003) and the College Student Experiences Questionnaire (CSEQ) (Pace, 1990). These variables were later factorially defined based upon the result from the factor analysis (see Measurement).

1.6.4 Faculty behaviors

Faculty behaviors were defined as the teaching practices that faculty exhibited in class to promote student learning. Faculty behaviors were originally measured by a group of observable indicators of effective teaching practices that have been the prime focus of research in higher education teaching, including faculty's instructional organization and clarity, behaviors towards collaborative learning among students, feedback to students, and out-of-class interaction with students. These variables were measured by latent, scale variables created by Pascarella et al. (2008, 2011) and Marsh's (1991a) Student

Evaluations of Educational Quality (SEEQ) (as cited in Marsh & Dunkin, 1997). These variables were later factorially defined based upon the result from the factor analysis (see Measurement).

1.6.5 Student background characteristics

Student background characteristics consisted of a student's gender, age, living status, delayed enrolment status, multiple university attendance, geographical origin, parents' university experience, employment responsibility, weekly expense, academic resources at home, and pre-university academic experience. This group of variables represented students' pre-university attributes and demographic conditions while being at university and was used as controlled factors for this study.

1.6.6 Institutional characteristics

Institutional characteristics consisted of a group of variables that were tapped to showcase different aspects of institutions under consideration in relation to student achievement in this study. These included the institutional control (public vs. private), faculty–student ratio, institutional admission policy, and the proportion of students from the city vs. those from the provinces. These variables measured some of the main characteristics of HEIs in Cambodia, especially reflecting on the faculty members' workload at each institution, the enrollment regulation, and the nature of the enrolled students by their original geographical locations. These variables were included in this study as the controlled factors when tested with the main factors of interest, i.e., student

engagement and faculty behaviors.

1.6.7 Fixed and random effects

These terms would be used at times in this research report and referred to "between-subject/group effects" and "nested-effects" at the higher level of the data hierarchy (e.g., the effects of student-level variables at the class or institutional level), respectively. For example, student-level factors such as student engagement factors would be analyzed at student, class/teacher, and institutional levels in this study in order to provide a clearer insight into the combined effects of these variables on student achievement. The variations in student achievement mainly due to between-individual student differences (at the student level) were termed "fixed effects", indicating that differences in student achievement were mainly a function of between-student differences in certain predictive variables; whereas the effects of student-level predictors on student achievement, when tested at the group level, were termed "random effects". The significant result related to this model testing would indicate that the effects of student-level variables would vary across groups (e.g., classes or institutions) (Beretvas, 2007). In other words, the presence of random effects indicated that the influence of the predictive factors of interest on student achievement would occur differently across groups (e.g., by class or institution). The understanding of both fixed and random effects in this study would provide a clearer picture of the 'strength' of the model in predicting student achievement at different levels.

1.6.8 General effects

"General effects" referred to the influence of any of the observed variables on the outcome/dependent variables based on the central tendency approach of the regression analysis, which rendered the observed effects on student achievement true/applicable to all student populations, regardless of their profiles. When the relationships among student engagement, faculty behaviors, and student achievement were treated in general terms or modeled in the general effects equation, any statistically significant relationships would suggest that a change in the independent variable would result in a change in student achievement in a similar manner for all students. In other words, the effects were all but equally predictable to all the student subpopulations under consideration.

1.6.9 Interaction/conditional effects

Unlike the general effects, interaction/conditional effects were the terms used in this study to represent how one independent variable interacted with another to influence the outcome/dependent variable. The central notion of such a relationship lied in the proposition that certain independent variables (e.g., student engagement) might have had varying degrees of influences on the academic achievement of some student subpopulations (Kuh et al., 2008). The presence of interaction effects indicated that the influences of variables of interest on student achievement would not be the same for all student populations. Rather, it designated that a particular group of students would be more greatly affected by the main variable being tested.

1.7 Limitations of the study

There are some limitations of this research. First, the focus of this study was on student achievement in an English degree program at universities in the city. Data representing teachers and students from other popular programs such as business, economics, and information technology and from non-urban universities were not included, and they were strictly limited to first-year university experience of teaching and learning. Thus, its conclusions must be restricted within this boundary. Second, student achievement was based on the aggregated scores of all the three test components measured in the achievement test: vocabulary, grammar and language expressions, and reading comprehension. Any specific decomposition of the test items was not rendered in the analysis. The test scores shown in the current research should be, thus, interpreted in general terms as the representation of students' overall academic performance. Also, student achievement was measured by only one test. Other measures such as students' grade, GPA, or intellectual and/or cognitive gains were not considered due to the lack of reliable data sources. Thus, the results of this study should not be inferred beyond the currently defined nature of student achievement. Third, this study employed a multi-level regression to examine the relationships among student engagement, faculty behaviors, and student achievement in a detailed manner. While the use of a multi-level regression proves useful to address the hierarchical nature of the data, the additional use of a structural equation model may provide richer information about the relationships among student engagement, faculty behaviors, and student achievement. Fourth, despite the fact that the predictive relationships in this current research were modeled in a more advanced and

sophisticated HLM software, the conclusions would not impose any causality of the relationships embodied in the data. No causality should be made from this study. The experimentation of specific variables would be suggestive of confirming the cause-and-effect relationships. Fifth, although this study mainly focused on the dual concepts of student engagement, most student engagement measures were limited to faculty's in-class teaching and students' learning behaviors. Further research should incorporate other external forces such as university support programs, a more comprehensive set of institutional characteristics, and social factors to explain the differences in students' academic outcomes. Last but not definitely least, this study reported faculty behaviors and student engagement predominantly based on quantitative data from a questionnaire survey. While the interview was also incorporated to provide an in-depth explanation of factors that are/are not important to student achievement, its role was no more than complementary. Further research wholly using qualitative data is needed to gain greater insights into effective teaching and learning practices at universities and their relationships with student achievement.

1.8 Research ethics

There are a number of ethical issues this study had taken into consideration. At all levels, data were collected with great caution. Confidentiality, privacy, and voluntariness were highly maintained. At the institutional level, due to the fact that the information pertaining to teaching and learning may to some degree reflect the quality of education at each university, especially at the private universities, the real names of the universities

selected for this study, or any explicit characteristics, were not exposed throughout this research report as quality is a sensitive issue in Cambodia. Only numerical representations, namely 1, 2, 3 and so on, were used in lieu of any sensitive characteristics or names of the universities that might have been easily recognized by the public. Also, all the participating universities were selected on a voluntary basis. A request form was sent out to each targeted university to seek official permission for conducting the present research.

At the individual level, the same mechanism was used for student selection. Despite the fact that ethical issues were not serious at this level given the nature of the educational investigation of this study, the subjects' identities were not requested in the questionnaire survey to ensure confidentiality and privacy of the information obtained, particularly their study behaviors and attitudes toward learning and teaching. Students were also requested to participate in this study and to fill out the questionnaire on a voluntary basis. A written statement describing the purpose of the survey and its scope for use was included in the questionnaire survey to seek their consent. All in all, no explicit identities of institutions and students were, by any means, exposed throughout this research report.

1.9 Structure of the dissertation

This study was divided into six chapters. Chapter One is comprised of the background of the study, the purpose of the study and research questions, originality of the study, the significance of the study, the conceptual framework, the definitions of key terms, the limitations of the study, the ethical considerations, and the structure of the dissertation. Chapter Two presents a general description of Cambodia's higher education development

from the historical perspective and discusses issues associated with the quality of Cambodia's higher education, particularly the quality of student learning, as a backdrop to increase the understanding of the gaps in college student achievement research in Cambodia's contemporary higher education context. Chapter Three discusses in detail college impact literature and the conceptual models to be examined in this study. This chapter is organized as follows: (1) college impact research, (2) concept of and empirical studies on student engagement in higher education, (3) concept of and empirical studies on college faculty impact, (4) discussion on students' background characteristics and institutional characteristics as the controlled factors, and (5) discussions on the conceptual and methodological gaps in the existing literature as well as the justifications for the present research. Chapter Four describes the methodology used to accomplish the set research questions of this study. It contains the research design, the targeted program, samples and sampling procedures, the research site, data collection, instrumentations and the measurement of variables, analytic techniques, and the internal validity of the study. Chapter Five presents the research findings based on the data from the questionnaire survey, both descriptively and inferentially, and discusses the findings by also highlighting the social and cultural aspects of teaching and learning in the Cambodian higher education context based on the interview data. Chapter Six provides the conclusions of the study, the research implications for policy and practice, and the directions for future research.

CHAPTER TWO

HIGHER EDUCATION IN CAMBODIA—BACKGROUND AND CONTEXT

Cambodia's higher education has a troubled and complex history. This chapter outlines the background and context of higher education in Cambodia through an overview of its development across major historical periods, briefly describes the current higher education system in Cambodia, and looks into the education quality within the country's contemporary higher education development context. Despite the fact that the scope of this study is limited to teaching and learning and its impact on students' academic achievement, the examination of the whole higher education context and its historical roots will shed useful light on the understanding of what has been ignored when it comes to the efforts, at both the individual and the national levels, to address the quality of higher education.

2.1 Development of higher education in Cambodia

Higher education in Cambodia has gone through several historical phases. This section will discuss higher education development in Cambodia across four historical periods to enhance the understanding of the tradition and the evolution of Cambodia's higher education. These historical phases are classified as follows: the pre-colonial period, the colonial period, the post-colonial period, and the modern higher education in Cambodia.

2.1.1 The pre-colonial period (Before 1863)

Despite a lack of concrete resources and evidence, the education system in Cambodia

before the French colonization (1863-1953) had been in parallel described as very traditional in nature (Ayres, 2000). Institutionalized (higher) education was totally absent (Clayton & Ngoy, 1997). Before the arrival of the French in 1863, as Chou and Manipoud observed, Cambodia appeared to adopt a monastic-style education, with Buddhist temples the only place for education (as cited in Ayres, 2000). In lieu of formal schools, the temple or "*wat*" was the only place where secular knowledge was taught to Cambodian children. Monks not only acted as the holy agent whose role was to transmit moral and religious precepts, but also played a vital role in the education of Cambodian children throughout the country by teaching them, mostly male population, to read sacred Cambodian texts, instructing them the concepts associated with Buddhism and Cambodian oral and literary traditions, and training them some vocational skills such as carpentry necessary for rural lifestyle (Ayres, 2000). The education system in this traditional society was mainly to develop moral, social, and cultural understanding among Cambodian children and adults to be good citizens. As Ayres (2000) noted, only some basic literacy (i.e., reading and writing texts) was emphasized and taught at the *wat* during this period. Literacy among Cambodians, especially the peasantry, was very low. Within the context of temple-style education, rote learning had been viewed as the most common approach to teaching and learning.

2.1.2 The colonial period (1863—1953)

From 1863 to 1953, Cambodia became a French protectorate. Education under the French colonization deviated substantially from that of the traditional Cambodia. For the

first time in the history of Cambodian education, Cambodia saw a transition from the pagoda education to the secular education. During the French colonial period, the French started to modernize the temple schools by introducing secular contents and teaching methods to the Cambodia's education system. For some, this is a turning point in the history of Cambodian education toward the liberalization of modern or Western education in this traditional society. Many scholars instead viewed the education during this colonial period as only a tool that facilitated the French exploitative process. Ayres (2000) and Clayton and Ngoy (1997) argued that the French was not truly serious about modernizing education in Cambodia. Clayton and Ngoy (1997) asserted that the French-based education system was merely designed to equip the colonial civil servants with the abilities to work for the French administration. Despite successfully formalizing secular education, only a limited number of elite Cambodians had access to this so-called modern education. The vast majority of Cambodians remained reliant on the pagoda education (Ayres, 2000).

Under French protection, higher education had seen little development. As Clayton and Ngoy (1997) stated, until 1949, all higher education services were exclusively offered at a country's only secondary school, the Lycee Sisowath. There was no form of modern-like HEIs established in that period until the establishment of the National Institute of Juridical, Political, and Economic Sciences in that year. The French educated a handful of Cambodian students to be capable of speaking French in order to help the European administrators to function in the colonial setting and, at the same time, appeared to indoctrinate them to discard traditional values and ideologies for those things [of the] French (Clayton & Ngoy, 1997). Although the establishment of the National Institute of

Juridical, Political, and Economic Sciences marked the historic development of higher education in Cambodia, the formal and localized higher education system was little emphasized. Higher education during the French colonization was a mere sorting machine the French used to create what was locally labeled "new men" or "Westernized Cambodians" to serve their colonial missions.

2.1.3 The post-colonial independence (1953 —1979)

After gaining independence on November 09, 1953, Cambodia started to restructure its education system. Prince Norodom Sihanouk, who liberated Cambodia from the French colony and ruled the country for nearly two decades afterward (1953-1970), viewed formal education as a critical force to liberate the country from the past subordination inherited from the French and as part of a campaign to modernize the country (Clayton, 1998; Clayton & Ngoy, 1997). Under Sihanouk, the Cambodian education system at all levels saw a fundamental shift from French to Khmer as the medium of instruction and a significant reform to reinstall the country's nationalist vision and identity. To realize his missions, the nationalist prince embarked on a massive education expansion by devoting nearly 20 % of Cambodia's annual budget to the development of the education sector. With this concerted effort, for the first time in the history, Cambodia saw the massive growth in the number of primary and secondary schools. Also, as part of the agenda to reduce dependence on the Westerners, higher education witnessed a dramatic expansion.

Under the Sihanouk regime, Cambodia witnessed a substantive higher education expansion. Of noteworthy evidence was the establishment of the modern university, named

the Royal Khmer University (currently the Royal University of Phnom Penh) in 1960, and other public universities in the same decade. These universities included the Royal Technical Institute (1964), the Buddhist University (1965), the Royal University of Agronomic Science (1965), the University of Fine Arts (1965), the Royal University of Kompong Cham (1965), the Popular University (1966), the Royal University of Battambang (1966), and the Royal University of Takeo/Kampot (1967) (ibid.). This quantitative development discourse, coupled with the imposed tuition-free policy for all higher education students, made higher education become accessible to greater numbers of students, increasing from 347 in 1955 to an estimate of 10,800 students by 1969 (Sloper, 1999). The educational reconstruction during the Sihanouk regime marked a great milestone for the understanding of today's modern higher education.

Unfortunately, despite widely known as the most prosperous period in the history, at least in terms of the public higher education expansion, the prosperous regime steered by Sihanouk was short-lived and was drawn into a declining state in the late 1960s (Sloper, 1999). Engulfed by the geopolitical crisis in the Indochina, the country's engagement in the civil war, and the growing discontent among rural people with the corrupt and feudal system, particularly with the flawed education plan under Sihanouk, the rapid higher education expansion in the 1960s immediately saw reverse implications, the most severe of which was the mismatch between the educational delivery and social needs (Chandler, 1993). Apparent evidence was the misalignment between the education planned by the Sihanouk and the economic reality of the country. Although Cambodia was an agrarian society, the education model engineered by Sihanouk was far from supporting that reality.

The higher education expansion and provision in that period was largely biased toward the city and major provinces (Duggan, 1996). This resulted in the movement that most graduates only sought employment that was predominantly concentrated in the city (Sloper, 1999). Also, higher education grew at a faster rate than the agriculturally based economy would be able to absorb. As a consequence, escalating unemployment began to rage across the country. By the late 1960s, Cambodia was overwhelmed by the growing discontent among rural people with the corrupt and feudal system, and the country's socio-economic situations progressively exacerbated. This led to the ouster of Sihanouk by a pro-American leader, Lon Nol, in 1970.

Following the ouster of Sihanouk, the US-supported regime under Lon Nol (1970-1975) moved away from the Sihanouk's socialist model. With the assistance of the US, the regime brought in a renaissance of Western ideologies once again in Cambodia's turbulent history. Unlike the French, Lon Nol viewed education as an important tool for the country's development, and like the system under Sihanouk, the education expansion program during this newly-installed government continued to be a prime focus (Ayres, 2000). Unfortunately, the escalating war within the country and the shrinking US power in the Indochina in the early 1970s substantially hampered such a development plan (Duggan, 1996). Cambodia's education system, including higher education, saw a little sign of an expansion and was only deteriorating, both hardware and software, thanks to the serial bombings by the US, the escalating war with the communist resistant guerrillas, notoriously known as the Khmer Rouge, and the country's economic crisis partly inherited from its predecessor's regime (ibid.). Educational infrastructures were, in particular,

heavily destroyed. In 1975, the Khmer Rouge put this pro-American regime to an end.

Under the Khmer Rouge from 1975 to 1979, efforts to modernize the education system came to a complete halt. The autocratic Khmer Rouge leader, alias Pol Pot, characterized education at all levels, particularly higher education, as a potential threat to the regime's egalitarian plan. Under Pol Pot, all the previous educational achievements during the 1950s and the 1960s, both hardware and software, were all but destroyed (Sloper, 1999). As Duggan (1996) reported, the regime eliminated almost every aspects of formal education, including plant, personnel, students, and educational facilities and materials. Higher education was the most severely suffered sector. The eradication of higher education was an outstanding target of the Pol Pot in an attempt to transform Cambodia into a socialist and agrarian society. Though different accounts prevailed, almost all university personnel, teachers, and graduates died or fled the country (Duggan, 1996; Sloper, 1999). Training HEIs, if not destroyed, were closed or transformed into warehouses. Drawn upon the pragmatic ideologies of the regime, the Khmer Rouge eradicated all forms of formal schooling, including higher education, concepts, and values installed in the previous eras. This period saw higher education development in all forms stagnate.

2.1.4 Vietnamese occupation (1979 —1989)

The Khmer Rouge regime did not last long. In 1979, Cambodia was invaded by Vietnam (Sloper, 1999). For nearly 10 years, Cambodia was under Vietnamese patronage and pragmatically aligned with the Soviet Union and the Eastern bloc countries. Barred by

the legacies of civil wars and the Khmer Rouge regime that had devastating impacts on the country's infrastructure and manpower development, Cambodia, once again, entered a difficult reconstruction period. Educational development at all levels faced mounting challenges. Higher education sector was no exception. Without financial and technical assistance of Vietnam and the Eastern bloc countries, education rehabilitation and development would have been extremely difficult. Within just one year after the liberation, more than 5,000 primary schools were reopened; over 1 million children were enrolled (Duggan, 1996; Sloper, 1999). Higher education also witnessed a remarkable resurgence. Several HEIs established earlier, mainly during the Sihanouk regime, were reopened in the 1980s. Teacher training and other provisions of higher education services also took place since.

Much like the system under the French, higher education, apart from the traditional provision of academic and technical training, had been utilized as a prime tool to serve the regional and global geopolitics agenda of Vietnam and its allies (Clayton & Ngoy, 1997). While Vietnam and other Eastern bloc countries assisted Cambodia in training teachers, providing and writing textbooks, and securing other aids in education, most of the teaching and learning contents were biased toward the socialist ideologies. As Vickery (1986) stated, courses were specifically designed to spread the Marxist-Leninist, Soviet-style communism (as cited in Clayton & Ngoy, 1997). HEIs were viewed as a mere venue for political training and the spread of ideologies against imperialism and capitalism. As such, despite gaining some so-called peace, this period faced severe constraints in relation to the development of higher education. The higher education development model engineered by

the Vietnam and the Soviet Union did little to fit Cambodia's reconstruction context, of which the development of manpower for socio-economic resurgence is a much-needed area.

2.1.5 The modern higher education in Cambodia (1989 — the present)

Following the withdrawal of Vietnam and the fall of the Soviet Union and international communism in 1989, Cambodia entered a new wave of political change (Clayton & Ngoy, 1997; Sloper, 1999). Cambodia once again became independent and was for the first time in preparation for a transition from a centrally planned economy to a free market economy. This post-occupation independence period saw previous educational assistance by Vietnam and the Eastern bloc countries immediately cut off and all the past ideological contents removed from higher education curriculum, textbooks, and other related teaching materials. Education provision and training were no longer centered on the Soviet-style education. Political education and ideologies were considered irrelevant to the new system. In addition, in lieu of the imposed Vietnamese and Soviet languages during the occupation period, Khmer language became the medium of instruction (Clayton & Ngoy, 1997). Shortly after the collapse of the Soviet Union and with the pressure from the international community, Vietnamese and Soviet educational advisors and professors, along with troops, departed the country, leaving the country with a severe shortage of skilled labor and financial resources (Clayton & Ngoy, 1997; Sloper, 1999). This imposed mounting tasks on the country's higher education reform toward the emergent labor market.

Nonetheless, the UN-sponsored elections in 1993 effectively created a positive

political discourse for Cambodia to bring reform, reconstruction, and rehabilitation of the education sector back into place (Sloper, 1999). Although the remnants of Cambodian warring factions prevailed in some parts of the country until 1997, assistance from the Western countries, both directly and indirectly, began pouring into the country. With a massive expansion of aid to education, Cambodia gradually witnessed a revival of its higher education system. The increase in higher education enrollment in the early 1990s, reportedly from 2,357 in 1985 to 13,465 in 1995, remained the fresh evidence (MoEYS, 1996, as cited in Sloper, 1999).

Despite this sign of improvement, Cambodia's higher education was still limited in size and capacity to absorb the vast majority of high school graduates who sought access to university education (Pit & Ford, 2004). Although the government of Cambodia started to foresee the need for capable human capital that fits into the country's socio-economic development discourse, higher education, though principally known as a center for knowledge creation, was the least financed sector, compared to basic education (Duggan, 1997) and still followed a centralized system, with public HEIs the only venue for the provision of teaching and training. Until the late 1990s, the state was the only provider of higher education in the country under a tuition-free system. Student enrollment was wholly limited to the size of state-funded scholarships. This led to a mismatch between the demand for higher education enrollment and the capacity of the existing state-financed HEIs.

Foreseeing the need for a skilled labor force for economic development and competition, the Royal Government of Cambodia (RGC) set out two policies in 1997 to

promote the privatization and expansion of higher education (Kwok et al., 2010; Pit & Ford, 2004). The first policy opened space for public HEIs to enroll students on a fee-paying basis in addition to the government-funded scholarships. The second policy allowed the private sector to establish and operate HEIs, free of restrictions on both purpose and mode, on top of the limited capacity of public HEIs. With this policy initiative, the first private university, Norton University, was established in that year. For the first time in the history, Cambodia saw the emergence of both public and private sectors to engage in the provision of higher education services to the society. Following this reform, Cambodia's higher education has expanded at an accelerating rate, from a little over 10 HEIs in the early 2000s to 101 HEIs in 2013, of which 62 are privately-owned and mostly located in Phnom Penh City. Private universities have for the first time dominated the higher education space of the country. Within just about a decade, the total number of students enrolled in Cambodian HEIs has increased more than tenfold, from a modest 10,000 in 1997 to 168,000 in 2009 (Chet, 2009). The growth has been even phenomenal during 2009-2012, surprisingly reaching 246,153. However, while this unprecedented development is likely to continue in the foreseeable future given the country's gradually enhanced political system toward a free market economy and socio-economic development in recent years, and, more importantly, an increase in a large pool of high school graduates, enrollment amounted to no more than 5% of the college-age population (Ford, 2013). Figure 2 shows higher education enrollment in 1997 and its development over the last seven years during 2005-2012.

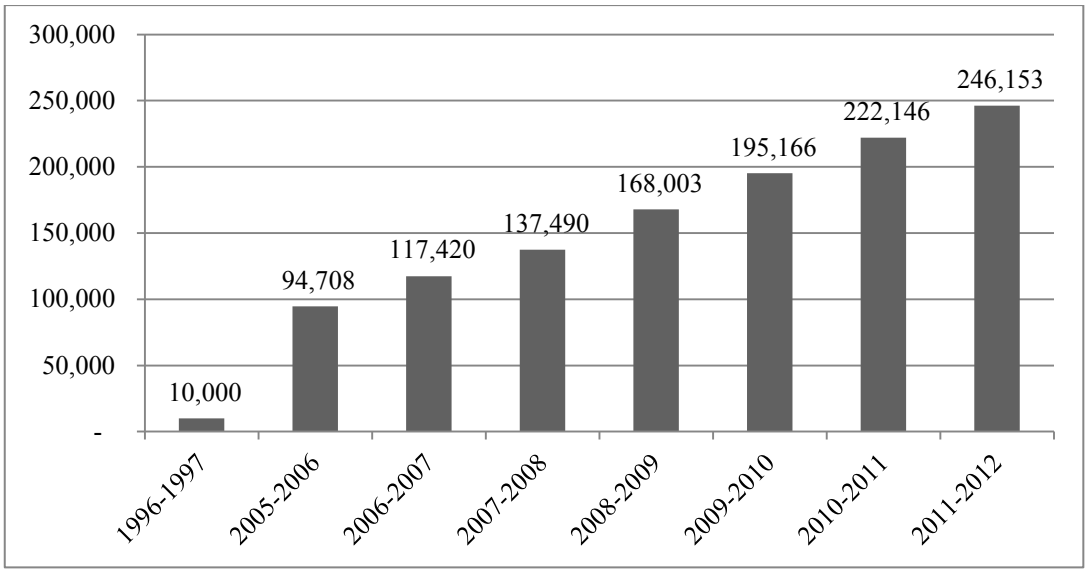


Figure 2 Total student enrollments in Cambodian HEIs
Source: Department of Higher Education of Cambodia: Statistics for 2011-2012

2.2 Current higher education system

Cambodia's higher education follows a centralized system. All HEIs, both public and private, are in principle under the supervision of two in-charge ministries: the Ministry of Education, Youth and Sport (MoEYS) and the Ministry of Labor and Vocational Training (MoLVT). These two ministries act as the governing bodies that manage Cambodia's higher education into two streams: academic and vocational (see Chet, 2006, 2009). The former is under the supervision of the Ministry of Education, Youth and Sport (MoEYS), whereas the latter is under the Ministry of Labor and Vocational Training, both of which play a critical role in providing teaching and training. Currently, other specialized ministries have also begun to offer higher education services. These ministries include Ministry of Health; Ministry of Agriculture, Forestry, and Fisheries; Ministry of Culture and Fine Arts; Ministry of Economy and Finance; Ministry of National Defense; and the Office of the Council of Ministers.

Cambodian HEIs are classified into three categories: the academy, university, and institute/independent specialized school. The first category is the academy. The academy is literally characterized as a HEI responsible for conducting research. The Royal Academy of Cambodia (RAC) is the only academy that fulfills this think-tank function (ibid.). Currently, this HEI also offers a range of advanced degree programs from master to doctoral degrees. The second category is university. The function of the university is to provide teaching and training of degree programs in broad terms, from diplomas to PhD degrees. The final group is a specialized HEI, which is entitled to offer professional or specialized training. All types of HEIs in Cambodia offer a traditional face-to-face mode of course delivery, with a modified credit system. Distance or online learning is only an emerging concept among Cambodian HEIs. For this study, only the second category is of interest as university is the most developed sector in Cambodia's higher education system and bears enormous responsibility to accommodate the vast majority of students currently enrolled in higher education. It is argued that the emphasis on this academic stream be a pragmatic approach to bolster human resources development for the country's economic development in the long run.

2.3 Quality of Cambodia's higher education

For decades, Cambodia has struggled to its feet to expand its higher education to rebuild human capital for the modernization and development of the nation. However, the complicating political situations throughout the second half of the twentieth century tempted Cambodia to concentrate more on the quantitative expansion of its higher

education than the qualitative one. Such a one-sided expansion has presented both opportunities and threats to the future development of Cambodia's higher education system. On the one hand, the rapidly improved access to higher education, as especially observed in the past decade, has marked a success story for Cambodia to revitalize its human capital lost from the decades of devastating civil war and social upheaval. On the other hand, a critical lack of regulatory mechanisms to safeguard the quality of education, while still allowing the current expansion, has put Cambodia's higher education in a vulnerable position. Within the current development backdrop, the quality of Cambodia's higher education has been strongly questioned (Ford, 2003, 2006, 2013).

Chet (2006) cautioned against this development landscape, pointing out that, "the rapid expansion of higher education without sufficient quality assurance systems in place can lead to the creation of institutions of dubious quality weakening the whole system" (pp. 14-15). Like other countries with a later emergence of higher education, Cambodia remains apparently new to the quality assurance concept and implementation. Until 2003, the accreditation body that would serve as a functioning and independent institution to manage higher education development processes remained on the whim. This has led many scholars, educational stakeholders, and the society to voice a serious concern over the quality of university students who will be the important workforce for the country's economic development.

To assure the quality of higher education, the government took a bold action to establish an accreditation agency, the Accreditation Committee of Cambodia (ACC), in 2003. The presence of the ACC signaled a positive move toward the enhancement of

quality in higher education through the practice of the institutional accreditation. According to the ACC's regulation, all HEIs, both public and private, are subject to a set of quality standards and policies to be qualified and accredited to grant degrees. Institutional accreditation has become a prime tool ever since to guarantee the academic quality of Cambodia's higher education. Although the institutional accreditation is still a new concept among HEIs, the accreditation title is compulsory for all HEIs that grant degrees, including Bachelor's, Master's, and PhD degrees (Chet, 2006). To gain the accreditation status, each HEI is mandated to meet the minimum quality requirements stipulated by the ACC, which encompass nine main criteria: (1) mission; (2) governance structure, management, and planning; (3) academic programme; (4) academic staff; (5) students and student services; (6) learning resources; (7) physical facilities; (8) financial management and planning; and (9) dissemination of information (see Chet, 2006).

Unfortunately, the effectiveness of this embryonic body remains to be seen. Many challenges have hampered the implementation of quality assurance in Cambodia. One of the main challenges is that this embryonic institution still lacks expertise and experience, leaving the capacity to carry out its duties professionally in question (Chet, 2009). More importantly, the ACC largely plays an external role in evaluating the quality of higher education at the time when Cambodian HEIs remains new to the institutional evaluation concept, especially the internal assessment. Additionally, although the implementation of quality assurance provides a platform for the understanding and enhancement of the quality of higher education in Cambodia, there is uncertainty as to extent to which 'quality' embraces within such a development context. The nine quality indicators, as they stand,

appear to do little or less directly to address the quality of student learning.

In policy, it is stipulated that enhancing student achievement is a prime measure that should lead to the quality improvement in education, including higher education (MoEYS, 2005). Yet, little has been done in relation to student assessment as to what factors are fundamentally related to students' academic achievement. Not only that, although the education policy emphasizes teaching and learning quality as a prime tool to enhance student achievement (ibid.), what constitutes teaching and learning quality and how they make an impact on student learning are open to critical question. The current quality assurance practice seemingly fails to concentrate on this educational problem in a detailed manner, if there is any. This adds an additional task for this present research. Taken together, it is the lack of empirical evidence relating to students' academic success, as usually measured in terms of their academic achievement, within the current context of higher education development in Cambodia that this present research is needed so as to bring in new ideas of looking at the quality of education from a more practical perspective.

CHAPTER THREE

REVIEW OF RELATED LITERATURE

This chapter begins with a description of the theoretical perspectives used to examine college student success research as well as the dual concept of the student engagement model to be examined in this study. The second section of this chapter will review the student engagement concept and its associated variables that have been tested in higher education research in both general and conditional terms and discuss the conceptual and methodological gaps within this line of research. The third section discusses the literature related to the conceptions of effective teaching behaviors in higher education and faculty behavior variables that have been widely examined in college faculty impact research. This section also contains a critical examination of the hypothesized relationships between faculty behaviors and student achievement to be explored in this study. The fourth section of this chapter reviews some students' background characteristics and institutional descriptors to be treated as controlled factors in this study. The final section provides an overall justification for the variables and the analytical framework to be examined in this present study.

3.1 College student success in perspectives

Student success in college has been a focus of higher education research for decades. The quest to understand and create conditions that matter to student learning and development in college has produced a plethora of empirical evidence from various

perspectives that have contributed to our understanding of the explanatory conceptual models of college student success. Of all the more dominant perspectives, the sociological, organizational, psychological, and economic perspectives have provided a framework for a large and growing body of research that has explored the associated factors to determine college student success.

From the sociological perspectives, student success is characterized as a function of the dynamic relationships among students' pre-entry attributes, college experiences, and home community that interact to influence the students' degree of fit to the academic and social systems of the institution. Within the sociological perspectives, Tinto's (1975) interactionalist theory has been the one that has been highly emphasized and tested in the college impact literature. Grounded in Spady's (1970) model using Durkheim's theory of suicide and Van Gennep's anthropological model of cultural rites of passage (as cited in Kuh et al., 2007), Tinto primarily focused on the interactions that occur between the individual students and the academic and social systems of a college or university and characterized these relationships as the core influences that determine whether students are to succeed in college. According to Tinto, the degree of adjustment to the environment of the institution they are attending, both academically and socially, is a crucial explanatory experience linked to student persistence and learning outcomes.

Academic and social integration are the two-complementary forces that serve as the centerpiece of Tinto's integration theory. According to Tinto's model, academic integration constitutes the quality of experiences pertaining to the structural and normative dimensions of the college or university. Structural integration represents the extent to

which students are able to associate their prior expectations with the explicit standards of the college or university, whereas the normative integration attends to an individual's identification with the normative structure of the academic system. Satisfaction with study progress and choice of major is among the explicit indicators of academic integration that have been highlighted in the college impact literature. Social integration contains the individual's adaptation to the social system of the college or university and represents the intertwining forces that occur at both the level of the college or university and the level of subcultures of the institution (Tinto, 1975). Of the more conventional measures of social integration, peer-to-peer interactions and faculty-student interactions are characterized as the prime measures that reflect how well individual students fit into the social systems of a college or university they are attending. Guided by the notion of integration as the value-added forces that foster student learning and development, Tinto postulated that although various students' individual academic and social backgrounds (for example, family backgrounds, individual attributes, and precollege schooling experiences) directly influence their initial commitment to the institution and to the goal of college graduation, the levels of academic and social integration after they enter college, in turn, influence their subsequent commitments to the institution and to the goal of college graduation, the factors that successively exert important influences on their learning processes and levels of engagement in academic activities. All things considered, the sociological perspectives, as its concept stands, accentuate the quality of experiences during college, both academic and social, as the interweaving forces that shape students' attitudes, commitments, and behaviors toward learning and that ultimately affect student success in college.

The organizational perspectives offer a critical conceptual foundation for the examination of the structural influences of the institution on student persistence and educational achievement in higher education research. Based on these perspectives, educational researchers have hypothesized that the institutional structures and processes play a vitally important role in student learning and their academic performances (Kuh et al., 2007). Institutional structures reflect the types of the institution students are attending, such as the institutional size, selectivity, resources, and faculty-student ratios; whereas institutional processes embrace the institutional practices, ranging from institutional policies to administrative services and to faculty practices and responsiveness to students, the factors that interact to influence students' perceptions and behaviors toward learning. Bean (1983) was one of the most widely known educational figures that emphasized the importance of organizational attributes of the college or university and its predictive relationships with college student success. In his student attrition model, Bean (1983) posited that, "beliefs shape attitudes, attitudes shape behaviors, and behaviors signal intents". According to Bean, the characteristics and conditions of the institution students are attending are assumed to provide a critical college environment that may either negatively or positively determine the levels of fit among students and their success in college.

Psychological perspectives describe the ways students' attitudes, motivations, and goals shape their behaviors toward learning and its influences on academic performances. Among the more important theories that emphasize the psychological state of students in relation to their success in college are the attitude-behavior theory, achievement motivation

theory, and achievement goal theory. The attitude-behaviors theory assumes that students' personality traits are important forces that affect their behaviors and perseverance toward learning (Bean & Eaton, 2000, as cited in Kuh et al., 2007). Bean and Eaton, for instance, posited that students with a strong self-concept are more confident about their ability to succeed, while those who are less confident are more likely to show less academic perseverance and to give up prematurely. The achievement motivation and goal theory holds that academic performance is generally assumed to be a product of students' achievement goals, and that achievement goals are affected by students' achievement motivations (Harackiewicz, Barron, Tauer, & Elliot, 2002), suggesting that, "students who are motivated to master or learn materials tend to adopt master goals, while students who are motivated to demonstrate competence or better academic achievement than their peers adopt performance goals" (as cited in Perna & Thomas, 2008). The psychological perspectives, in general, hold that students have certain personality traits when they enter a college or university, and these pre-college attributes are assumed to shape their behaviors toward their peers, faculty, and the entire learning processes accordingly, the factors that, thereafter, translate into productive learning outcomes.

Economic perspectives lend support to the idea that success in college is a function of the cost-benefit equilibrium perceived by the individual students. Of the more dominant notions built within this economic sphere is the human capital theory (Becker, 1964, as cited in Van Den Berge & Hofman, 2005). The human capital theory builds a foundation of the economic approach that guides the economic inquiry of education and its link to student success. The theory taps the fundamental ideas that if the cost of education or

involvement in certain activities outweighs its returns, students will compromise their efforts in learning and likely depart from university prematurely. In the broadest sense, costs may involve tuition fees as well as time and energy invested in certain activities, whereas benefits may include future earnings as well as the obtained knowledge and skills. The human capital theory concentrates on how individual attributes and especially the family backgrounds of the students play a role in explaining the extent to which students invest time, money, and energy in education or other learning opportunities. From the economist standpoint, the cost-benefit considerations among students are the centerpieces of the economic approach that has been used to examine how students succeed in college. In education, students' socio-economic status has been considered a prime factor that enhances our understanding of how socio-economic factors affect their attitudes and behaviors toward learning and, thus, their academic outcomes (Kuh et al., 2007).

Despite the fact that different perspectives have been employed to enhance the understanding of factors that influence student success in college, most of the previous research has classified factors affecting students' academic outcomes into two related categories—individual characteristics and the quality of experiences in college—and particularly lends support to the utility of the explanatory conceptual models built upon the sociological perspectives. Predominantly, the sociological perspectives emphasize the interactions of the two categories, positing that, at the outset, certain student characteristics may play a predominant role in explaining student learning and success. Theoretically, the psychological and economic rationales play a critical role in determining the interplay between students' pre-college attributes and their psychological states while in college.

Thereafter, what students do during college or university is an important contributor to their learning and development. The emphasis has been that the quality of college experiences may affect their initial goals and commitments to learning and, thus, their academic performances. Within research adhering to this hypothesized conception, the utility of the student engagement model has been the one that has been widely documented in higher education research in recent decades. Student engagement has been characterized as both the important proxy for and the antecedent of student integration into both the academic and social systems of the institution and has served as the more explicit indicators of institutional effectiveness (Kuh, 2009).

3.2 Student engagement in perspectives

Student engagement is a dual concept that embodies extensive educational practices that are linked to student success in college. Kuh (2001, 2003) broadly conceptualized student engagement as the amount of time and energy students devote to educationally purposeful activities as well as the institutional conditions that matter to such practices. Student engagement is a widely studied and theorized concept that mainly taps the behavioral aspects of student learning and the ways institutions enhance those behaviors to foster student learning and development. The notion of student engagement lends a strong basis to the behaviorist viewpoint (Kahu, 2013), which states the importance of human behavior patterns as the proxy for the understanding of learning and teaching conditions at the university. Kuh (2001) is one of the prominent educational figures that lend strong support to the behaviorist rationale to explain student success in college. Following the

behavioral perspective, Kuh (2001) emphasized five areas of student engagement in academically driven activities during college (i.e., the level of academic challenge, active and collaborative learning, student-faculty interaction, enriching educational experiences, and supportive campus environment) as the quality benchmarks to evaluate the effectiveness of American HEIs. These five indicators of student engagement have been well crafted for the National Survey of Student Engagement (NSSE) and widely utilized among colleges and universities in the US to tap a range of institutional practices and student behaviors related to student satisfaction and achievement, including time on tasks, social and academic integration, and teaching practices (Kahu, 2013). The NSSE is a survey instrument that was developed mainly as a measurement of quality in higher education, particularly at the undergraduate tier. Table 1 illustrates the NSSE benchmarks in detail.

Table 1 NSSE benchmarks

Academic challenge	- Preparing for class (studying, reading, writing, rehearsing, and so forth related to academic program) - Number of assigned textbooks, books, or book-length packs of course readings - Number of written papers or reports of twenty pages or more; number of written papers or reports of between five and nineteen pages; and number of written papers or reports of fewer than five pages - Course work emphasizing analysis of the basic elements of an idea, experience, or theory - Course work emphasizing synthesis and organizing of ideas, information, or experiences into new, more complex interpretations and relationships - Course work emphasizing the making of judgments about the value of information, arguments, or methods - Course work emphasizing application of theories or concepts to practical problems or in new situations - Working harder than you thought you could to meet an instructor's standards or expectations - Campus environment emphasizing time studying and on academic work
Active and collaborative	- Asked questions in class or contributed to class discussions - Made a class presentation

learning	- Worked with other students on projects during class - Worked with classmates outside class to prepare class assignments - Tutored or taught other students - Participated in a community-based project as part of a regular course - Discussed ideas from your readings or classes with others outside class (students, family members, coworkers, or others)
Student-faculty interaction	- Discussed grades or assignments with an instructor - Talked about career plans with a faculty member or advisor - Discussed ideas from your readings or classes with faculty members outside class - Worked with faculty members on activities other than course work (committees, orientation, student-life activities, and so forth) - Received prompt feedback from faculty on your academic performance (written or oral) - Worked with a faculty member on a research project outside of class
Enriching educational experiences	- Participating in co-curricular activities (organizations, publications, student government, sports, and so forth) - Practicum, internship, field experience, co-op experience, or clinical assignment - Community service or volunteer work - Foreign language course work - Study abroad - Independent study or self-designed major - Culminating senior experience (comprehensive exam, capstone course, thesis, project, and so on) - Serious conversations with students of different religious beliefs, political opinions, or personal values - Serious conversations with students of a different race or ethnicity - Using electronic technology to discuss or complete an assignment - Campus environment encouraging contact among students from different economic, social, and racial or ethnic backgrounds - Participating in a learning community or some other formal program where groups of students take two or more classes together
Supportive campus environment	- Campus environment provides the support you need to help you succeed academically - Campus environment helps you cope with your nonacademic responsibilities (work, family, and so on) - Campus environment provides the support you need to thrive socially - Quality of relationships with other students - Quality of relationships with faculty members - Quality of relationships with administrative personnel and offices

Source: Kuh (2001)

The notion of student engagement has its origin in Tinto's (1975) integration theory, which underscores student integration into the academic and social systems of the institution as the explanatory forces that promote college student success. The emphasis of

the integration theory has been strongly placed on the quality of experiences, particularly student engagement in academically driven activities, students themselves encounter during the course of their study at the university. Earlier advocates that have contributed to the advancement of the concept of student engagement are Astin (1984) and Pace (1990). Although these scholars used different terms to describe student engagement processes, their emphases did not deviate substantially from one another, especially from what was advanced by Kuh (2001, 2003) and his colleagues just a decade ago. Guided by his involvement theory, Astin (1984) broadly described student engagement as students' mental and physical involvement in the academic experience, such as involvement in class activities, relations/contact with peers and teachers, and extra-curricular activities. According to Astin, students' physical and psychological involvement in such academic activities represents a valuable asset for successful integration and desired learning outcomes. In his student development model, Pace (1990) defined student engagement as the quality of efforts students devote to learning in three core activities (student-faculty contact, cooperation among students, and active learning) that research has shown to be linked with desired learning outcomes. Framed within the student development viewpoint, the College Student Experiences Questionnaire (CSEQ) serves as an important survey tool that has been widely used to measure student engagement efforts as well as the educational practices of HEIs. Table 2 presents how each construct of student engagement is composed of in the CSEQ survey instrument.

Table 2 CSEQ items that represent three good practices in undergraduate education

Faculty-student contacts	- Talked with a faculty member. - Asked your instructor for information related to a course you were taking (grades, make-up work, assignment, etc.). - Visited informally and briefly with an instructor after class. - Make an appointment to meet with a faculty member in his or her office. - Discussed ideas for a term paper or other class project with a faculty member. - Asked an instructor for advice and help to improve your writing. - Asked your instructor for comments and criticisms about your work. - Discussed your career plans and ambitions with a faculty member. - Made an appointment to talk with an instructor who had criticized a paper you had written. - Met with a faculty adviser or administrator to discuss the activities of a student organization. - Discussed personal problems or concerns with a faculty member. - Had coffee, soda, or snacks with a faculty member. - Worked with a faculty member on a research project.
Cooperation among students	- Told a friend why you reacted to another person the way they did. - Sought out a friend to help you with a personal problem. - Tried to explain the (course) material to another student or friend. - Asked other people to read something you wrote to see if it was clear to them. - Discussed with other students why some groups get along smoothly, and other groups don't. - Sat around in the union or center talking with other students about your classes and other college activities. - Asked a friend to tell you what he or she really thought about you. - Been in a group where each person, including yourself, talked about his or her problems. - Discussed policies and issues related to campus activities and student government. - Discussed reasons for the success or lack of success of student club meeting, activities, or events. - Worked in some student organization or special project (publications, student government, social event, etc.). - Used the lounge(s) or meeting rooms (in the union) to meet with a group of students for a discussion. - Worked on a committee.
Active learning	- Underlined major points in the readings. - Wrote a rough draft of a paper or essay and revised it yourself before handing it in. - Used a dictionary or thesaurus to look up the proper meaning of words. - Tried to see how different facts and ideas fit together. - Thought about practical applications of the material. - Summarized major points and information in your readings or notes. - Participated in class discussions. - Worked on a paper or project where you had to integrate ideas from various sources. - Identified with a character in a book or movie and wondered what you might have done under similar circumstances. - Revised a paper or composition two or more times before you were satisfied with it. - Referred to a book or manual about style of writing, grammar, etc. - Used the card catalogue or computer to find what materials there were on some topics. - Made outlines from class notes or readings. - Developed a bibliography or set of references for use in a term paper or other report. - Elected a course that dealt with understanding personal and social behavior.

	- Used indexes (such as Reader's Guide to Periodical Literature) to journal articles. - Read articles or books about personal adjustment and personal development. - Took a test to measure your abilities, interests, or attitudes. - Asked the librarians for help in finding material on some topic. - Read something in the reserve book room or reference section. - Did additional readings on topics that were introduced and discussed in class. - Checked out books to read (not textbooks). - Found some interesting materials to read just by browsing in the stacks. - Ran down leads, looked for further references that were cited in things you read. - Gone back to find a basic reference or document that other authors had often referred to.

Source: Kuh et al. (1997)

The models advanced by Astin (1984), Kuh (2003), and Pace (1990), either tacitly or explicitly, point to the critical role of student engagement behaviors and the institutional conditions that matter to such practices. Institutional practices are, in particular, integral to student engagement processes. Among the more important features of institutional practices, the important influence of faculty behaviors has been highly documented in the college impact literature (e.g., Bjorklund et al., 2004; Bray et al., 2004; Cabrera et al., 2001; Pascarella et al., 1996, 2008, 2011; Sheehan & Duprey, 1999). Kahu (2013) reviewed a large body of research that has tested the utility of student engagement and reasserted that faculty's teaching practices represent the important features of institutional practices that influence students' levels of engagement in educationally driven activities and their academic outcomes. The next sections will review two bodies of literature related to the dual concept of student engagement (student engagement and faculty's classroom teaching practices) and the most frequently controlled student characteristics and institutional factors and discuss how previous research has guided the design of this study.

3.3 Student engagement research

3.3.1 Student engagement and learning outcomes

A large body of evidence has highlighted the positive effect of student engagement on a diverse array of students' learning outcomes in college. Of the more important features of student engagement, mounting evidence has pointed to the salutary effects associated with student contact with faculty members, active and collaborative learning, and time spent on academic tasks on students' desired learning outcomes (e.g., Carini et al., 2006; Davis & Murrell, 1993; Kuh et al., 2008; Kuh & Hu, 2001; Pike & Kuh, 2005). A review of literature, however, reveals that different types of student engagement appear to have had varying effects on students' learning outcomes across studies as well as educational contexts. Although literature attends to the importance of student engagement as the benchmarks for the examination of what matters to students' desired learning outcomes in college, different types of student engagement appear to have been important to students' learning outcomes based upon the educational settings of individual studies. That is, while certain types of student engagement have been found to be the important influences on students' desired learning outcomes in one study, those variables have reportedly had trivial or even non-significant effects in another one. The effects of student engagement on student achievement have also been mixed in magnitude, i.e., either general or conditional, when group differences based on certain student subpopulations were taken into account. This section discusses research evidence attending to the effects of different types of student engagement on student success and looks into the existing relationships in both general and conditional terms.

3.3.1.1 Faculty-student interaction

Previous studies have widely documented the significant influence of faculty-student interaction on many measures of students' learning outcomes. Kuh and Hu (2001) examining the effect of faculty-student interaction on student learning and development among American universities in the 1990s found that the amount of contact/interaction with faculty members had a significant contribution to such students' academic gains as general education, personal development, science and technology, vocational preparation, and intellectual development. Students who interacted with their faculty more frequently, such as asking for information related to a course, working on a research project with a faculty member, talking with instructors outside the class, asking instructors for advice on writing or comments/criticism about work, and visiting a faculty member informally after class, were likely to report higher gains in the outcome measures studied. Laird and Cruce (2009) and Pike and Kuh (2005) echoed this finding and stated that an increased level of teacher-student contact was also associated with students' self-reported gains in general education, communication skills, interpersonal development, and intellectual development.

However, it remains to be seen as to whether this factor has emerged as the best predictor of students' gains in other cognitive and non-cognitive development measures when tested in a wider higher education context. Compared to other measures of student engagement, Kuh et al. (1997) pointed out that student interaction with faculty members had only trivial influences on students' self-reported gains in general education, personal-social development, and intellectual skills. Carini et al. (2006) similarly showed that the effect of student-faculty interaction on such desired learning outcomes as critical thinking

and grades was relatively small in magnitude.

Literature has further shown that the effects of student engagement on student achievement can be rather conditional, depending on the context from which the study samples were selected. Kuh et al. (1997) found that faculty-student interaction only had a significant effect for male students at master's granting institutions. Female students' academic performances were not significantly affected by the amount or frequency of contacts with their faculty members. Carini et al. (2006) and Kuh and Hu (2001) discovered that the amount of time and energy invested in interacting with faculty, both in- and out-of-class, had a positive, compensatory effect on the academic achievement of students attending university with a low academic profile. Students who entered university with academically challenged abilities and had a high contact with faculty members were more likely to report higher gains in academic outcomes. Laird and Cruce (2009) suggested that an increased level of teacher-student talks would benefit both part-time and full-time students. Its effect was more pronounced for the former group despite the fact that they generally reported to have lower academic outcomes compared to their full-time counterparts. On balance, literature that has concentrated on the conditional effects of certain types of student engagement on student success in college appears to support the idea that the higher level of faculty-student interaction during the course of college study explained higher gains in the academic achievement among academically underprepared students than that of those who entered college or university with a high academic profile.

3.3.1.2 Active and cooperative learning

From the behavioral view, active and collaborative learning embodies all-embracing college experiences, both in- and out-of-class experiences, which are often characterized as one of the good representations of student engagement and important predictors of student learning and development. Kuh et al. (1997) demonstrated that active learning and cooperation among students were significantly and positively associated with a host of students' educational gains. Even after controlling for confounding influences of students' background characteristics, the results indicated that students who were more engaged in class participation and cooperative activities with peers reportedly had higher scores in their academic achievement, such as gains in general education, personal-social development, and intellectual skills, than their less engaged peers. These factors were also the best predictors of academic gains relative to faculty-student interaction and students' background characteristics. Cabrera, Crissman, Bernal, Nora, Terenzini, and Pascarella (2002) found that collaborative learning was the single best predictor of each of the four cognitive and affective outcomes (personal development, understanding of science and technology, appreciation for art, and analytical skills). Pike and Kuh (2005) examined the effects of academic and social engagement and concluded that, among others, active and collaborative learning had substantial effects on students' gains in general education, communication skills, interpersonal development, and intellectual development.

While literature generally suggests that these engagement factors speak volumes for student success in college, research evidence points out that its influence across contexts has been fairly mixed. Carini et al. (2006) provided a piece of good evidence contrary to

other studies discussed earlier by instead revealing that, despite being positive in effect, active and collaborative learning only had a modest influence on such desired learning outcomes as critical thinking and grades. A similar relationship was evident in Pike et al. (2011), who posited that although active and collaborative learning was positively related to both students' cognitive and non-cognitive outcomes, the magnitude of influence for active and collaborative learning was somewhat varied by students' learning outcomes. Pike and his colleagues found that the effect of active and collaborative learning was more pronounced for such cognitive outcomes as general education, writing and speaking, quantitative analyses, and critical thinking, but not for the non-cognitive outcomes, such as self-understanding, working with others, developing ethical standards, and civic/community development.

The effects of active and collaborative learning also appear to be general in one instance, yet conditional in another one. Kuh et al. (1997) demonstrated that class participation and cooperative learning tended to have general effects for all students, regardless of gender and institution types they were attending. Students' time and energy devoted to class participation and cooperative learning had a similar degree of influence on the academic performance of male and female students and students from institutions with the baccalaureate, the master's, and the doctorate as the highest degrees granted. Gender and institutional differences appeared to have a trivial role in explaining the differential influences of active and cooperative learning on students' learning outcomes. The measures of active learning and cooperation among students were, however, found to have more substantial effects on the academic achievement of low-ability students (Carini et al.,

2006) and first-generation students (Pascarella et al., 2004). Students with academically challenged abilities and from the families who never attended college tended to benefit more from being engaged in working with other students on projects/tasks, both in- and out-of-class, than their low engaged counterparts. The opposite pattern was, however, found for the effects of course-related interaction with peers on science reasoning. Pascarella et al. (2004) found that course-related peer learning had a more pronounced effect on science reasoning for students whose parents had a moderate or high level of postsecondary education than for first-generation students.

3.3.1.3 Time on academic tasks

Time on academic tasks represents one of the most crucial student engagement activities and has been a common focus of student engagement research. Notwithstanding mixed results among previous research, mounting evidence has indicated that students' time spent on academic tasks has contributed to a host of student's desired learning outcomes. Kuh and Hu (2001), for instance, found that the amount of time spent on academic work was positively related to gains in science and technology, vocational preparation, and intellectual development. Cabrera et al. (2002) documented a positive influence of time on academic tasks (hours spent studying) on students' understanding of science and technology and analytical skills. Keup (2006) analysed multi-institutional data of 19,995 students at 115 baccalaureate-granting colleges and universities and uncovered that the number of hours per week spent studying and doing homework had a positive payoff in students' GPA and self-assessed cognitive development in analytical and

problem-solving skills, critical thinking skills, general knowledge, and knowledge of a particular filed or discipline. Likewise, in their attempt to unmask the effects of student engagement among first-year college students, Kuh et al. (2008) demonstrated that although time on tasks was not found to be a significant predictor of student persistence to the second year of college, students' time spent on tasks spoke volumes for students' desired GPA. The results from their study specifically suggested a threshold level of time spent studying that made a difference in students' GPA, showing that only students who spent from 6 to 20 hours per week studying or more tended to perform better than their peers. The amount of time spent studying below the threshold of 6 hours did not markedly contribute to the variations in students' GPA.

Among other important features of student engagement, time on academic tasks has been widely examined as to whether its influences vary by students' pre-college attributes. A review of literature reveals that this factor appeared to have diverse influences on the academic outcomes of specific student subpopulations. Terenzini et al. (1996) found that the number of hours per week spent studying had a positive, compensatory effect on the reading skills of students who came from a family whose parents had never attended college or university. As their results suggested, first-generation students benefited more in their reading skills than their traditional peers from studying more hours. Pascarella et al. (2004) added the same piece of evidence that the number of hours studied had a stronger positive effect on critical thinking for first-generation students than for other traditional college students. Cabrera et al. (2002), however, provided different conclusions, positing that students' efforts devoted to time spent studying appeared to influence cognitive and

affective outcomes of white males, white females, and minorities in the same fashion, except for their analytical skills. Although the compensatory effect pattern of time on tasks on study success was, in general, more often observed for academically and economically challenged students, such as the first-generation students, students of color, and those from a low-income family, than for those who were originally from the more advantageous socio-economic family backgrounds, such as white students, second-generation students, and students from a high-income family, Cabrera et al. found that white males benefited more in their analytical skills than their white female and minority peers from their increase in hours spent studying.

3.3.2 Discussions on conceptual and methodological gaps

Despite a large and growing body of research examining the utility of the student engagement model, literature has indicated that these studies have been limited in two critical respects, the factors that would potentially lead to the inconsistencies of results among previous studies. First, literature has shown that student engagement measures were operationally defined differently across studies. While Pike and Kuh (2005), for instance, deconstructed student engagement broadly into social and academic domains and explored their relationships with desired learning outcomes, Davis and Murrell (1993) broke down academic and social effort into five subscales, such as clubs and organizations, conversation topics, student acquaintances, writing and course learning. In one instance, student engagement may embrace only active cooperation among students and student-faculty contact (Kuh et al., 1997). In another instance, it incorporates a wide array of

activities, including even more comprehensive global measures of engagement from the National Survey of Student Engagement (NSSE) and the College Student Experiences Questionnaire (CSEQ) (Kuh, 2003; Pace, 1990). Unlike other researchers, Kuh et al. (2008) characterized student engagement as only a single construct combined from 19 items to represent educationally purposeful activities. While such a combining method is suggestive of dodging concerns about inconsistent reporting of subscales within large constructs (Pike, Kuh, McCormick, Ethingon, & Smart, 2011), activities students are thought to be engaged in are not necessarily equally important across settings. Further, even within the same constructs, it is far from clear whether previous researchers used the same number of variables or measurement items and interpreted them in the same fashion from one context to another. Given these measurement discrepancies, Pike et al. (2011) argued that it was not uncommon that results have been mixed/inconsistent across studies. As such, it is questionable as to whether previous results can be compared with one another.

Second, recent literature has suggested that the relationships between student engagement and the academic achievement can be somewhat conditional based on individual students' precollege attributes. Many measures of student engagement, such as time on academic tasks, active learning, and cooperation among students were, for instance, found to have more substantial effects on the academic achievement of low-ability students (Carini et al., 2006), students of color (Kuh et al., 2008), and first-generation students (Pascarella et al., 2004). The presence of the interaction effects in recent literature seems to question the previous results in that the influences of some insignificant variables on academic achievement could have been masked within certain subsamples when the

interaction effects were not considered. Complicating the previous research results is that previous studies have seemingly incorporated the interaction terms differently from one another or even have overlooked the potential of interaction variables to explain the complex nature of learning among students from different profiles. Such a methodological gap in literature is likely to pose a serious question when results are to be compared across studies.

The presence of these gaps points to two main directions for future research. First, the fact that results of previous studies have indicated that different types of student engagement had unique effects on students' learning outcomes across studies partly due to differences in measurement and/or social and cultural contexts calls for a better understanding of the nature of specific student engagement within which the learning and teaching context is specifically situated. In that sense, locally relevant constructs of student engagement are needed to reflect on more specific features of student learning within a related social and cultural context of interest. Second, literature also supports the idea that taking into account the diversity of students' background characteristics is truly important for the understanding of the relationships between student engagement and student success in college or at the university. Although results have been mixed as to whether the influences of student engagement measures can be general or conditional, incorporating the interaction effects of student engagement by specific student subpopulations offers a critical knowledge base that helps to advance our understanding of the complexity of student learning embedded within a particular group of students.

3.4 Faculty impact studies

This section discusses two lines of research as a conceptual foundation for the understanding of effective teaching in higher education: (1) the conceptions of effective teaching at the university and (2) research on the associations of faculty behaviors and the academic achievement.

3.4.1 Conceptions of effective university teaching

Students' evaluations of faculty behaviors are recognized as the main approach to enhance the understanding of successful classroom teaching skills and practices and their importance to student learning (Pascarella & Terenzini, 2005). The robustness of using students' perspectives in understanding effective teaching has received a great deal of attention among educators and researchers in recent years. Marsh (1991a) was among the more widely recognized scholars in utilizing students' perceptions to investigate key components of effective teaching behaviors (as cited in Marsh & Dunkin, 1997). According Marsh, teacher quality constitutes multi-dimensional factors embracing different dimensions of teaching behaviors in the classroom settings. Mainly based on large-scale surveys and a rigorous process of students' evaluations of educational quality (SEEQ), Marsh developed nine dimensions of teaching practices (i.e., teacher organization/clarity, breadth of coverage, instructor enthusiasm, learning/value, examination/grading, group interaction, individual rapport and workload/difficulty) as the indicators of teachers' desirable teaching behaviors.

While the indicators Marsh proposed for effective teaching behaviors are thought to be applicable across different contexts, how they apply in a developing country remains unclear. Contemporary review of the literature reveals that the meaning of effective teaching in developed and still-advancing higher education contexts may not be the same (Devlin & Samarawickrema, 2010). Even in a developed higher education system, Delvin and Samarawickrema argued that what constitutes effective teaching remains diverse across studies. Hativa, Barak, and Simhi (2001), for example, defined the characteristics of effective teaching broadly, mainly arguing for a multi-dimensionality of teaching behaviors in the classroom akin to that of Marsh's SEEQ model. Patrick and Smart (1998) highlighted three main factors: respect for students, ability to challenge students, and organization and presentation skills. In contrast to them, Young and Shaw (1999) pointed to six other features that included teachers' value of the subject, motivating students, a comfortable learning atmosphere, organization of the subject, effective communication, and concern for student learning; and Saroyan, Amundsen, McAlpine, Weston, Winer, and Gandell (2004) emphasized teachers' knowledge and presentation skills as the important components of effective teaching. Additionally, the subset of qualities under each faculty teaching behaviors also varies from study to study. Given these discrepancies, Delvin and Samarawickrema suggested that, regardless of a newly developed or still-changing higher education context, the meaning of effective university teaching should be deeply explored in its own educational setting. Such a caution, thus, renders the utilization of exploratory factors associated with the measures of faculty behaviors to be examined in the present

research necessary so as to address any bias merely due to conceptual and contextual differences.

3.4.2 Faculty behaviors and learning outcomes

The behavioral perspective has served as a prime notion to enhance our understanding of the role of faculty behaviors that have been extensively researched for decades (Kahu, 2013). The underlying notion of this perspective lies in a simple logic that what faculty do/exhibit in the classroom determines the class climate that either positively or negatively influences student learning and development. Within this perspective, faculty behaviors have been conceptualized to encompass multi-dimensional classroom teaching practices that influence how much students learn and grow. Among the more important components of faculty behaviors that have been widely researched in the faculty impact literature and have emerged as the outstanding predictors of student learning are faculty's instructional organization and clarity, abilities to challenge students, behaviors towards collaborative learning, and the level of interaction with and feedback provided to students. (e.g., Bjorklund et al., 2004; Bray et al., 2004; Cabrera et al., 2001; Pascarella et al., 1996, 2011). However, while these dimensions of teaching practices have been generally documented as the important contributors to students' learning outcomes, previous results appear to be somewhat inconsistent across studies. The effects of different teaching practices are rather context-dependent in relation to the students' learning outcomes examined. While Bray et al. (2004), for example, found the statistically significant and positive relationship between the instructional organization and clarity and student

achievement in reading comprehension, Bjorklund et al. (2004) indicated that the interaction and feedback faculty provided to students had the strongest impact on students' self-reported gains in several design and professional skills. Cabrera et al. (2001) highlighted the important influences of these two measures on student achievement, but tended to point out that the influences of faculty teaching practices that promote the cooperative learning classroom condition, the interaction with students, and the feedback to students were somewhat mixed depending on the specific outcome measures. In addition to the presence of inconclusive results within this line of research, previous results also highlighted the conditional influences of faculty behaviors on students' learning outcomes by specific student characteristics. The next section will discuss each dimension of faculty behaviors and its association with students' learning outcomes in greater detail.

3.4.2.1 Instructional organization and clarity

Research evidence has indicated that various faculty efforts in the classroom have important influences on student learning. Among the more important types of faculty behaviors, faculty members' instructional organization and clarity has emerged as an important predictor of student learning in various respects. Cabrera (2001) pointed out that the instructors who brought clarity and organization to the classroom positively influenced student development. For instance, explaining assignments and activities, clearly stating course expectations, and articulating assignments to the content of the class spoke volumes for the increment in the ability of the students to solve problems and the development of the awareness of what the engineering occupation is all about. Bray et al. (2004) analyzed

longitudinal data from 18 institutions to track the literacy development of 1,054 students during the first three years of college and found that clear and well-organized instruction was an important predictor of growth in reading comprehension. The effect was even more potent for male students and those who began college with low reading comprehension scores. This factor was, nonetheless, not a significant predictor of students' attitude toward literacy activities.

Pascarella et al. (2008, 2011) documented a positive effect of exposure to organized and clear instruction on student persistence, suggesting that faculty who brought well-organized and clear teaching to the classroom helped boost the levels of persistence among first-year college students exponentially. Yet, the influence of this factor did not differ significantly in magnitude for men versus women, white students versus students of color, students with different ACT scores, and students from various institutional types (i.e., research university, regional university, community college, and liberal arts college). Faculty's instructional organization and clarity apparently exerted the same degree of influence on persistence for all students from different profiles.

3.4.2.2 Faculty interaction and feedback

A large body of evidence exists to support the role of faculty interaction and feedback in student learning in undergraduate education. Prime examples supporting such a hypothesized direction include Bjorklund et al. (2004) and Cruce, Wolniak, Seifert, and Pascarella (2006), to name just a few. Bjorklund et al. (2004) studied the effects of faculty interaction and feedback on gains in study skills and found that providing constructive

support and feedback to students was significantly and positively related to students' self-reported gains in several design and professional skills. Even after controlling for the host of student demographic characteristics and campus location, this factor was the strongest contributor to all the learning outcomes studied. Students reported the greatest gains in all four learning outcomes (i.e., group skills, problem solving skills, occupational awareness, and engineering competence) when they interacted with and received feedback from their instructor more frequently.

In estimating the impacts of three dimensions of good practices on the cognitive development, orientations to learning, and educational aspirations of students during their first year of college, Cruce et al. (2006) showed that effective teaching and interaction with faculty had a significant total and direct effect on students' reading comprehension, critical thinking skills, openness to diversity and challenge, and internal locus of attribution for academic success. Cruce et al. (2006) also suggested a positive, compensatory effect of effective teaching and interaction with faculty on the reading comprehension of female students and those entering college with below-average precollege reading comprehension, whereas men benefited less in mathematics knowledge than women from being in classes where high-order questioning methods, course challenge, interaction with faculty, and instructor feedback were being promoted by the faculty. Despite these results, the contribution of the faculty-student interaction is neither consistent across student outcomes nor sizable in magnitude. Collectively, this factor was only significantly related to four out of the nine student outcomes studied. Additionally, its effect was relatively small in magnitude.

Different types of faculty-student interaction also appeared to have had varying degrees of influence on students' academic outcomes. Pascarella and Terenzini (1991), for example, found that only interacting with faculty about intellectual or course-related matters was beneficial for student outcomes, while pure social exchange such as discussing personal problems, campus issues, or socializing informally only had a limited impact. Umbach and Wawrzynski (2005) showed that course-related faculty interaction was positively related to a number of academic gains while in college. This significant evidence was observed for both first-year and senior students. Both groups of students reported greater gains in personal/social development, general education knowledge, and practical competencies, despite the fact that striking evidence of the gains in practical competencies was only observed for senior students rather than for their junior counterparts. Out-of-class interactions with faculty did not have any meaningful effect on the educational gains studied. Working with students on activities other than course work (extra-curricular activities), research activities, counseling, and supervising internships appeared to have less support for all the students' self-reported gains.

3.4.2.3 Collaborative learning

Cabrera et al. (2001), in their attempt to develop performance indicators for assessing classroom teaching practices and student learning, showed that instructor interaction and feedback, collaborative learning, and clarity and organization were, in general, significantly and positively associated with students' self-reported gains in problem-solving skills, group skills, and understanding of engineering as an occupation. Among all

the observed learning outcomes, the results particularly showed that collaborative learning had the strongest effect on students' self-reported gains in their group skills. Collaborative learning, however, exerted just a trivial and positive influence on students' gains in occupational awareness. The same pattern was observed in Bjorklund et al. (2004). Although they supported the findings that collaborative learning was an important contributor to gains in group skills, problem solving skills, and occupational awareness, the coefficients for cooperative learning in predicting students' gains were, in general, relatively small in magnitude, particularly in predicting students' gains in problem solving skills and occupational awareness. The collaborative learning factor was even not significantly related to students' gains in engineering competence.

3.4.3 Discussions on conceptual and methodological gaps

Pike et al. (2011) pointed out a few overlooked factors that explained the inconsistencies of the findings of previous correlational research. First, Pike et al. argued that some of the inconsistencies of the findings of previous correlational research are due to measurement differences among studies. This holds true among the faculty impact studies. Some studies, for instance, focused explicitly on faculty's course organization and instructional clarity and its relation to students' learning outcomes (e.g., Bray et al., 2004; Pascarella et al., 2008, 2011); others mainly concentrated on the role of faculty's interaction and feedback (e.g., Bjorklund et al., 2004). Only few considered different dimensions of faculty behaviors at a time (e.g., Cabrera et al., 2001). As such, a critical question emerges as to whether all of the outstanding indicators of faculty behaviors are

potentially important contributors to academic achievement when tested together, especially in a wider socio-cultural context, since most of these studies only put emphasis on the association of specific faculty behaviors and student achievement, with evidence particularly pertaining to developed higher education systems. Differences in the measurement of the learning outcomes have also played a role in part in explaining such differential effects of faculty behaviors among faculty impact studies. Given the conceptual gaps in the existing literature, Pike et al. (2011) argued that it is not uncommon that previous studies produced contradictory findings.

Second, inconsistent results may be in part a function of indirect effects of the variables in study on the outcome variables. Pike et al. (2011) observed that institution-level factors may to some degree be attenuated by other mediating factors that are more closely linked to student achievement. Apparent evidence is reflected in recent studies by Pascarella et al. (2008, 2011), who attempted to address this temporal relationship, looking into the direct and indirect effect of teachers' instructional quality on student achievement relative to students' educational satisfaction. In both studies, the effect of instructional quality began to disappear when the student-related factor was taken into account, clearly indicating that the influence instructional quality had on student achievement was more indirect or mediated by the student-level factor. This finding would superficially be in contrast with that of Cabrera et al. (2001), who concluded that faculty's instructional quality was positively and significantly associated with students' learning outcomes, while merely studying the direct relationship between these two measures. Differences in

researchers' efforts to consider the critical role of the mediating effects in study may also potentially result in different findings among previous studies.

A number of limitations have also been observed within this line of research. First, research evidence has particularly shown that a range of faculty behaviors have been strongly associated with student engagement in educationally purposeful activities (Umbach & Wawrzynski, 2005), a construct that represents the amount of time and energy students invest in educational activities and has also been widely linked to various desired college outcomes (e.g., Carini et al., 2006; Davis & Murrell, 1993; Greene et al., 2008; Kuh & Hu, 2001; Pike & Kuh, 2005). Unfortunately, a small body of research has examined the relationships among faculty behaviors, student engagement, and student achievement in a detailed manner. Although Umbach and Wawrzynski (2005), for instance, explored the role of college faculty in student learning and engagement and found a number of important faculty teaching practices, such as using active and collaborative learning techniques, interacting with students, and challenging students academically, a quest to understand the extent to which the influence of these institution-level factors on student achievement was moderated by the commonly vetted student engagement factors, such as time on tasks, active and collaborative learning, and student-teacher interaction, was not highly emphasized. Studies on the direct and indirect influences of faculty behaviors on student achievement with the hypothesized moderation effect of student engagement factors are still underrepresented in college success research.

Second, while previous studies have generally suggested the compensatory effects of good educational practices on the academic outcomes of economically and academically

challenged students (Kuh et al., 2008; Pascarella et al., 2004), relatively few studies have concentrated on the examination of whether the effects of different types of faculty behaviors on student achievement are the same for all students or greater for specific student subpopulations. Most of the studies that focused on the conditional associations of faculty behaviors and the learning outcomes of certain student subpopulations, especially among those with varying precollege academic abilities/experiences, looked into the conditional effects of faculty behaviors on student persistence, not the academic achievement (e.g., Pascarella et al., 2008, 2011). Bray et al. (2004) appeared to offer meaningful evidence regarding the associations of effective teaching and student achievement in reading comprehension and attitude toward literacy activities in both general and conditional terms, by considering disparities in students' race, gender, precollege reading abilities, and attitude toward literacy activities. Yet, the construct of effective teaching in their exploratory research was mainly limited to the role of faculty's organization and clarity, leaving its predictive strength compared to other types of effective teaching behaviors in question when tested together.

Finally, most previously cited studies appeared to treat the structural nature of teacher data at the same level with student data, mainly using the ordinary least square (OLS) regression models (e.g., Bjorklund et al., 2004; Bray et al., 2004; Cabrera et al., 2001; Pascarella et al., 1996), an approach likely to produce a much biased estimation of the resultant standard errors in analysis (Type I error) (Raudenbush, Bryk, Cheong, Congdon, & du Toi, 2004). Pike et al. (2011) suggested that such a combination of within- and between-group data may result in modest/blurring relationships between group-level

variables and the outcome ones, which may, in turn, falsely attenuates the degree of importance of the group-level variables. The group-level nature of the faculty behaviors variables is a case in point that requires special data treatment. With the absence of a multi-level analysis, the results of previous research would be highly in question.

3.5 Controlled factors

3.5.1 Student characteristics

In general, students enter college with diverse socio-economic backgrounds and prior learning experiences. These initial differences may affect their attitudes toward learning, study behaviors, and academic performances to an unknown degree. This study, thus, discussed the following student characteristics and characterized them as the controlled variables to enhance the understanding of the net influences of student engagement and faculty behaviors on students' academic achievement: age, gender, precollege academic experience, employment responsibilities, delayed enrolment status, multiple institution attendance, and socio-economic status.

3.5.1.1 Age

Age difference has been one of the most investigated issues in higher education research. Yet, arguments as to whether younger students performed better than their older peers, or vice versa, remained ambiguous. Some studies concluded that older students performed better in their academic achievement when compared to their younger counterparts (e.g., McInnis et al., 1995, as cited in Mackenzie & Schweitzer, 2001;

Trueman & Hartley, 1996, as cited in Bruinsma, 2003). Mainly, older students were reported to possess better time-management skills, clearer career orientations, and sufficient integration into the academic and social systems of the university. Jansen and Bruinsma (2005) ascertained that the main difference in the academic achievement between the two cohorts lied in the fact that older students had better-developed deep information processing strategies, gained higher work discipline, and were more involved in academic activities than younger students did. Rather than being at a disadvantage, being old could be seen as a proxy for mature individuals holding a life experience that desirably helped to navigate their learning. These findings were somehow reasonable given that older students showcased some important characteristics that involved the fundamental components of effective learning.

However, different results were also noted. According to Clark and Ramsey (1990) (as cited in Mackenzie & Schweitzer, 2001) and Van der Hulst and Jansen (2002), young students tended to perform better academically than their older peers when differences in study workload were taken into account. This is due to the fact that older students tended to engage in a part-time job while studying, a factor that inevitably competed for their amount of time devoted to learning. Further, older students may have spent more time on schooling prior to entering the university. This reality may have indicated a certain level of intellectual difficulty among the old students to a degree, let alone the psychological pressure when placed in the same class with their younger peers.

3.5.1.2 Gender

The effect of gender has been a debatable issue in school effectiveness research. Recent literature (e.g., Jansen, 2004; Pike & Kuh, 2005; Richarson & Woodley, 2003; Simonite, 2003; Shah & Burke, 1999; Van der Hulst & Jansen, 2002) demonstrated that female students achieved significantly better results than their male peers. This was understandable given that female students were bound to show better time management skills (Jansen & Bruinsma, 2005) and peer relation (Berger & Milem, 1999). Better work discipline and peer relation appeared to downplay the fact that females had traditionally appeared to be inferior in their academic achievement. Being good at time management and socialized with peers helped to increase their motivation to learn and involvement in the academically desirable activities accordingly.

Albeit these echoed findings, it was rather premature to assume female students' superiority in time management or preparation when explaining the differences in academic achievement between these two cohorts. Indeed, there were cases where male students were found to benefit more from the given learning conditions and to achieve better results than their counterparts. For instance, a joint study in Jordan by Alnabhan, Al-Zegoul, and Harwell (2001) indicated that male students performed significantly better than female students when their parents were highly educated. An obvious effect was observed for male students when their fathers had a higher educational level. A cultural rationale may have played a role in this. That is, father with better education appeared to be more active and to exert more influences in the family structure; this may have had more positive impacts on male students' motivation to learn than females'. The effect of gender

also appeared to be entangled by other confounding factors. Motivation could be a mediating force that determined the academic performance between males and females as well. Running contrary to these findings, Frick, Chadha, Watson, Wang, and Green (2009) did not find a gender difference in relation to students' academic learning time, study progress, satisfaction, grades, and course ratings. Irrespective to gender, students who reported a high rating on academic learning time appeared to be more satisfied with the course and to report the significant learning progress as expected. In their study, gender was not found to be a rudimentary factor.

3.5.1.3 Pre-academic abilities

Studies on students' academic achievement in higher education have shown that a strong academic background in pre-university education explained higher academic achievement among students while in college (Atkinson, 2006; Jansen & Bruinsma, 2005; Keup, 2006; Mackenzie & Schweitze, 2001). Jansen and Bruinsma (2005) found that students with a higher GPA in their high school were more likely to be in a better position to convert their learning experiences in a more desired manner and to achieve a higher GPA at the end of the first year of college education. These students reportedly had higher academic involvement, positive perceptions of learning, and stronger institutional commitment than those who possessed lower high school grades (Berger & Milem, 1999). However, whether the effect of pre-academic abilities is ubiquitous in higher education research remains open to question since many findings appeared to lend support to other mediating variables. Lizzio, Wilson, and Simons (2002) contended that college learning

environment was a stronger factor and could compensate for varying effects of previous abilities subsequently. Low-ability students could perform as well as or even better than their high academic profile counterparts provided that they were fully integrated into the learning environment of a college or university.

3.5.1.4 Employment responsibilities

As widely known, university education is a costly investment for individuals although the financial toll varies across countries. By and large, university students often engage in either full-time or part-time employment in order to cover part of their schooling expenses. Being employed during schooling was, however, reported to bear a more negative impact on student learning than the positive one. To be exact, although work experience helped contribute to learning empowerment, heavy workload could compete for study time and minimize learning productivity accordingly. In a study on first year Australian university students, Mackenzie and Schweitze (2001) found that employment responsibilities were a main cause of students' study workload disparity. Mackenzie and Schweitze showed that full-time students with no employment responsibilities outperformed and achieved a higher GPA than full-time students with part-time employment responsibilities. Being employed while studying was rather hard for the latter group to balance and/or maximize their amount of time spent studying.

Nevertheless, literature has shown that the effect of employment responsibilities while in college on students' learning outcomes was also conditional. Mackenzie and Schweitze, for instance, found that engaging in full-time work did not strongly affect part-

time students' learning. Part-time students holding a full-time employment status appeared to be at an advantage, in terms of motivation, career goals, and time management skills compared to full-time students who were engaged in part-time work while in college. Van Den Berg and Hofman (2005) indicated that time spent on a paid job would bear negative effects on study progress provided that students worked more than a threshold of 12 hours per week. Working below this threshold level would only have a minimal effect on their study progress.

3.5.1.5 Delayed enrollment to university

Enrollment patterns represent when students start college—immediately or some years following high school (Kuh et al., 2007). Research has shown that late entry to college or university had negative impacts on student persistence. Delayed entry reduced the odds of student persistence and degree completion to a degree (Adelman, 2006, as cited in Kuh et al., 2007). This hypothesized relationship, however, did not hold for other students' learning outcomes. Green et al. (2008), for example, found that delayed entry to college was positively and significantly associated with students' academic outcomes, such as course grades. For some reason, students who entered university some years following high school were more likely to gain better grades and to pass the courses than their peers.

3.5.1.6 Multiple institution attendance

Multiple institution attendance is one of the enrollment patterns that have been a focus of attention among HEIs in tracking the profiles of enrolled students. An increasingly

common pattern of student enrollment is attending more than one institution simultaneously or transferring from a two-year HEI to a four-year one (Adelman, 2006, as cited in Kuh et al., 2007). Studies have shown that attending more than one institution had a negative relationship with student outcomes. Laird and Cruce (2009) showed that being a transfer student had a negative relationship with students' general education gains, such as writing, speaking, critical and analytical thinking skills, and occupational skills. Transfer students were more likely to report less gain in these areas of knowledge and skills than their traditional peers. Pike et al. (2011) also found that being a transfer student was negatively related to both cognitive and non-cognitive gains of senior students. Transfer status had a more devastating effect on student learning at a higher grade.

3.5.1.7 Socio-economic status

Literature has shown that students' socio-economic backgrounds have played a critical role in students' educational aspirations, motivation and commitment to learning, and study behaviors. Among the more important components of students' socio-economic status (SES) that have been widely researched in the literature and have emerged as the outstanding predictors of student learning are family income and parental education. Astin (1993) found that students' SES had a positive effect on the odds of earning a bachelor's degree, even after controlling for students' academic ability. Family income was an important predictor of degree completion. Students from the low-income group reportedly had lower average first-year grades compared to students in the highest income band (Wolniak & Engberg, 2010).

Within the SES rationale, parental education is also considered an important factor that interacts to influence student learning and their academic success in college or at the university. In general, students with highly educated parents are likely to show higher motivation and to be more engaged in academic activities than their peers. Family support would play a critical role in this (Alnabhan et al., 2001). Terenzini et al. (1996) found that students whose parents never attended college or the university had less positive out-of-class experiences and had to deal with particular nonacademic challenges compared to their peers. These first-generation students tended to have lower educational aspirations than their second-generation counterparts. Hamick and Stage (2004) showed that parental college education affected students' educational aspirations in some ways that contributed to their learning and success in college. Pike and Kuh (2005) confirmed this relationship and concluded in their study on first- and second-generation college students that a drive to succeed in learning was one of the main causes leading to the achievement gap between the two groups. Students whose parents completed college appeared to have higher educational aspirations and higher probability of success in college. Wolniak and Engberg (2010) took this result to the next level, stating that the students from a family with a graduate level degree were even more likely to perform better than those from a family holding just high school or college-level education.

3.5.2 Institutional characteristics

Much of the college impact literature has focused attention on the critical role of college experience by placing student experience and engagement at the core of the

institutional policies and practices. Knowing what the institutional conditions foster student experience and engagement constitutes a great deal of knowledge to provide the favorable college experience for student learning and their success. Among the widely documented constituents of institutional conditions, structural characteristics of institutions have been a focus of college impact research for decades. These characteristics include, but not limited to, such features as institutional type, control, selectivity, and structural diversity (Kuh et al., 2007).

3.5.2.1 Institutional type

Research emphasizing the role of institutional conditions has shown that the institutional type where students attend has inconsistent influences on a range of students' learning outcomes such as persistence and academic achievement. Pascarella, Wolniak, Cruce, and Blaich (2004) using a subsample of the National Study of Student Learning (NSSL) suggested that some small liberal arts colleges were more effective in providing favorable conditions for good educational practices and in converting the educational practices in place into more meaningful outcomes. This is in part because smaller institutions were generally more engaging than larger institutions due to smaller classes and more favorable faculty-student ratio (National Survey of Student Engagement, 2002, 2003). These conditions were favorable for students to increase the levels of interaction with faculty and peers as well as active class participation. Cruce et al. (2006) provided a contrasting picture, suggesting that research universities, regional universities, historically Black colleges, and community colleges appeared to be more effective in fostering student

learning in their study. Students in these types of institutions were likely to gain more from the three dimensions of good practices in undergraduate education during the first year of college (effective teaching and interaction with faculty, interaction with peers, and challenge/high expectations of faculty) than students at liberal arts colleges. These results are new pieces of evidence given that, in previous studies, the institutional type had no impact on student efforts in college activities and gains from college (Kuh & Hu, 2001; Pascarella & Terenzini, 1991).

3.5.2.2 Institutional control

The effect of institutional control has been somewhat inconclusive although previous studies have similarly reported the insignificant impact it had on student persistence and success. Kuh and Hu (2001) found that institutional control had no relations to the amount of student efforts in college activities and gains from college. Students at public and private universities reportedly did not show any significant differences in their efforts in college activities and gains from the college. In reviewing three decades of college impact research, Pascarella and Terenzini (2005) reported that institutional control is not a factor in whether students earn a bachelor's degree. Christie and Hutcheson (2003), however, suggested that traditional-aged students at private universities were likely to be more successful than their peers at the public universities to achieve a baccalaureate degree. Keup (2006) added to this evidence, showing that students at private universities were also likely to gain a better grade-point average (GPA) and self-assessed cognitive development although students at public universities thereafter outperformed in the latter academic

outcome when students' first-year experience and involvement were taken into account. Yet, it should be noted that this evidence has been only limited to the context of the developed world, especially the U.S and European countries. Relatively little has been known with regard to the role of control in higher education in developing countries. The understanding of institutional control beyond the context of previous research is, thus, warranted.

3.5.2.3 Institutional selectivity

Kuh and Hu (2001) defined institutional selectivity in terms of the levels of institutional admission competitiveness. The higher selectivity would reflect the more competitive student selection at the enrolling HEIs. This measure has been highly correlated with student persistence. Saupe, Smith, and Xin (1999) found that highly selective institutions were likely to enroll academically well-prepared students and would graduate them at higher rates (as cited in Kuh et al., 2007). Notwithstanding this evidence, its relationships with other measures of learning outcomes have been ambiguous. Pascarella (2001) reported that institutional selectivity has little impact on outcomes measures of student learning, particularly critical thinking. Kuh and Hu (2001) showed that institutional selectivity was not directly related to such academic gains as general education, science and technology, personal development, vocational preparation, and intellectual development. Institutional selectivity appeared to have an indirect influence on students' desired learning outcomes in part because the more selective institutions were likely to have students exhibiting higher levels of educational effort, the factor widely

documented as the main contributor to student success in college. This might be due to the fact that high selectivity would be likely to raise students' expectations toward university when enrolled.

3.5.2.4 Structural diversity

Structural diversity of institutions has been an important condition positively affecting students' learning outcomes. In U.S higher education, structural diversity is essentially concerned with the extent to which students of color are included in the student population (Hurtado, Dey, Gurin, & Gurin, 2003). Pike and Kuh (2006) reported that a diverse student population of a campus positively affected the levels of interaction among diverse groups of students. A diverse student body may increase students' exposure to diverse viewpoints as well as diverse people, thereby improving the probability of enhancing their diversity experiences. Such interactions ultimately contributed to a supportive campus environment and mediated students' critical thinking as well as their intellectual and personal development (Hurtado, Milem, Clayton-Pedersen, & Allen, 1998; Pascarella, Palmer, Moye, & Pierson, 2001). On balance, previous research appeared to indicate that the effect of structural diversity was rather indirect than direct in predicting students' academic outcomes.

3.6 Justifications for the present research

Although results of previous research have supported the important influences of student engagement and faculty practices on students' desired learning outcomes in college,

there are a number of limitations that warrant further attention. First and foremost, results of previous research have been largely limited to the context of countries with developed higher education systems. Relatively little research has been expanded into the educational settings of countries with emerging higher education systems, thereby rendering the conclusions made in the previous research questionable when they are viewed beyond their original settings. Second, the fact that the constructs of student engagement and faculty behaviors and the measures of learning outcomes appear to have been contextualized and tested differently across studies raises a critical question as to whether previous findings can be compared with one another, especially beyond the context of previous research. Finally, previous research appears to have looked into the effects of student engagement and faculty behaviors in varying manners. To some, the conditional and both direct and indirect effects of the variables observed were emphasized. To others, these hypothesized relationships were not considered. These conceptual gaps would potentially result in significant differences in the analytical framework employed in the existing literature.

This study addressed the gaps in the existing literature by expanding on the conceptual and analytical lenses among previous studies in the following respects. In terms of student engagement, four commonly researched constructs that tapped students' time on course-related tasks outside the class, active learning, collaboration among peers, and faculty-student interaction were reconsidered by decomposing them into smaller and comprehensible subsets to represent specific students' learning behaviors within the context of Cambodia' higher education through the utilization of an exploratory factor analysis. Doing so helped to ensure that the student engagement factors, particularly its

subscales, would fit the context in which students in this present research were situated better and to improve the validity of student engagement constructs to be examined in this study (Field, 2009). In addition, this study also examined the relationships between student engagement and academic achievement in both general and conditional terms, with the controls for other confounding influences of student characteristics and institution-related factors. Incorporating these extraneous variables as the controlled factors would strengthen the understanding of the predicting power that student engagement would have on student achievement to a great extent. Besides, looking into whether certain features of student engagement had a greater degree of influence on the academic achievement of specific student subpopulations offered a refined understanding of the role of specific academic engagement in fostering the academic performance of different student subpopulations (e.g., by students' gender, precollege academic ability, and geographical origin).

With regard to college faculty impact research, since most of the studies only put emphasis on the associations of specific faculty behaviors and student achievement, with evidence particularly pertaining to developed higher education systems, a critical question emerges as to whether all of the widely researched indicators of faculty behaviors are potentially important contributors to academic achievement when tested together, especially in a different socio-cultural context. To give a total picture of the strength of faculty behaviors in a broader context, this study examined the relationships between different dimensions of faculty behaviors and student achievement simultaneously in the context of a country with a later emergence of higher education, i.e., Cambodia. This study also examined the extent to which faculty behaviors influenced student achievement in

both direct and indirect terms by also modeling these relationships together with student engagement in educationally purposeful activities. The statistical controls for student characteristics and institutional factors were also applied. More importantly, in lieu of an OLS regression, this study modeled the relationships among faculty behaviors, student engagement, and student achievement, using multi-level modeling/hierarchical linear modeling (HLM) to account for the nested structure of the data at the class and institutional levels. Finally, the present research took the conditional effect analysis into account by also evaluating whether the effects of faculty behaviors on student achievement varied in magnitude for specific student subpopulations, i.e., men vs. women, those with varying levels of precollege academic experiences, and those from different geographical origins.

CHAPTER FOUR

RESEARCH METHODOLOGY

This chapter provides an overview of the research methodology used for the present research. It starts with a description of a research design, a justification for selecting a targeted program, procedures for the sample selection and the characteristics of the sample, and a research site justification. Then it details the data collection procedures, instruments and measurement of the variables used for this study, and the analytical tools appropriate for accomplishing the set research questions. Finally, the internal validity section describes the strategies the researcher utilized to ensure the validity of the research.

4.1 Research design

This research was correlational in nature mainly employing a questionnaire survey as the instrument to examine student engagement in educationally purposeful activities and faculty behaviors and their predictive relationships with students' academic achievement. It was a study that utilized a quantitative approach to explore the determinants of student achievement in the first-year of university in the context of Cambodia's higher education, using multi-level modeling. As part of this research, the interview was also employed as a supplementary tool to help illustrate the context of learning and teaching that would further explain the results obtained from the survey. The interview was important to gain greater insights into what is truly happening in the natural setting (Fraenkel, Wallen, & Hyun, 2012). This is no exception to educational research. Incorporating interview into the

analysis is a robust method to detail the existing learning and teaching phenomenon when the survey data generally lack. It enables the researcher to obtain a richer description of human behaviors in specific natural settings—the social and cultural perspectives of the people and their associated reasoning.

4.2 Targeted program

An English language program in four-year undergraduate education was a focus of this study. Some explanations rendered the emphasis on this program relevant to and useful for enhancing our understanding of student learning during the first-year of university in the Cambodia's higher education context. The first explanation was related to the fact that English is among the most preferred programs in university education in Cambodia. After Cambodia has launched an open-door policy in the early 1990s that favors a free market economy, the demand for English language competence has become a trend in the emerging marketplace; the necessity of English education has quickly expanded into university education. In recent years, the enrollment in the English language program amounts to a comparatively sizeable share of the total student enrollment at Cambodian universities (Chet, 2006; The Department of Cambodian Higher Education, 2009). Enrollment in the English program is also projected to grow at an accelerating rate in the near future given the country's economic growth and plans to improve international relations and regional integration (e.g., ASEAN 2015) (ASEAN Secretariat, 2009) and the increasing importance of English as a *lingua franca* for the global communication and cooperation (Clayton, 2002). Thus, it is argued that English will likely represent one of the

most outstanding programs in the Cambodia's higher education system.

The second explanation was that the understanding of the influence of teaching and learning on student achievement in the English program also likely sheds some light on the knowledge associated with this area of research in other programs considering the increasing number of students with multiple institutional attendances observed within the English program. Chet (2006) observed that although English is not a primary choice of major among Cambodian university students, the vast majority of students likely combine degree-level English language learning at university with the other full-time program they are also taking. The statement was also supported by the current survey data which showed that almost half of the students were taking two degrees at two different universities at the same time (see Table 7, pp. 137-138). This would to a degree extend the significance of this study beyond the context of the currently focused program.

The last rational related to the fact that English has been one of the integrated courses included in most of the first-year programs offered by HEIs in Cambodia. English is viewed as one of the core subjects to equip first-year students with fundamental language capacity to be able to advance to the next year level. The emphasis on English as an area of knowledge not only bears linguistic significance for international communication but also serves as an important input for first-year university students in Cambodia to be able to get a wider access to English learning materials considering the significant lack of relevant academic reading resources in the Cambodian language. The competence in English, thus, puts students at an additional advantage. In light of this dual significance, the research on student achievement in the English program to a degree would offer valuable inputs to

enhance student learning beyond its spectrum. All things considered, the weighted importance of the understanding of teaching and learning and how they were related to student achievement within this program may have significant added-values to enhance the scholarship of higher education teaching and learning that mattered to student's learning outcomes in other programs to a certain degree. It is this value-loaded evidence that rationalized the focus of this program in this current research.

Unfortunately, there is the potential lack of a critical examination of student learning quality in this field of study. While there has been a lot of attention on the increasing availability of English programs at the university, there have been fewer discussions on the quality of student learning in this emerging field of study. Some actions at the institutional and individual levels have been undertaken in response to public demands, but most of these efforts have failed to adequately address student learning quality. For instance, the Accreditation Committee of Cambodia was established to assure education quality, yet it evaluates programs mostly by institutional characteristics and management characteristics (Chet, 2006). Previous studies of English language education have centered on the development of English language teaching policies/status (Appleby, Copley, Sithirajvongsa, & Pennycook, 2002; Clayton, 2002; Clayton, 2008; Moore & Bounchan, 2010; Neau, 2003) or learning and teaching strategies (Keuk, 2008, 2009; Keuk & Tith, 2006; Khan, 2008; Ly, Chea, & Sou, 2007). The attempt to understand the quality of student learning and, in particular, the factors predicting students' academic achievement is almost nonexistent (Kwok et al., 2010). Such lack of empirical research in this field is surprising given growing accountability and transparency demands from society. Thus,

without evaluating the quality of students, the significant progress made in providing students with more access to this program merely signals academic risks and potentially inconsistent academic achievement among students (Ford, 2003, 2006). Empirical research that directly evaluates the significant contribution of teaching and learning to student achievement is particularly needed to yield more direct implications for improving student quality in the English language program.

4.3 Sample

Ten universities were selected on a purposeful basis, with two from public universities, two from highly enrolled private universities, and six from small and medium sized emerging universities. The two public universities are the only two public HEIs that offer undergraduate English programs in Cambodia and are characterized to be among the most prestigious and oldest public universities (Chet, 2009). Private universities were selected on the basis of student enrollment and their establishment years. The two private universities with high student enrollment in the English program represent the comprehensive universities established in the late 1990s and the early 2000s; whereas the other six universities mostly represent emerging HEIs established in the second half of the 2000s, with student enrollment considerably lagging behind the other selected universities in this study sample. Although these universities may not be generalized to Cambodia's overall higher education landscape, the rationale behind this selection was to provide a wide range of university characteristics that may reflect on the Cambodian higher education's current realities, embracing both public and private universities and

universities with different operation years and with varying numbers of student enrollment. It is important to understand that such a selection basis was used with an attempt to enhance the generalizability of the research findings rather than to render any comparison among different types of universities included in this study. In the selection process, curricular similarity among the targeted universities was also considered one of the criteria. Only universities that shared common curriculum, especially in terms of textbook and syllabus, were included in the questionnaire survey. With this selection criterion, one university was ruled out mainly due to the use of a different textbook from other selected universities. In total, nine universities were included in the survey.

First-year university students were the participants in this study. Random and cluster sampling methods were used in the questionnaire survey for selecting class and student samples, respectively. A 30 percent criterion was used for class selection. However, at the universities with classes fewer than three, all classes were included in the survey. Taken together, 30 classes were selected, with 923 students in total could be used for the analysis. Table 3 shows the university characteristics and student samples in the current survey.

Interviews were conducted at three universities out of the nine universities selected for this study. These universities range from high to low, in terms of previous year's student enrollment and locally perceived prestige. Twenty-two students and five teachers were interviewed in the first phase of the data collection (December 2011-January 2012). These students were selected on the basis of their academic performances ranging from low to high as measured by their end-of-semester English achievement test scores. Teachers were selected from classes from which the 22 students were selected. Such a

selection method was used in order to gain a better understanding of teaching and learning experiences from both students' and teachers' perspectives. In the second phase (November-December 2012), the interviews were conducted with the same interviewees who voluntarily participated in the first phase's interviews. In this phase, 16 students and three teachers could be reached for the interviews.

Table 3 Description of university and students samples

University	Type	Year of establishment	Description	Classes	Students
1	Private	Late 2000s	A specialized HEI	3	29
2	Public	Before 1990s	A comprehensive university	7	211
3	Public	Before 1990s	A specialized university	2	71
4	Private	Late 2000s	A comprehensive university	2	89
5	Private	Late 2000s	A comprehensive university	1	37
6	Private	Late 2000s	A comprehensive university	3	126
7	Private	Late 2000s	A comprehensive university	3	82
8	Private	Early 2000s	A comprehensive university	4	143
9	Private	Late 1990s	A comprehensive university	5	149
Total				30	937
Useable sample (Listwise method)				30	923

4.4 Research site

This study was conducted in Phnom Penh City, the capital city of Cambodia. One reason related to the feasibility of the researcher to collect data during a limited time frame.

Another reason was concerned with the fact that the vast majority of universities are located in the city. Universities in the city have served as an academic hub for students from various backgrounds and with different geographical origins. Although expanding research of this kind into suburban or provincial areas may have provided additional or different insights into teaching and learning realities as well as the schooling contexts in Cambodia, the current study would have a substantial contribution to the understanding of teaching and learning situations and its development at Cambodian universities given the diverse characteristics of the selected universities and students for the survey (see Table 3, p. 96, and Table 7, pp. 137-138)

4.5 Data collection

Data were collected in two periods during December 2011–January 2012 and November–December 2012. In the first period, data for a questionnaire survey, test scores, and preliminary interviews were targeted. All request forms were submitted to the Ministry of Education, Youth and Sport (MoEYS) and each targeted university in early December. The questionnaire and English achievement test piloting were conducted in late December. The actual administration of the questionnaire and test was undertaken in late January, as it is a period when the semester will usually end. Constrained by the shortage of teaching hours due to continuous holidays in Cambodia, the questionnaire and test were administered in the same session, with 20 minutes for students to fill out the questionnaire and 60 minutes for them to sit for the test. Teachers were also requested to be present in class during the test. At the beginning of the session, the researcher was also with the

homeroom teacher to explain what and how to do with the test to students and to assist them with further clarifications. Interviews were conducted with students and teachers from three universities selected from the university sample. In the second period, only interview data were collected. This is part of a follow-up interview based on some preliminary results from the survey. Although the first period of the data collection was also accompanied by the interviews with students and teachers, the interviews in the second period was more specific and concrete, with a purpose of explaining and confirming the results obtained from the survey and the previous interview, respectively.

4.6 Instruments

4.6.1 Questionnaire

A self-reported questionnaire was re-designed from widely known and validated instruments in the same research field (i.e., the National Survey of Student Engagement [NSSE], College Student Experiences Questionnaire [CSEQ], Pascarella et al.'s [2008, 2011] instrument, and Marsh's [1991a] Student Evaluations of Educational Quality [SEEQ] model) to examine students' characteristics, student engagement in academically driven activities and faculty's teaching behaviors. The NSSE and CSEQ survey items were taken from *The College Student Report*, which is copyrighted and the copyright is owned by the Trustees of Indiana University. A license for use was requested and granted. Thus, the NSSE and CSEQ items were used with permission from *The College Student Report*, National Survey of Student Engagement, Copyright 2001-13 The Trustees of Indiana University (see Appendix B).

A self-reported questionnaire is a widely used tool in university impact research and is considered valid and reliable provided that its contents are appropriately designed, clearly worded or phrased, referred to respondents' recent activities, and perceived to be important and familiar to the respondents (Pike, Smart, Kuh, & Hayek, 2006; Pascarella & Terenzini, 2005). To meet these conditions, the survey items used for this research were modified in a few respects. For instance, only the questions that could be applied to the context of Cambodian higher education learning were incorporated into the survey. These questions were restructured, deconstructed, piloted, and contextualized accordingly in order to make them fit current student learning realities at Cambodian universities. A Japanese professor, some doctoral students, a post-doctoral fellow at Hiroshima University, and local teachers in Cambodia were requested to review the wording, coherence, and succinctness of each questionnaire item. The questionnaire was revised and translated into a local language (Khmer) and piloted with 35 students to check whether timing was appropriate and if its contents were not misleading. Thereafter, another round of revisions was made accordingly. The original four-point Likert scale (in the NSSE and CSEQ) was also changed to a six-point Likert scale. So were the items taken from Pascarella et al.'s [2008, 2011] instrument and Marsh's [1991a] Student Evaluations of Educational Quality [SEEQ] model. This modification was to ensure that broader response options were given to students so that more objective ratings could be obtained.

4.6.2 Test

A first-year English achievement test was used to measure students' academic

achievement in this study. The academic achievement test was employed in lieu of the standardized proficiency test on the ground that this study mainly centered on the examination of student achievement within a specific time frame rather than on the measurement of students' language abilities in general terms (i.e., proficiency test). Considering the test validity criteria, only the academic achievement test that measured what students had learnt or had been taught with reference to the set curriculum was appropriate and would be aligned in realistic terms with the teaching and learning conditions where students were situated in this study. While the proficiency tests (e.g., TOEFL or IELTS) are standardized and more reliable, they do not, in principle, share the context of this study, and their uses as the academic outcome criterion to link to student engagement and faculty behaviors under consideration in this present research are very likely prone to a severe breach of test content validity (see "content validity" in Fraenkel et al., 2012). In addition, the academic achievement test was employed in lieu of students' grade or grade point average (GPA) with the rationale that different classes and institutions could have used different tests accordingly. Such a problem would render students' test scores highly biased toward each test's constructs, level of difficulty, and weighting across classes and institutions. All things considered, the researcher-designed academic achievement test based on the common contents of the course book among the selected universities was the one that would fit well into the design of this research.

The test was designed in accordance with the contents of the textbook students had learnt in one semester period and assessed student learning in three conventional areas: vocabulary, grammatical structures and expressions, and reading skills. Test construction

was made in cooperation with homeroom teachers at three universities who helped to validate the contents, to change the test format, and to examine the level of test difficulty and its weighting accordingly. The test was later piloted at three universities with 80 students who were not the selected sample for this study. The reliability of the piloted test was $\alpha = 0.90$. Due to the fact most students were not able to answer the language expressions section correctly; otherwise, they tended to excessively spend much time on it, this section was left out to ensure appropriate timing for students to work on other sections. Some additional hints were also provided in the vocabulary section to improve students' familiarity with the test format. The overall internal consistency of the actual test when administered was $\alpha = 0.81$.

4.6.3 Interview

Two interview protocols were constructed based on a similar conceptual framework as that of the questionnaire. These protocols asked teachers and students to describe the current situations of teaching and learning at Cambodian universities, to evaluate as to what factors are important to student learning and what impedes students from achieving desired learning outcomes, and to point out challenges currently facing university students in Cambodia. The interviews were used to supplement evidence obtained from the questionnaire survey and to draw a richer picture of the learning and teaching context in which teachers and students in this present research were situated. The role of the interview was, however, no more than complementary.

4.7 Measurement

Six categories of variables, comprising student achievement, student characteristics, student engagement, faculty behaviors, institutional characteristics, and cross-product variables that were created to represent the interaction terms among student engagement variables, faculty behaviors variables, and the targeted student cohorts (males vs. females, those with varying levels of precollege academic experience, and those from different geographical origins), were examined to address the two sets of research questions stated earlier in the present research. The sections that follow will describe the nature of variables included in this study and how they were coded and measured in greater detail.

4.7.1 Student achievement

Student achievement, the dependent variable of this study, was measured in terms of English test scores, which measured three areas of knowledge: vocabulary, grammatical structures and expressions, and reading comprehension. The vocabulary section consisted of 25 items, tapping students' understanding of English collocations, word formations (prefixes and suffixes), and some general words learnt from the course book. The second section measured students' abilities to use grammatical structures and expressions correctly. This section included 10-item matching and gap-filling exercises and 15-item mixed English tenses. The reading comprehension section incorporated two reading skills into the test: fast reading (reading for main ideas) and reading for scanning and skimming, each composed of five items and eight items, respectively. The scores from each section were totaled and used to represent students' academic achievement in this research. Student

achievement was treated as a scale/continuous variable.

4.7.2 Student characteristics

As the controls, the following student characteristics were included in the analysis: gender, age, living status, enrolment status, multiple university attendance, geographical origin, parents' university experience, employment responsibility, weekly expense, academic resources at home, and precollege academic experience. The living status was a recoded variable classifying the original response options into two groups: live with parents and live outside. The enrolment status was obtained by subtracting the high school graduation year from the enrollment year to university, with a result of *"0"* denoting "not delayed" to the university, otherwise "delayed". The multiple university attendance and place of origin were dichotomous variables, respectively representing whether students were doing two degrees at different universities at the same time and were originally from the city or the provinces. Although parental education, occupation, and income have been widely used as a proxy for students' family socio-economic status, only parents' university experience, academic resources at home (desk, personal room, study place, computer, the internet and dictionary), and students' weekly expense were measured since they were considered a more direct proxy for students' social and financial capital that could be obtained with the use of a self-report questionnaire. Parents' university experience was a recoded variable, representing whether students had parents with or without university education. Precollege academic experience was obtained by standardizing and summing three academic-related measures (the number of years of learning English full-time, the

number of years of learning English part-time, and their achieved level of English prior to university, ranging from the pre-intermediate to the advanced level). The standardization of these three measures was to ensure that each item was measured on the same scale, thereby cancelling out any bias stemming from measurement differences among these items when they were combined together (Kuh et al., 1997). The description of variables and how each variable was recoded for the data analysis is presented in Table 6 (pp. 111-112).

4.7.3 Student engagement

Student engagement was measured using self-reported questions adapted from the National Survey of Student Engagement (NSSE) and College Student Experiences Questionnaire (CSEQ), which determined students' study time outside class (time spent on course-related reading [2 items] and homework [2 items]), active and collaborative learning among students (19 items), and student-teacher interaction (5 items), using a six-point Likert scale *(6 = always; 5 = usually; 4 = often; 3 = sometimes; 2 = rarely; 1 = never)*. Measures of time spent on course-related reading outside class and homework were combined into a single variable (*time on course-related tasks*) due to a relatively high collinearity between the two variables ($r = 0.64$, $p < .001$). This factor was also square-rooted to ensure its normality for the data analysis. Factor analysis was conducted on active and collaborative learning and student-teacher interaction, using a principle component analysis and a varimax rotation. The analysis produced five distinct factors, with two items removed to ensure the internal reliability of the scales. These factors are

peer learning (4 items), active class participation (5 items), class preparation (4 items), homework/tasks (4 items), and student-teacher interaction (5 items). Since these five factors were latent variables mathematically loaded from the factor analysis, reliability testing using a Cronbach's alpha (α) as a criterion was conducted to determine their internal consistency. Measures of extra-curricular activities were not included in this study because most of the prescribed items encompass extensive out-of-class encounters between and among students, the practices apparently being at the infancy stage in the Cambodian higher education context. In total, six student engagement variables were obtained and used for the analysis. Table 4 shows the factor loadings of the five student engagement scaled variables that were produced through the factor analysis.

Table 4 Factor loadings of the five student engagement scaled variables

Items	Student-teacher interaction *(α = 0.85)*	Class participation *(α = 0.70)*	Homework/ tasks *(α = 0.68)*	Peer learning *(α = 0.75)*	Class preparation *(α = 0.73)*
- Asked your teacher for suggested reading materials	.827				
- Discussed your learning difficulties with your teacher	.786				
- Discussed with your teacher how to improve your study skills	.785				
- Received prompt comments/feedback on your academic work (e.g. homework, quizzes, tests or assignments)	.780				
- Discussed ideas from your readings or classes with your teacher	.755				
- Contributed ideas to whole class discussion		.714			
- Made a class		.690			

presentation from your group work					
- Worked actively with other students on the assigned task(s) in small group activities in class		.668			
- Asked questions in class when you don't understand		.600			
- Used a dictionary to search for the meaning of new words in class		.493			
- Turned in homework with poor quality			.807		
- Turned in homework late			.792		
- Came to class without completing homework			.775		
- Came to class without completing the assigned reading tasks			.619		
- Had discussions with other students on learning difficulties				.809	
- Asked for help from friends when having (a) learning problem(s)				.769	
- Had reviews of your performance on homework or quizzes with other students				.620	
- Discussed ideas from your readings or classes with other students outside class				.442	
- Read new materials as a preparation for the next class					.777
- Did additional readings on topics introduced in class					.744
- Summarized information from your reading					.708
- Took detailed notes from class					.412

The six student engagement variables were contextually defined with reference to their respective loaded themes. Time spent on course-related tasks outside class was a

variable that captured the amount of time students devoted to self-study, as indicated by the number of hours spent per week doing additional homework and reading extra materials outside class beyond what was assigned by their teachers. Homework/tasks represented students' efforts/commitment to doing exercises or tasks assigned by teachers. Class participation measured student engagement in whole class activities, mostly capturing the extent of students' individual contribution to the whole class interaction, whereas peer learning was specifically themed as a measure that tapped the levels of student engagement in pair work or group discussion on particular tasks and learning issues. Class preparation was denoted, as its meaning explicitly stands, as a measure that examined the extent to which students devoted their time and energy to academic preparedness before class. Student-teacher interaction measured the level/amount of contact/discussion/consultation between students and teachers outside class on particular learning issues and other study skills.

4.7.4 Faculty behaviors

Four main dimensions of faculty behaviors that have been the prime focus of higher education teaching literature, namely faculty's instructional organization and clarity, behaviors towards collaborative learning, faculty's interaction with students, and faculty's feedback to students were incorporated into this study. These measures were partially adapted from Pascarella et al. (2008, 2011) and Marsh's (1991a) Student Evaluations of Educational Quality (SEEQ) model, together consisting of 28 items using a six-point Likert scale *(6 = always; 5 = usually; 4 = often; 3 = sometimes; 2 = rarely; 1 = never)*.

Factor analysis using a principle component analysis and a varimax rotation produced three distinct measures, with some items removed to ensure desirable internal consistency: faculty's instructional organization and clarity (9 items), support and feedback (8 items), and class practices to challenge students (4 items). Again, since these five factors were latent variables mathematically loaded from the factor analysis, reliability testing using a Cronbach's alpha (α) as a criterion was conducted to determine their internal consistency. Though not exhaustive, these measures closely represented mixed teaching behaviors in English language teaching in the Cambodian higher education context.

Table 5 Factor loadings of faculty behaviors variables

Items	Organization and clarity (α = 0.91)	Support and feedback (α = 0.88)	Class practices to challenge students (α = 0.73)
- His/her presentation of course material was well organized.	.810		
- Class time was used effectively.	.774		
- He/she gave clear explanations.	.774		
- Course goals and requirements were clearly explained.	.772		
- He/she made good use of examples and illustrations to explain difficult points.	.755		
- He/she interpreted abstract ideas and theories clearly.	.726		
- He/she was well prepared for class.	.705		
- He/she effectively reviewed and summarized the material.	.685		
- He/she gave you homework that helped in learning the course material.	.488		
- He/she checked if you had learnt the material well before going on to new material.		.827	
- He/she effectively checked your homework.		.819	
- He/she effectively checked your understanding through quizzes.		.791	
- He/she offered helps to you when you had a		.789	

problem(s). - He/she enabled students of different abilities to answer the questions. - He/she gave you feedback on assessment tasks timely. - He/she gave feedback that helped improve your understanding. He/she praised you when you did well.		.773 .719 .719 .698	
- He/she asked you to explain the materials in class. - He/she used students' work as the basis of discussion. - He/she asked you to point out the difficult points of the materials in class. - He/she raised challenging questions for discussion.			.776 .709 .705 .628

The three loaded factors represented different aspects of teaching behaviors among faculty members in Cambodia. The instructional organization and clarity dimension tapped the extent to which faculty members were prepared and how clearly the instruction was delivered in the classroom teaching. The support and feedback dimension embraced the extent to which faculty members exhibited their teaching behaviors to assist students in learning through implementing an on-going assessment of students' work and providing constructive feedback and motivation to students while teaching. Class practices to challenge students lied in a notion that a challenging learning environment helped students grow academically. This component was made of the teaching behaviors that were characterized as the factors that imposed challenging conditions on student learning such as posing challenging questions, asking students to explain particular learning contents to the whole class, and eliciting the discussion topics on the basis of students' work.

4.7.5 Institutional characteristics

Some institutional descriptors were considered as the controls in the model development of this study. For some practical reasons, the institution-level variables were contextualized accordingly. These variables included institutional control (public vs. private), faculty-student ratio, institutional admission, and the proportion of students from the city vs. the provinces. The faculty-student ratio was a researcher-made ratio by dividing the total student enrollment by the total faculty members for each institution, based on the 2010-2011 data provided by the Department of Higher Education of Cambodia. The institutional admission measured the extent to which enrollment at each institution was regulated. Due to the lack of institutional assessment data, students' evaluation of the admission policy at the university they were attending was employed, and each institution's rated scores from the current survey data were aggregated into the institution-level data for the level 3 data analysis. The aggregated score for each institution's proportion of students from the provinces vs. the city was also computed from the current survey data to take this student-level variable to the institution-level predictor. Overall, the inclusion of institution-level variables in the data analysis was to cancel out some confounding influences that institutional conditions may have had on student achievement. Accounting for these factors would additionally improve the robustness of the main models being tested in the present research and, thus, contribute to a better understanding of the main effects student engagement and faculty behaviors would have on student achievement.

4.7.6 Interaction terms

Cross-product variables were created to examine the interaction effects that student engagement and faculty behaviors may have had on the academic achievement of specific student subpopulations. Cross-product variables represent the interaction between two or more independent variables created to examine whether the effect of the independent variable of interest on the outcome variable varies as a function of another independent variable (Kuh et al., 2008). In terms of student engagement factors, eighteen interaction effect variables by students' gender, geographical origin, and precollege academic experience were created and included in the general equation model of the data analysis. With regard to faculty behaviors, nine cross-level interaction terms were built in relation to students' gender, geographical origin, and precollege academic experience. All of the cross-product/interaction effect variables were evaluated together with the general effect variables in the final models to answer the last research questions that examined the conditional effects of student engagement and faculty behaviors on student achievement, respectively.

Table 6 Description of variables

Variables	**Description/metric**	**Measure**
Student achievement	English test score (total score = 76)	Scale
Institutional characteristics (four variables)		
Institution control	0 = public 1 = private	Dichotomous/nominal
Faculty-student ratio	The ratio of total faculty members to total students for each institution	Scale

Institutional admission	The level of admission policy strictness at each institution based on student rating	5-point Likert scale [a]
Proportion of students from the city	The percentage of students from the city vs. those from the provinces	Scale
Student characteristics (11 variables)		
Age		Scale
Gender	0 = male 1 = female	Dichotomous/nominal
Enrollment status	0 = not delayed 1 = delayed	Dichotomous/nominal
Living status	0 = live with parents 1 = live outside	Dichotomous/nominal
Multiple college attendance	0 = no 1 = yes	Dichotomous/nominal
Geographical origin	0 = province 1 = Phnom Penh	Dichotomous/nominal
Parents' college experience	0 = no (Both father and mother had no college/university education.) 1 = yes (Either father or mother had college/university education.)	Dichotomous/nominal
Employment responsibility	0 = no (not employed) 1 = yes (employed)	Dichotomous/nominal
Student's weekly expense	Average weekly expense (in Riels [b])	Scale
Academic resources at home	Sum of six items (Availability of desk, personal room, study place, computer, the internet, and dictionary at home)	Scale (0-6)
Precollege academic experience	Precollege English learning experience (Years of learning English full time, years of learning English part-time, and the highest level of English before college)	Scale Z-scores
Student engagement (six variables)		
Time on course-related tasks	Hours a week on self-study on course-related tasks (Four items)	Scale
Student-teacher interaction	Frequency of contact with teachers (Five items)	Ordinal 6-point Likert scale [c]
Active class participation	Frequency of class participation (Five items)	Ordinal 6-point Likert scale
Homework/tasks	Frequency of doing assigned homework and tasks (Four items)	Ordinal 6-point Likert scale
Peer learning	Frequency of discussion with peers (Four items)	Ordinal 6-point Likert scale
Class preparation	Frequency of class preparation	Ordinal

	(Four items)	6-point Likert scale
Faculty behaviors (three variables)		
Instructional organization and clarity	Faculty behaviors toward instructional delivery and quality (Nine items)	6-point Likert scale Ordinal
Support and feedback	Faculty behaviors toward support and feedback (Eight items)	6-point Likert scale Ordinal
Class practices to challenge students	Faculty behaviors toward a challenging class (Three items)	6-point Likert scale Ordinal

Note:

[a] 5 = very strict; 4 = strict; 3 = somewhat strict; 2 = less strict; 1= not strict at all

[b] 'Riel' is the currency used in Cambodia.

[c] 6 = always; 5 = usually; 4 = often; 3 = sometimes; 2 = rarely; 1 = never

4.8 Data analysis

4.8.1 Survey data analysis

Since this study looked into the influences student engagement and faculty behaviors may have had on student achievement at student, class, and institutional levels, a three-level hierarchical linear model (HLM) was employed. One main reason for the use of the HLM for the data analysis was much related to the nested nature of student and teacher data at the class and institutional levels, respectively. While the use of multiple regressions is appropriate for analyzing student-level data, a single-level regression analysis is considered to have breached a number of assumptions when applied to multi-level/nested data. The most noticeable problem relates to the breach in the assumption of non-independence of students' scores within each group such as class and institution, while assuming that the observations are independent (Beretvas, 2007). A single-level regression analysis, when used with data highly structured at different levels, likely produces a much

biased estimation of the resultant standard errors in the analysis (Type I error) (Raudenbush et al., 2004). Pike et al. (2011) suggested that treating nested data at the same level may also result in modest/blurring relationships between group-level variables and the outcome ones, which may, in turn, falsely attenuates the degree of importance of the group-level variables. The group-level nature of the faculty behaviors and institution-level variables is a case in point that requires special data treatment beyond the function of single-level multiple regressions. With the absence of a multi-level analysis, the results of the present research would be highly in question.

A multi-level model is highly suggestive of dodging problems associated with the nested nature of data observed in this present study. In education, nested data include students clustered together in classes, institutions, or even districts. Beretvas (2007) pointed out that students within the same group (e.g., class) will be more alike than students from another group, suggesting that within-group variances (e.g., in terms of students' test scores) would not be the same as the between-group variances. Multi-level modeling was designed to capture such complexities in educational research. Taken together, since this study was aimed at looking into the effects of student engagement and faculty behaviors on student achievement at the student, class, and institutional levels, it is important that the same analytical tools be utilized at any of the levels observed throughout the study to reduce unprecedented biased conclusions due to different statistical options employed at each level. The HLM addresses these problems.

Another reason was concerned with the robustness of this statistical tool to examine the effects of the observed variables at both the individual and the group levels (i.e.,

between-individual student differences and between-class/institution differences) (Pike et al., 2011; Raudenbush et al., 2004). The HLM allowed the researchers to partition the effect of each predictor in a more detailed manner, clearly indicating the extent to which differences in the outcome variables were due to between-individual student differences and between-group differences. This statistical tool was useful when both individual and contextual factors were of interest. Given the nature of research questions presented earlier, this study to a great extent shared these characteristics.

The three-level HLM analyses started with a null model to examine the amount of variability in student achievement that was attributable to student, class and institutional levels (Raudenbush et al., 2004). The null model estimated the variances of the "intercepts" at all the three levels and contained no predictor variables from any level. The intercepts represented mean scores of student achievement for each institution. As recommended by Raudenbush et al. (2004), this is the first step of HLM to evaluate the level-2 and level-3 variance components in order to determine if HLM was necessary. The null model produced the chi-square tests of between-class and between-institution variance components, which evaluated whether there were statistically significant differences in student achievement across classes and institutions (Pike et al., 2011). The proportions of variances at the group levels (class and institutional levels) were estimated by dividing the between-class and between-institution variance components by the total variance components observed at all levels, respectively (Beretvas, 2007; Pike et al., 2011; Raudenbush et al., 2004). The same formula was also used to estimate the proportion of the variance component at the student level. The proportion of the variance component at each

data level was formulated by:

$$\textit{Student-level variance} = \frac{Sigma\text{-}squared\ (\sigma^2)}{Total\ variance\ components} \quad (1)$$

$$\textit{Class-level variance} = \frac{Tau\text{-}pi\ (\tau_\pi)}{Total\ variance\ components} \quad (2)$$

$$\textit{Institution-level variance} = \frac{Tau\text{-}beta\ (\tau_\beta)}{Total\ variance\ components} \quad (3)$$

where sigma-squared (σ^2) is the level 1 variance of the intercept, tau-pi (τ_π) is the level 2 variance of the intercept, and tau-beta (τ_β) is the level 3 variance of the intercept. The total variance components are the sum of all the variances observed at all levels ($\sigma^2 + \tau_\pi + \tau_\beta$).

The examination of the variance components in the null model provided the estimates of the proportions of the between-student, between-class, and between-institution variance in student achievement that were attributable to student-, class-, and institution-related factors. The variance components in this null model served as the baseline against which the variability in student achievement in the subsequent models was explained when the host of independent variables was evaluated. The null model was represented by the following equations:

Level-1 model (4)

Student achievement $_{ijk} = \pi_{0jk} + e_{ijk}$

Level-2 model (5)

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

Level-3 model (6)

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

where π_{0jk} is the intercept for students in class j and institution k, e_{ijk} is the residual/student i's deviation from π_{0jk}, β_{00k} is the average intercept across classrooms, r_{0jk} is the classroom j's deviation from β_{00k}, γ_{000} is the average intercept across institutions, and μ_{00k} is the institution k's deviation from γ_{000}.

4.8.1.1 Effects of student engagement

Five models were constructed to address the three research questions in this section. These models were termed "conditional model" in multi-level modeling, representing when predictor variables were estimated in relation to the outcome variable (Beretvas, 2007; Raudenbush et al., 2004). The first model evaluated the extent to which student characteristics may have influenced students' academic achievement. The inclusion of these factors in the student achievement model (null model) mainly served as a controlled model against which the subsequent models were evaluated. This model was represented by these equations:

Level-1 model (7)

$$\text{Student achievement}_{ijk} = \pi_{0jk} + \pi_{1jk}(AGE) + \pi_{2jk}(GD) + \pi_{3jk}(ENROLL) + \pi_{4jk}(LIVSTAT) + \pi_{5jk}(PREEXP) + \pi_{6jk}(MULTIATTD) + \pi_{7jk}(GEOORG) + \pi_{8jk}(PARCLEXP) + \pi_{9jk}(EMPLSTAT) + \pi_{10jk}(WKLEXP) + \pi_{11jk}(ACDRES) + e_{ijk}$$

Level-2 model (Intercept-as-outcome) (8)

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

Level-3 model (Intercept-as-outcome) (9)

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

Note: GD = Gender; ENROLL = Enrollment status; LIVSTAT = Living status; PREEXP = Precollege academic experience; MULTIATTD = Multiple institutional attendance;

GEOORG = Geographical origin; PARCLEXP = Parental college experience; EMPLSTAT = Employment status; WKLEXP = Weekly expenses; ACDRES = Academic resources at home

Changes in the variance components at each level after student characteristics were added in this step of the data analysis, divided by the variance components for the baseline models, provided the estimates of the proportions of between-student, between-class, and between-institution variance that were accounted for by the student characteristics of interest (e.g., the proportion of variance explained by the student-level variables $= [\sigma 2_{\text{null}} - \sigma 2_{\text{conditional}}]/\sigma 2_{\text{null}}$) (Pike et al., 2011). Without statistically controlling for the influence of student backgrounds, the estimate observed in the following models may have been masked or misleading as differences in student achievement may have instead been accounted for by the variation in student characteristics.

In the next model, student engagement measures were added to the student achievement models. This separate analysis was conducted mainly to determine the extent to which student engagement factors were associated with student achievement when other variables were not considered. All the student engagement factors were allowed to vary by class or "class-specific" and by institution or "institution-specific" to assess whether the influence of these variables on student achievement may also have been related to between-class and between-institution contexts. This model was used to filter important student engagement variables whose effects may have been affected by between-class and between-institution contexts. If the slopes for these factors did not vary significantly by class and institution, their equations were fixed for further steps of the data analysis. After computing this model, all statistically insignificant random-effect variables were removed;

only the statistically significant class- and institution-level variables associated with student engagement measures were carried over into the next step of the analysis. While the omission of the insignificant random-effect variables would not provide a total picture of the strength of the predictor variables at the class and institution levels, this method would offer a refined statistical means to attenuate a multicollinearity risk in the next model when a bulk of variables were tested at once. From a statistical standpoint, this random effect testing method would help to increase the robustness of the next model when all factors (student characteristics and student engagement in educationally purposeful activities) were evaluated at once. In sum, the relationships between student engagement factors and student achievement in this model were estimated at both the individual and the group levels. Again, changes in the variance components at all levels were examined to determine the proportions of variance that were explained by student engagement measures. Student engagement factors were entered into the equations in the following ways:

Level-1 model (10)

$$\text{Student achievement}_{ijk} = \pi_{0jk} + \pi_{1jk}(SS\_T) + \pi_{2jk}(CLPAR) + \pi_{3jk}(HWTSK) + \pi_{4jk}(PRLEARN) + \pi_{5jk}(CLPREP) + \pi_{6jk}(TMTSK) + e_{ijk}$$

Level-2 model (Intercept- and slopes-as-outcomes) (11)

$$\pi_{0jk} = \beta_{00k} + r_{0jk}$$
$$\pi_{1jk} = \beta_{10k} + r_{1jk}$$
$$\pi_{2jk} = \beta_{20k} + r_{2jk}$$
$$\pi_{3jk} = \beta_{30k} + r_{3jk}$$
$$\pi_{4jk} = \beta_{40k} + r_{4jk}$$
$$\pi_{5jk} = \beta_{50k} + r_{5jk}$$

$$\pi_{6jk} = \beta_{60k} + r_{6jk}$$

Level-3 model (Intercept- and slopes-as-outcomes) (12)

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

$$\beta_{10k} = \gamma_{100} + \mu_{10k}$$

$$\beta_{20k} = \gamma_{200} + \mu_{20k}$$

$$\beta_{30k} = \gamma_{300} + \mu_{30k}$$

$$\beta_{40k} = \gamma_{400} + \mu_{40k}$$

$$\beta_{50k} = \gamma_{500} + \mu_{50k}$$

$$\beta_{60k} = \gamma_{600} + \mu_{60k}$$

Note: SS_T = Student-teacher interaction; CLPAR = Class participation; HWTSK = Homework/tasks; PRLEARN = Peer learning; CLPREP = Class preparation; TMTSK = Time on course related task outside class

The third model evaluated the influences of student characteristics and student engagement factors on student achievement. The interpretation of this model was, however, more focused on the relationships between student engagement in educationally driven activities and student achievement, whereas student characteristics only served as the controlled factors. Holding student backgrounds constant was important when interest was placed on the process variables in educational research. In this model, only the statistically significant random effects of student engagement factors that would be observed in the previous random-effect analyses (see equations 11 and 12) were included in the slopes-as-outcomes equations. To see how the models developed, the proportions of variance across the models were compared accordingly, with the same formula for the calculation of the changes in variances at each level applied. These models were represented by the equations below:

Level-1 model (13)

Student achievement $_{ijk} = \pi_{0jk} + \pi_{1jk}\,(AGE) + \pi_{2jk}\,(GD) + \pi_{3jk}\,(ENROLL) + \pi_{4jk}\,(LIVSTAT) + \pi_{5jk}\,(PREEXP) + \pi_{6jk}\,(MULTIATTD) + \pi_{7jk}\,(GEOORG) + \pi_{8jk}\,(PARCLEXP) + \pi_{9jk}\,(EMPLSTAT) + \pi_{10jk}\,(WKLEXP) + \pi_{11jk}\,(ACDRES) + \pi_{12jk}\,(SS\_T) + \pi_{13jk}\,(CLPAR) + \pi_{14jk}\,(HWTSK) + \pi_{15jk}\,(PRLEARN) + \pi_{16jk}\,(CLPREP) + \pi_{17jk}\,(TMTSK) + e_{ijk}$

Level-2 model (Intercept- and slopes-as-outcomes) (14)

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

$\pi_{12jk} = \beta_{120k} + (r_{12jk})$

$\pi_{13jk} = \beta_{130k} + (r_{13jk})$

$\pi_{14jk} = \beta_{140k} + (r_{14jk})$

$\pi_{15jk} = \beta_{150k} + (r_{15jk})$

$\pi_{16jk} = \beta_{160k} + (r_{16jk})$

$\pi_{17jk} = \beta_{170k} + (r_{17jk})$

Level-3 model (Intercept-and slopes-as-outcomes) (15)

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

$\beta_{120k} = \gamma_{1200} + (\mu_{120k})$

$\beta_{130k} = \gamma_{1300} + (\mu_{130k})$

$\beta_{140k} = \gamma_{1400} + (\mu_{140k})$

$\beta_{150k} = \gamma_{1500} + (\mu_{150k})$

$\beta_{160k} = \gamma_{1600} + (\mu_{160k})$

$\beta_{170k} = \gamma_{1700} + (\mu_{170k})$

Note: Only significant slopes-as-outcomes/random effects variables found in student engagement models (equations 11 and 12) were added to the level-2 and level-3 equations in this model and the subsequent models.

The next model added further the effects of institutional characteristics to the previous model that considered the influences of student characteristics and student engagement factors on student achievement. Controlling for differences in institutional characteristics offered a robust means to enhance the accuracy of the model estimation of

the effects of student engagement factors on student achievement considering the diversity of institutions in this study. The inclusion of institutional characteristics cast further light on whether institutional factors made a difference in student achievement and whether or not they would substantially affect the estimation power rendered by other models. In this model, the institutional descriptors (institutional control, faculty-student ratio, institutional admission, and proportion of students from the city vs. the provinces) were added to the level 3 model.

Level-1 model (16)

Student achievement $_{ijk} = \pi_{0jk} + \pi_{1jk}\,(AGE) + \pi_{2jk}\,(GD) + \pi_{3jk}\,(ENROLL) + \pi_{4jk}\,(LIVSTAT) + \pi_{5jk}\,(PREEXP) + \pi_{6jk}\,(MULTIATTD) + \pi_{7jk}\,(GEOORG) + \pi_{8jk}\,(PARCLEXP) + \pi_{9jk}\,(EMPLSTAT) + \pi_{10jk}\,(WKLEXP) + \pi_{11jk}\,(ACDRES) + \pi_{12jk}\,(SS\_T) + \pi_{13jk}\,(CLPAR) + \pi_{14jk}\,(HWTSK) + \pi_{15jk}\,(PRLEARN) + \pi_{16jk}\,(CLPREP) + \pi_{17jk}\,(TMTSK) + e_{ijk}$

Level-2 model (Intercept-and slopes-as-outcomes) (17)

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

$\pi_{12jk} = \beta_{120k} + (r_{12jk})$

$\pi_{13jk} = \beta_{130k} + (r_{13jk})$

$\pi_{14jk} = \beta_{140k} + (r_{14jk})$

$\pi_{15jk} = \beta_{150k} + (r_{15jk})$

$\pi_{16jk} = \beta_{160k} + (r_{16jk})$

$\pi_{17jk} = \beta_{170k} + (r_{17jk})$

Level-3 model (Intercept-and slopes-as-outcomes) (18)

$\beta_{00k} = \gamma_{000} + \gamma_{001}\,(INSTICTRL) + \gamma_{002}\,(FAC\_SS) + \gamma_{003}\,(PROPCITY) + \gamma_{004}\,(ADMS) + \mu_{00k}$

$\beta_{120k} = \gamma_{1200} + (\mu_{120k})$

$\beta_{130k} = \gamma_{1300} + (\mu_{130k})$

$\beta_{140k} = \gamma_{1400} + (\mu_{140k})$

$\beta_{150k} = \gamma_{1500} + (\mu_{150k})$

$\beta_{160k} = \gamma_{1600} + (\mu_{160k})$

$\beta_{170k} = \gamma_{1700} + (\mu_{170k})$

Note: INSTICTRL = Institutional control; FAC_SS = Faculty-student ratio; PROPCITY= Proportion of students from the city; ADMS = Institutional admission

To examine whether student engagement factors had differential influences on the academic achievement of specific student populations, the interaction terms of student engagement factors by students' gender, geographical origin, and precollege academic experience were added to the general effects equation in the next step of the data analysis. A statistically significant increase in the proportion of R-square (R^2) of the model indicated the presence of interaction/conditional effects (Kuh et al., 2008), implying that the influence of student engagement on academic achievement would vary in magnitude by particular student background characteristics. To ease the interpretations of interaction effects, all scale variables that were used to test for the presence of the conditional/interaction effects would be recoded into dichotomous variables (0 = below mean; 1 = above mean), and (a) cross-tabulated result(s) would be created to display the interacting nature of the variables of interest in relation to student achievement if any conditional relationship was statistically significant. Taking into account the interaction effects could reduce the risk of accepting the main effects of student engagement only on the surface, while underestimating its overall effects on student achievement (Pascarella & Terenzini, 2005). These mixed models were characterized as follows:

Level-1 model (19)

Student achievement $_{ijk} = \pi_{0jk} + \pi_{1jk}\ (AGE) + \pi_{2jk}\ (GD) + \pi_{3jk}\ (ENROLL) + \pi_{4jk}\ (LIVSTAT) + \pi_{5jk}\ (PREEXP) + \pi_{6jk}\ (MULTIATTD) + \pi_{7jk}\ (GEOORG) + \pi_{8jk}$

$(PARCLEXP) + \pi_{9jk}(EMPLSTAT) + \pi_{10jk}(WKLEXP) + \pi_{11jk}(ACDRES) + \pi_{12jk}(SS\_T) + \pi_{13jk}(CLPAR) + \pi_{14jk}(HWTSK) + \pi_{15jk}(PRLEARN) + \pi_{16jk}(CLPREP) + \pi_{17jk}(TMTSK) + \pi_{18jk}(SS\_T*GD) + \pi_{19jk}(CLPAR*GD) + \pi_{20jk}(HWTSK*GD) + \pi_{21jk}(PRLEARN*GD) + \pi_{22jk}(CLPREP*GD) + \pi_{23jk}(TMTSK*GD) + \pi_{24jk}(SS\_T*PREEXP) + \pi_{25jk}(CLPAR*PREEXP) + \pi_{26jk}(HWTSK*PREEXP) + \pi_{27jk}(PRLEARN*PREEXP) + \pi_{28jk}(CLPREP*PREXP) + \pi_{29jk}(TMTSK*PREEXP) \pi_{30jk}(SS\_T*GEOORG) + \pi_{31jk}(CLPAR*GEOORG) + \pi_{32jk}(HWTSK* GEOORG) + \pi_{33jk}(PRLEARN* GEOORG) + \pi_{34jk}(CLPREP* GEOORG) + \pi_{35jk}(TMTSK* GEOORG) + e_{ijk}$

Level-2 model (Intercept- and slopes-as-outcomes) (20)

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

$\pi_{12jk} = \beta_{120k} + (r_{12jk})$

$\pi_{13jk} = \beta_{130k} + (r_{13jk})$

$\pi_{14jk} = \beta_{140k} + (r_{14jk})$

$\pi_{15jk} = \beta_{150k} + (r_{15jk})$

$\pi_{16jk} = \beta_{160k} + (r_{16jk})$

$\pi_{17jk} = \beta_{170k} + (r_{17jk})$

Level-3 model (Intercept- and slopes-as-outcomes) (21)

$\beta_{00k} = \gamma_{000} + \gamma_{001}(INSTICTRL) + \gamma_{002}(FAC\_SS) + \gamma_{003}(PROPCITY) + \gamma_{004}(ADMS) + \mu_{00k}$

$\beta_{120k} = \gamma_{1200} + (\mu_{120k})$

$\beta_{130k} = \gamma_{1300} + (\mu_{130k})$

$\beta_{140k} = \gamma_{1400} + (\mu_{140k})$

$\beta_{150k} = \gamma_{1500} + (\mu_{150k})$

$\beta_{160k} = \gamma_{1600} + (\mu_{160k})$

$\beta_{170k} = \gamma_{1700} + (\mu_{170k})$

In the model development, a goodness-of-fit test was conducted through the model's hypothesis testing to examine whether the deviance statistics and chi-square value were reduced and statistically significantly, respectively (see details in Raudenbush et al., 2004).

The significant output indicates that the inclusion of factors in the model had a significant and additional contribution to the variability in student achievement and represents the fitness of the model under consideration in the data analysis. A few other assumptions were also examined using a multiple regression method. First, as a rule when a large number of predictors are examined, there is a possibility that multicollinearity can distort the accuracy of the model estimation. As such, two important statistics (the tolerance statistics and variance inflation factor) were tested. The data indicated that the tolerance statistics and variance inflation factor were far above .2 and less than 10 respectively. Thus, as Menard (1995) and Myers (1990) suggested, multicollinearity within the data was not a major concern (as cited in Field, 2009). To minimize this problem, all scale variables, including the cross-product variables, were also added as "grand-centered" when modeled in the HLM.

Second, the fact that student's weekly expense (M = 80,090; SD = 68,492) was positively skewed, as evidenced in its extremely large standard deviation, might, in principle, have biased the regression models significantly (see Table 7, pp. 137-138). The influence of some extreme cases on the whole model is acknowledged in Field (2009). One solution is to remove those cases to improve the goodness-of-fit of the model. But, the fact that Cook's distance was reported less than 1 in this study suggests that the outliers did not make any substantial changes in the regression models even when the models were regressed in a reduced form (Cook & Weisberg, 1982, as cited in Field, 2009). Thus, no removal of extreme cases by student's weekly expense was made in the analysis.

Finally, assumptions of linearity, homogeneity of variance and normality of residuals

were evaluated to determine whether the findings of this study could be generalized to a wider population, using a plotted graph between regression standardized predicted values (ZPRED) and regression standardized residuals (ZRESID), a histogram and normal probability plot of the residuals. Field (2009) suggested that these assumptions are met when the graph of ZPRED and ZRESID does not funnel out and consist of any sort of curve, the residuals are normally distributed having a bell-shaped curve, and the points representing the regression standardized residuals lie on the straight line. The analysis of residuals indicated that this study met these conditions, thus implying that the results from the regression model could be generalized beyond the sample.

4.8.1.2 Effects of faculty behaviors

Six models were developed to address the four research questions in this section. Model 1 controlled for the effects of student characteristics on student achievement (see equations 7, 8, and 9, p. 117). Model 2 estimated the association of faculty behaviors and student achievement by controlling for student characteristics. Because students in each class were asked to rate their teacher's teaching practices, the obtained scores from students' rating were aggregated to represent each class's teaching conditions and to transform students' rated scores at the individual level to the class-level variables for the data analysis. In this model, the effects of faculty behaviors were allowed to vary by institution, or "institution-specific", to examine whether institutional contexts may have had influences on the predictive relationships between faculty behaviors and student achievement. If the slopes for faculty behavior factors did not vary significantly by

institution, their equations were fixed for further steps of the data analysis. This model was represented by these equations:

Level-1 model (22)

$$\text{Student achievement}_{ijk} = \pi_{0jk} + \pi_{1jk}(AGE) + \pi_{2jk}(GD) + \pi_{3jk}(ENROLL) + \pi_{4jk}(LIVSTAT) + \pi_{5jk}(PREEXP) + \pi_{6jk}(MULTIATTD) + \pi_{7jk}(GEOORG) + \pi_{8jk}(PARCLEXP) + \pi_{9jk}(EMPLSTAT) + \pi_{10jk}(WKLEXP) + \pi_{11jk}(ACDRES) + e_{ijk}$$

Level-2 model (Intercept-as-outcome) (23)

$$\pi_{0jk} = \beta_{00k} + \beta_{01k}(ORGCLR) + \beta_{02k}(SUPFEED) + \beta_{03k}(CHALCLASS) + r_{0jk}$$

Level-3 model (Intercept- and slopes-as-outcomes) (24)

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

$$\beta_{01k} = \gamma_{010} + \mu_{01k}$$

$$\beta_{02k} = \gamma_{020} + \mu_{02k}$$

$$\beta_{03k} = \gamma_{030} + \mu_{03k}$$

Note: ORGCLR = Instructional organizational and clarity; SUPFEED = Support and feedback; CHALCLASS = Challenging class

Model 3 predicted student achievement with student engagement factors at student, class, and institutional levels (see equations 10, 11, and 12, pp. 119-120). After computing this model, all statistically insignificant random-effect variables were removed; only the statistically significant class- and institution-level student engagement variables were carried over, together with the level-one factors, into the next step of analysis. Again, while the omission of the insignificant random-effect variables would not provide a total picture of the strength of the predictor variables at the class and institutional levels, this method would offer a refined statistical means to attenuate a multicollinearity risk in the next model when a bulk of variables were tested at once. From a statistical standpoint, this

random effect testing method would help to increase the robustness of the next model to a degree when all relevant factors under consideration were evaluated.

Model 4 predicted student achievement with faculty behaviors and student engagement factors, while controlling for student characteristics. A substantial decrease in the coefficient of any statistically significant faculty behaviors in this model implies that the effects of faculty behaviors on student achievement were likely to be indirect or moderated by the amount of student engagement in specific academically purposeful activities. Again, all the variance changes in each model, especially compared to the baseline models, were examined to determine the extent to which each block of variables entered would influence student achievement. This model was built as follows:

Level-1 model (25)

Student achievement $_{ijk} = \pi_{0jk} + \pi_{1jk}\,(AGE) + \pi_{2jk}\,(GD) + \pi_{3jk}\,(ENROLL) + \pi_{4jk}\,(LIVSTAT) + \pi_{5jk}\,(PREEXP) + \pi_{6jk}\,(MULTIATTD) + \pi_{7jk}\,(GEOORG) + \pi_{8jk}\,(PARCLEXP) + \pi_{9jk}\,(EMPLSTAT) + \pi_{10jk}\,(WKLEXP) + \pi_{11jk}\,(ACDRES) + \pi_{12jk}\,(SS\_T) + \pi_{13jk}\,(CLPAR) + \pi_{14jk}\,(HWTSK) + \pi_{15jk}\,(PRLEARN) + \pi_{16jk}\,(CLPREP) + \pi_{17jk}\,(TMTSK) + e_{ijk}$

Level-2 model (Intercept-and slopes-as-outcomes) (26)

$\pi_{0jk} = \beta_{00k} + \beta_{01k}\,(ORGCLR) + \beta_{02k}\,(SUPFEED) + \beta_{03k}\,(CHALCLASS) + r_{0jk}$

$\pi_{12jk} = \beta_{120k} + (r_{12jk})$

$\pi_{13jk} = \beta_{130k} + (r_{13jk})$

$\pi_{14jk} = \beta_{140k} + (r_{14jk})$

$\pi_{15jk} = \beta_{150k} + (r_{15jk})$

$\pi_{16jk} = \beta_{160k} + (r_{16jk})$

$\pi_{17jk} = \beta_{170k} + (r_{17jk})$

Level-3 model (Intercept- and slopes-as-outcomes) (27)

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

$\beta_{01k} = \gamma_{010} + (\mu_{01k})$

$\beta_{02k} = \gamma_{020} + (\mu_{02k})$

$\beta_{03k} = \gamma_{030} + (\mu_{03k})$

$\beta_{120k} = \gamma_{1200} + (\mu_{120k})$

$\beta_{130k} = \gamma_{1300} + (\mu_{130k})$

$\beta_{140k} = \gamma_{1400} + (\mu_{140k})$

$\beta_{150k} = \gamma_{1500} + (\mu_{150k})$

$\beta_{160k} = \gamma_{1600} + (\mu_{160k})$

$\beta_{170k} = \gamma_{1700} + (\mu_{170k})$

Institutional characteristics were added to the next model of the data analysis. This model included a host of institution-level variables in the previous equation with an attempt to further control for the effects the institutional factors would have had on student achievement above and beyond that of faculty behaviors and the likes of student characteristics and student engagement under consideration. In brief, this model tested the combined effects of student characteristics, faculty behaviors, student engagement, and institutional factors to examine if changes incurred as a result of institutional differences rather than individual- or class-difference factors. Equations below present how this model was estimated:

Level-1 model (28)

Student achievement $_{ijk} = \pi_{0jk} + \pi_{1jk}\,(AGE) + \pi_{2jk}\,(GD) + \pi_{3jk}\,(ENROLL) + \pi_{4jk}\,(LIVSTAT) + \pi_{5jk}\,(PREEXP) + \pi_{6jk}\,(MULTIATTD) + \pi_{7jk}\,(GEOORG) + \pi_{8jk}\,(PARCLEXP) + \pi_{9jk}\,(EMPLSTAT) + \pi_{10jk}\,(WKLEXP) + \pi_{11jk}\,(ACDRES) + \pi_{12jk}\,(SS\_T) + \pi_{13jk}\,(CLPAR) + \pi_{14jk}\,(HWTSK) + \pi_{15jk}\,(PRLEARN) + \pi_{16jk}\,(CLPREP) + \pi_{17jk}\,(TMTSK) + e_{ijk}$

Level-2 model (Intercept-and slopes-as-outcomes) (29)

$$\pi_{0jk} = \beta_{00k} + \beta_{01k}(ORGCLR) + \beta_{02k}(SUPFEED) + \beta_{03k}(CHALCLASS) + r_{0jk}$$

$$\pi_{12jk} = \beta_{120k} + (r_{12jk})$$

$$\pi_{13jk} = \beta_{130k} + (r_{13jk})$$

$$\pi_{14jk} = \beta_{140k} + (r_{14jk})$$

$$\pi_{15jk} = \beta_{150k} + (r_{15jk})$$

$$\pi_{16jk} = \beta_{160k} + (r_{16jk})$$

$$\pi_{17jk} = \beta_{170k} + (r_{17jk})$$

Level-3 model (Intercept-and slopes-as-outcomes) (30)

$$\beta_{00k} = \gamma_{000} + \gamma_{001}(INSTICTRL) + \gamma_{002}(FAC\_SS) + \gamma_{003}(PROPCITY) + \gamma_{004}(ADMS) + \mu_{00k}$$

$$\beta_{01k} = \gamma_{010} + (\mu_{01k})$$

$$\beta_{02k} = \gamma_{020} + (\mu_{02k})$$

$$\beta_{03k} = \gamma_{030} + (\mu_{03k})$$

$$\beta_{120k} = \gamma_{1200} + (\mu_{120k})$$

$$\beta_{130k} = \gamma_{1300} + (\mu_{130k})$$

$$\beta_{140k} = \gamma_{1400} + (\mu_{140k})$$

$$\beta_{150k} = \gamma_{1500} + (\mu_{150k})$$

$$\beta_{160k} = \gamma_{1600} + (\mu_{160k})$$

$$\beta_{170k} = \gamma_{1700} + (\mu_{170k})$$

To examine whether faculty behaviors had differential influences on the academic achievement of specific student populations, cross-model interaction terms by students' gender, geographical origin, and precollege academic experience were added to the general effects equation in the final step of the data analysis. A statistically significant increase in the proportion of R-square (R^2) of the model indicates the presence of interaction effects (Kuh et al., 2008), meaning that faculty behavior(s) might have had a greater effect on the academic achievement of specific student subsamples. All scale variables that were used to

test for the presence of the conditional/interaction effects would be recoded into dichotomous variables (0 = below mean; 1 = above mean), and (a) cross-tabulated result(s) would be created to display the interacting nature of the variables of interest in relation to student achievement if the conditional associations was statistically significant. The cross level interaction model was built together with other models using the following equations:

Level-1 model (31)

$$\text{Student achievement}_{ijk} = \pi_{0jk} + \pi_{1jk}(AGE) + \pi_{2jk}(GD) + \pi_{3jk}(ENROLL) + \pi_{4jk}(LIVSTAT) + \pi_{5jk}(PREEXP) + \pi_{6jk}(MULTIATTD) + \pi_{7jk}(GEOORG) + \pi_{8jk}(PARCLEXP) + \pi_{9jk}(EMPLSTAT) + \pi_{10jk}(WKLEXP) + \pi_{11jk}(ACDRES) + \pi_{12jk}(SS\_T) + \pi_{13jk}(CLPAR) + \pi_{14jk}(HWTSK) + \pi_{15jk}(PRLEARN) + \pi_{16jk}(CLPREP) + \pi_{17jk}(TMTSK) + e_{ijk}$$

Level-2 model (Intercept- and slopes-as-outcomes) (32)

$$\pi_{0jk} = \beta_{00k} + \beta_{01k}(ORGCLR) + \beta_{02k}(SUPFEED) + \beta_{03k}(CHALCLASS) + r_{0jk}$$

$$\pi_{2jk} = \beta_{20k} + \beta_{21k}(ORGCLR) + \beta_{22k}(SUPFEED) + \beta_{23k}(CHALCLASS)$$

$$\pi_{5jk} = \beta_{50k} + \beta_{51k}(ORGCLR) + \beta_{52k}(SUPFEED) + \beta_{53k}(CHALCLASS)$$

$$\pi_{7jk} = \beta_{70k} + \beta_{71k}(ORGCLR) + \beta_{72k}(SUPFEED) + \beta_{73k}(CHALCLASS)$$

$$\pi_{12jk} = \beta_{120k} + (r_{12jk})$$

$$\pi_{13jk} = \beta_{130k} + (r_{13jk})$$

$$\pi_{14jk} = \beta_{140k} + (r_{14jk})$$

$$\pi_{15jk} = \beta_{150k} + (r_{15jk})$$

$$\pi_{16jk} = \beta_{160k} + (r_{16jk})$$

$$\pi_{17jk} = \beta_{170k} + (r_{17jk})$$

Level-3 model (Intercept- and slopes-as-outcomes) (33)

$$\beta_{00k} = \gamma_{000} + \gamma_{001}(INSTICTRL) + \gamma_{002}(FAC\_SS) + \gamma_{003}(PROPCITY) + \gamma_{004}(ADMS) + \mu_{00k}$$

$$\beta_{01k} = \gamma_{010} + (\mu_{01k})$$

$$\beta_{02k} = \gamma_{020} + (\mu_{02k})$$

$\beta_{03k} = \gamma_{030} + (\mu_{03k})$

$\beta_{120k} = \gamma_{1200} + (\mu_{120k})$

$\beta_{130k} = \gamma_{1300} + (\mu_{130k})$

$\beta_{140k} = \gamma_{1400} + (\mu_{140k})$

$\beta_{150k} = \gamma_{1500} + (\mu_{150k})$

$\beta_{160k} = \gamma_{1600} + (\mu_{160k})$

$\beta_{170k} = \gamma_{1700} + (\mu_{170k})$

4.8.2 Interview data analysis

A semi-structured interview was employed to examine respondents' perspectives in order to describe the explanatory context underlying teaching and learning factors that spoke volumes for students' desired academic performance. Contextual explanations of factors affecting student achievement and other associated challenges were also noted. The analyses were conducted separately on the two interview data that were collected in the first and second phases. Thereafter, the synthesis of the findings was made after all the analysis processes were done. Relevant theme-based results were presented along with contextual explanations representing the respondents' perspectives and reasoning to supplement the survey's findings.

4.9 Internal validity of the study

This section describes how the internal validity of the study was considered. At the design stage, two critical problems pertaining to the construction of scale variables in the questionnaire survey and an academic achievement test were taken into account. In terms of scale variables, a six-point Likert scale *(6 = always [100%]; 5 = usually [80%]; 4 = often [60%]; 3 = sometimes [40%]; 2 = rarely [20%]; 1 = never [0%])* was used in lieu

of a four-point scale originally used in the previous studies' instruments *(4 = Very often; 3 = Often; 2 = Occasionally/Sometimes; 1 = Never)*. This modification was made to ensure that respondents were better informed of the distinctive meaning of each response option. A shorter time frame was also specified when asking students to report on their engagement activities and to evaluate their teachers' classroom teaching behaviors. Sudman and Bradburn (1982) stated that, "human memory is fallible and depends on the length and recency of the time period and the saliency of the topic" (p. 21). When asking about behavioral questions, Sudman and Bradburn suggested that making questions specific within an appropriate time period is a prerequisite to reduce memory recall errors. Therefore, this study limited itself by only asking for recent teaching and learning behaviors within the last few month period to reduce memory recall errors as questions pertaining to student engagement activities and faculty behaviors could be considered low-salient questions that technically required higher memory recalls among respondents. A longer time span may just pose a serious threat to validity of the information obtained.

With regard to testing, this study utilized an actual achievement test—a researcher-made test—rather than the readily available standardized tests. The main rationale was to ensure the content validity of the test that would fit the purpose of this study better, i.e. to specifically examine factors related to student achievement, not students' language knowledge or proficiency in general. While theoretically standardized tests would have been highly rated as a valid and reliable assessment tool, its usage would not provide a total picture of what students have learnt or achieved within a specified time frame. For that reason, this study utilized a locally and contextually designed test to measure student

achievement based upon what they had been taught as well as what was written in the course contents during which the data collection for this research was undertaken.

At the data collection stage, "instrument decay" was also taken into account when the test was piloted (Fraenkel et al., 2012). The test was administered at three universities that were supposed to be the targeted sample for this study. However, classes that were selected for test piloting were not the classes that were, thereafter, randomly selected for the questionnaire survey and the actual test administration. This approach would to a great extent cancel out any test bias and familiarity for specific student samples.

At the data analysis stage, one of the main threats to validity of this kind of correlational research was concerned with the analytical tool used for data analysis. This study was composed of data that were, in nature, hierarchically structured at the class/teacher and institutional levels. As students were nested within specific classes, variances within classes would not be the same, as would be the variances between classes. The same holds true for within- and between-institution variances in student achievement (Beretvas, 2007). When this hierarchical nature of the data was neglected and treated at the same level, as is the case of the ordinary least square regression method (OLS), a much biased estimation of the resultant standard errors in analysis (Type I error) would be resulted (Pike et al., 2011; Raudenbush et al., 2004). Results would, thus, be to varying degrees open to critical question. This study took this problem into account by employing a multi-level regression analysis, in which data were treated and analyzed differently at each level. This analytic approach renders the significant tests feasible at both the individual and the group levels.

Another means to cancel out the threat to internal validity of the study was to control for other extraneous variables. This approach was commonly used in correlational research mainly to provide a more accurate estimate of the effects of variables under consideration on the outcome variables (e.g., Kuh et al., 2008; Pascarella et al., 2011). This study, therefore, incorporated students' background characteristics and institutional factors as the controlled factors into the models to predict student achievement. In doing so, differences in student achievement that would be explained by any variations in students' background characteristics and institutional factors would be accounted for or held constant, thereby giving a clearer picture that student engagement and faculty behaviors would truly combine to predict student achievement.

CHAPTER FIVE

RESULTS AND DISCUSSIONS

5.1 Results

5.1.1 General descriptive results

This section presents briefly the mean score of student achievement, the characteristics of the students included in the study, the mean scores of student engagement subscales, the mean scores of faculty behavior subscales, and the characteristics of the institution sample. As stated earlier, participants were 923 first-year university students majoring in English, drawn from 30 classes at nine universities in Phnom Penh City, Cambodia, in 2012. The survey showed that students, on average, had a score of 39.40 out of the total score of 76, with a standard deviation of 9.53. Students appeared to perform somewhat at the average level in each knowledge and skills dimensions included in this study's student achievement test, with on average students reportedly having 48.15 % of correct responses on the vocabulary section, 53.14 % on the grammar and language expressions, and 52.21 % on the reading comprehensions. Such a result suggests a moderate performance among the first-year students studied in this survey. However, a relatively high standard deviation observed in the data implied that the distribution of students' test scores would be scattered to a degree, the value that would, in turn, indicate noticeable academic gaps among the students. Such a discrepancy and its influencing factors, thus, needed to be explored.

First-year students selected for this present study appeared to exhibit mixed

characteristics. The results showed that 58 % were males, and 42 % were females, with an average age of 20 (*SD* = 2.72). Almost half of the students did not start university immediately after high school (48 %), were from the provinces (49 %), and were taking two full-time bachelor's degrees at two universities at the same time (44 %). About 30% of the participants were students whose parents had attended university, the proportion suggesting that most students were from the families that had no college experience or were labeled "first-generation students". Eighteen percent of the students described themselves as having employment responsibilities, either full-time or part-time, while studying at the university. Students on average spent about 80,000 Riels per week on their basic expenses (approx. 20 USD/week) and tended to possess four out of six basic home resources examined in this study (a desk, personal room, study place, a computer, the internet and a dictionary). Overall, while these data may not have reflected the characteristics of students studying at Cambodian universities in its entirety, they seemingly represented a fairly balanced distribution of student profiles by gender, geographical origins (provinces vs. city), and multiple university attendance status. This composition offered mixed and meaningful inputs for the understanding of students' experiences toward teaching and learning in Cambodia's higher education.

Table 7 Descriptive results

Measure	Description/Metric	*N*	Mean	SD
Academic achievement	English test score (total score = 76)		39.40	9.53
Institutional characteristics				
Institutional control	0 = public	2 (22%)		

	1 = private	7 (78%)		
Faculty-student ratio	Ratio of the total number of teachers to the total number of students		35.78	16.95
Institutional admission	Enrollment admission strictness [a]		3.34	0.59
Proportion of city students	Percentage of students from the city vs. those from the provinces		0.50	0.17
Student characteristics				
Age			20.15	2.72
Gender	0 = male	535 (58 %)		
	1 = female	388 (42 %)		
Enrollment to university	0 = not delayed	480 (52 %)		
	1 = delayed	443 (48 %)		
Living status	0 = live with parents	452 (49 %)		
	1 = live outside	471 (51 %)		
Multiple college attendance	0 = no	517 (56 %)		
	1 = yes	406 (44 %)		
Geographical origin	0 = province	461 (49.9 %)		
	1 = Phnom Penh	462 (50.1 %)		
Parents' college experience	0 = no	655 (71 %)		
	1 = yes	268 (29 %)		
Employment responsibility	0 = no	757 (82 %)		
	1 = yes	166 (18 %)		
Student's weekly expense	Average weekly expense (in Riels [b])		80,090	68,492
Academic resources at home	Sum of six items [c] (0-6)		3.90	1.54
Precollege academic experience	Precollege English learning experience		0.00	0.67
Student engagement				
Time on course-related tasks	Hours a week on course-related tasks		2.69	2.39
Student-teacher interaction	Frequency of contact with teachers [d]		1.96	1.19
Active class participation	Frequency of class participation		4.15	0.92
Homework and tasks	Frequency of doing homework and tasks		4.78	0.98
Peer learning	Frequency of discussion with peers		3.85	1.00
Class preparation	Frequency of class preparation		3.77	1.01
Faculty behaviors				
Instructional organization and clarity	Faculty behaviors toward instructional delivery and quality		4.87	0.38
Support and feedback	Faculty behaviors toward support and feedback		4.45	0.36
Class practices to challenge students	Faculty behaviors toward a challenging class		3.60	0.36

Note:

[a] 5 = very strict; 4 = strict; 3 = somewhat strict; 2 = less strict; 1 = not strict at all

[b] 'Riel' is the currency used in Cambodia.

[c] Availability of desk, personal room, study place, computer, the internet and dictionary at home
[d] 6 = always; 5 = usually; 4 = often; 3 = sometimes; 2 = rarely; 1 = never

With regard to students' levels of engagement in academic activities, the data indicated that students were likely to have low levels of engagement in time spent reading or doing course-related tasks outside the class on their own (M = 2.69 hours/week, SD = 2.39), in consulting with faculty their learning problems, especially outside the class (M = 1.96, SD = 1.19), in discussing with peers their learning progress and problems (M = 3.85, SD = 1.00), and in investing time and effort in class preparation (M = 3.77, SD = 1.01). Students, however, reported to have higher levels of engagement in two traditional academic activities: active class participation (M = 4.15, SD = 0.92) and assigned homework and tasks (M = 4.78, SD = 0.98). These data seemingly highlighted a tendency that student engagement in the academic activities within the context of this study was more likely to occur in the classroom context or within the highly guided learning context than at other study arenas, including university library and home or within the independent learning modes.

The descriptive results further showed that, on average, students reported to have exposed to faculty who tended to exhibit a desired level of instructional delivery and quality (M = 4.87, SD = 0.38) and support and feedback (M = 4.45, SD = 0.36), whereas students were not highly exposed to classes that promoted a challenging learning environment, such as questioning for the explanation of the materials and critical thinking (M = 3.60, SD = 0.36). This critical lack of a challenging class condition seemed to provide a close representation of the traditional classroom teaching context in Cambodia, where

teachers had long played a more active role than students while teaching (Bunlay, Wright, Sophea, Bredenburg, & Singh, 2009; Neau, 2003).

The selected institutions for this study, on average, had a relatively high faculty-student ratio, with a mean of 35.78[1] and a standard deviation of 16.95. The ratio exceeded the desired standard 1:25 set by the ACC for the academic field in Arts and Humanity[2]. This high ratio implied that university teachers in Cambodia tended to teach in large classes and would be more engaged in teaching than in other professionally driven activities. Further, the survey data indicated that admission regulations among universities under consideration were not highly rated as "strict" by their enrolled first-year students. While the view toward the admission policy/regulations among students was somewhat mixed, with a mean of 3.34 and a standard deviation of 0.59, the rated mean score appeared to point out that the quality of student recruitment was, in general, still in question. The data also demonstrated that student populations at the university sample were mixed in their geographical origins. On average, the institution sample appeared to enroll up to fifty percent of students from the provinces (M = 0.50, SD = 0.17). This proportion likely lends support to the current higher education situation in Cambodia where students from various provinces are moving into the city to seek university education (Chet, 2006).

[1] The average ratio of total faculty members to total student enrollment at the nine selected institutions based on 2010-2011 data from the Department of Higher Education of Cambodia

[2] Manual on foundation year course program for higher education institutions in Cambodia (January 2007)

5.1.2 Descriptive results by institutional control

This section describes the general characteristics of public and private institutions selected for this present study. Table 8 presents some important characteristics of public and private universities in this study. In general, private institutions appeared to lag behind their public counterparts in various respects. Based on the current survey data, private universities tended to have recruited students with lower-academic backgrounds. The *t*-test analysis showed that private universities likely had students with an English ability below the intermediate level (M = 1.93, SD = 0.92), whereas the contrast held true for students enrolled at public universities (M = 2.60, SD = 0.92), t (479) = 10.48, $p < .001$. Public universities reportedly had students with higher academic abilities. This was also reflected in their academic performance. By and large, private universities were described as "low-performing" HEIs compared to the public universities, as measured in terms of student achievement. Students at the public universities were, in general, likely to outperform those from the private counterparts, t (489) = 18.61, $p < .001$ (M_{public} = 47.11, SD = 8.61; M_{private} = 36.01, SD = 7.80). They performed significantly better in all the three language and skills tested (vocabulary, grammar and language expressions, and reading comprehensions). The disadvantaged student characteristics observed within the Cambodia's private higher education sector were discernible given the loosely regulated entry requirements and weak rules for absence and exam among private universities in Cambodia (Leng, 2010). Public universities, in contrast, had a better recruitment policy, particularly with the entrance examination in place, thus likely recruiting better academic-profile students.

The data further indicated that private universities were likely to have more male students than the female ones, $\chi^2 = 8.43$, $p < .01$, while gender difference was not observed within the public universities. These results represented a reduced gender gap at the public higher education sector, which would be in line with the priority policy by the Ministry of Education, Youth and Sport (MoEYS) to improve female access to university education (MoEYS, 2005). For institutional attendance status, public universities tended to have more students taking another university degree while also enrolling in the English program, $\chi^2 = 53.05$, $p < .001$. Within the private universities, the majority of students appeared to be the single-institution attendees. This opposite tendency might associate with the gap in socio-economic backgrounds of students at these two higher education sectors. Apparently, private universities tended to have more students who graduated their high school in the provinces, $\chi^2 = 20.69$, $p < .001$. Considering slow socio-economic development in rural Cambodia, the ability to finance their enrollment in two degree programs in the city at the same time would, thus, be in question. In contrast, there were a significantly higher number of students from the city within the public institutions, and these students tended to hold a multiple university attendance title. In Cambodia, students with multiple institution enrollments may be in general described as both scholarship and fee-paying students (Chet, 2006). Students in the city might be at the advantage to enroll in both programs considering their higher precollege academic experience and better family's socio-economic status. Private universities also had other two noticeable characteristics significantly different from those of public counterparts. Further comparative analyses revealed that, private universities were more likely to have students whose parents did not

have any college experience, generally termed "first-generation students", $\chi^2 = 34.05$, $p < .001$, and who appeared to be from the lower income families based on their self-reported weekly expenses, t (892) = 96.56, $p < .001$ (M_{public} = 100, 088.43 Riels[3], SD = 3,193; $M_{private}$ = 71, 113.76 Riels, SD = 5,941).

Apart from student characteristics, public and private universities had a marked difference in the student admission policy. Based on the students' perceptions toward the admission policy at the institution where they were studying, public universities tended to hold a better title than the private ones (M_{public} = 4.11, SD = 0.95; $M_{private}$ = 3.24, SD = 1.03), t (575) = 12.62, $p < .001$). Public universities were perceived to have stricter student recruitment requirements than the private counterparts. This result shared with that of Leng (2010), who found that there were easier and fewer entry requirements at the private higher education sector. Leng (2010) went on to describe that the entrance exam set at the private universities only existed on the surface, instead allowing all the people who applied to pass. Private universities also admitted students without a grade 12 certificate. On the contrary, public universities did not admit students without a certificate of grade 12 and had an entrance exam in place or used the grade 12 examination grade as one of the criteria to select students in line with the allocated scholarship schemes or the proposed number of students in fee-paying programs to the MoEYS that were run in parallel with the scholarship ones.

.

[3] Riels is a currency of Cambodia. 1 USD is equivalent of approximately 4,000 Riels (as of 2012).

The faculty-student ratios at public and private universities in this study were also significantly different from each other. The 2010-2011 data from the Department of Higher Education of Cambodia showed that public universities likely had a larger faculty-student ratio, with an average of 1:60, than that of the private universities, which was only observed at 1:28. The higher ratio at public universities would reflect a higher level of workload among faculty members and their full-time tenure, whereas the much smaller faculty-student ratio at private universities would suggest a lower level of workload among faculty members and dictate the assumption that teachers were more likely to hold a part-time title. These ratios, however, presented somewhat tricky tips for interpretations with regard to teachers' workload in Cambodia's higher education, especially at the private sector. Considering the fact that teaching is the main source of income among teachers in Cambodia, it is possible that teachers at private universities were also engaged in teaching services/full-time work at another place. The notion of faculty-student ratio within this study, thus, needed to be interpreted with great caution.

Table 8 Comparisons between public and private universities

Variable	Public universities	Private universities
Academic performance	Higher-performing students	Lower-performing students
Precollege academic experience	Higher-academic experience students (above-average precollege academic experience)	Lower-academic experience students (below-average precollege academic experience)
Gender	Gender balance	Male-dominant
Institutional attendance	Multiple institutional attendance	Single institutional attendance

Geographical origin	City students	Provincial/rural students
University admission	Stricter admission	Less strict admission
Faculty-student ratio	1:60	1:28

Note:

- *T–test* and chi-square methods were used for these comparative analyses. All tests were statistically significant at $p < .05$ or beyond.
- Faculty-student ratio was a researcher-made ratio for each institution by dividing the total student enrollment by faculty members based on 2010-2011 data from the Department of Higher Education of Cambodia.
- Other characteristics presented in the table were based on the current study's survey data of 923 students at the nine selected universities.

5.1.3 Predictors of student achievement

5.1.3.1 Null/no-predictor model

As a precondition for the hierarchical linear model analysis, the null/no-predictor model was evaluated to determine the amount of variability in student achievement at each level (student, class, and institutional levels). This model included an intercept (an average test score/student achievement) for the student level and tested whether it varied across classes and institutions. No predictors/independent variables at any of the levels were considered at this stage of the data analysis. This step is crucial to evaluate as to whether or not the data are appropriate for the HLM analysis (Pike et al., 2011; Raudenbush et al., 2004). To be more precise, the null model, often termed "unconditional model" in the multi-level analysis, is mandatory to determine if there is a sufficient amount of variability in the outcome variables at any of the higher level of the hierarchy, i.e., class and institutional levels.

Table 9 illustrates the amount of variability in students' test scores observed in the data at each level. The null model indicated that there were statistically significant

variations in student achievement across classes ($\chi 2 = 91.10$, $p < .001$) and institutions ($\chi 2 = 128.67$, $p < .001$). The data revealed that a large proportion of the variance in student achievement, roughly 67 %, was attributable to student-level factors, and about one third of the variance was attributable to class- and institution-level factors, with 7 % due to between-class differences, and the remaining 26 % to between-institution differences. While the results suggested that much of the variation in student achievement was accounted for by student-level factors, the large magnitude of the variance collectively observed across classes and institutions justified the use of a three-level HLM for this study. In this regard, both fixed and random effects of the variables of interest (i.e., student engagement and faculty behaviors) were specified and tested accordingly to determine if the influences of these variables would vary across classes and institutions. This analytic option would be useful to examine if class or institutional climates played a key role in affecting student learning and their academic achievement.

Table 9 Variability in student achievement (test scores)

Unit of analysis	Variance	Proportion of the variance explained (%)
Between-students ($N = 923$)	54.15	66.61[a]
Between-classes ($N = 30$)	5.85	7.19[b]
Between-institutions ($N = 9$)	21.30	26.20[c]

[a] Proportion of the variance explained (between-students) = 54.15/(54.15+5.85+21.30)
[b] Proportion of the variance explained (between-classes) = 5.85/(54.15+5.85+21.30)
[c] Proportion of the variance explained (between-institutions) = 21.30/(54.15+5.85+21.30)

5.1.3.2 General effects of student engagement

5.1.3.2.1 Student characteristics and student achievement

Table 10 shows the HLM results for the association of student characteristics and student achievement. This model estimated the extent of influences student characteristics might have exerted on student achievement. Since the analysis at this stage only served as a controlled method to isolate the effects of student characteristics from the subsequent models, the factors representing student characteristics were not allowed to vary by class or institution. The results revealed that student characteristics accounted for approximately 7 % of the variance in student achievement, with 1.60 % due to between-student differences, 0.78 % due to between-class differences, and 4.36 % due to between-institution differences. These results indicated that student characteristics only had trivial influences on student achievement. The results showed that students' precollege academic experience and employment responsibility were the only student characteristics that exerted significant and positive influences on student achievement. Students who attended university with a higher level of academic experience and worked while studying tended to perform better than those who attended university with less experience and did not work. Differences in student achievement were not significantly associated with other students' background characteristics.

Table 10 The association of student characteristics and student achievement

Variable	**Beta coefficient**
Intercept	38.22***

Student characteristics	
Gender (1 = female)	-0.68
Age	-0.19
Enrollment status (1 = delayed)	0.53
Living status (1 = outside)	0.25
Precollege academic experience	1.30**
Multiple college attendance (1 = yes)	0.34
Geographical origin (1 = city)	0.52
Parents' college experience (1 = yes)	-0.24
Employment status (1 = employed)	2.24*
Weekly expenses	0.00
Academic resources at home	0.20
Between-student variance	1.60 %
Between-class variance	0.78 %
Between-institution variance	4.36 %
Total variance explained	6.74 %
Goodness-of-fit test	
Deviance statistics	6341.15
Chi-square statistics	25.11
P-value	< .01

Note: * Significant at 0.05 level; ** Significant at 0.01 level; *** Significant at 0.001

5.1.3.2.2 Student engagement and student achievement

In this model, student engagement factors were estimated separately from other factors and accounted for about 22 % of the variance in student achievement, with 16.86 % at the student level, 0.92 % at the class level, and 4.02 % at the institutional level. The three-level analysis provided evidence that the variability in student achievement was concurrently due to between-student, between-class, and between-institutional differences. The results from this model indicated that four types of student engagement were significantly and positively related to student achievement at the student level. Students who devoted more time to course-related tasks outside the class, actively engaged in class participation, and often did homework/tasks were likely to have higher test scores than

those having low engagement in these activities. Higher amounts of class preparation also explained higher students' test scores. However, neither time spent on interaction with teachers nor peer learning was the significant predictor of student achievement at this level. These results indicated that the amount of student-teacher interaction and peer learning did not make any difference in student achievement.

The data showed that class participation was the only factor that was positively and significantly predictive of student achievement, even tested at the class level. This result indicated that the influence of student engagement in class participation tended to vary across classes, implying that, within some classes, class participation had a more pronounced effect on student achievement. The presence of both student- and class-level effects of this factor enhanced its validity in predicting student achievement in this study to a great degree. Other student engagement factors that were statistically significant at the student level were not detected to have differential influences on student achievement

Table 11 The association of student engagement and student achievement

Variable	**Beta coefficient**
Intercept	38.75***
Student engagement (Student-level effects)	
Student-teacher interaction	0.12
Active class participation	1.02**
Homework/tasks	1.20*
Peer learning	-0.24
Class preparation	0.73*
Time on course-related tasks	1.63*
Student engagement (Class-level random effects)	
Student-teacher interaction	0.21
Active class participation	1.43**
Homework/tasks	0.49

Peer learning	0.18
Class preparation	0.32
Time on course-related tasks	2.24
Student engagement (Institution-level random effects)	
Student-teacher interaction	0.08
Active class participation	0.28
Homework/tasks	1.02*
Peer learning	0.14
Class preparation	0.28
Time on course-related tasks	2.64*
Between-student variance	16.87 %
Between-class variance	0.92 %
Between-institution variance	4.02 %
Total variance explained	21.81 %
Goodness-of-fit test	
Deviance statistics	6141.66
Chi-square statistics	224.59
P-value	< .001

Note: * Significant at 0.05 level; ** Significant at 0.01 level; *** Significant at 0.001

across classes. This implied that the differences in student achievement were a function of students' individual differences in investing time and energy in the engagement activities observed at the student level rather than a product of the class climate differences. The absence of the class-specific effects of other student engagement measures appeared to attenuate the role of the class climate substantially, while suggesting that the student engagement factors that were observed to be statistically significant at the student level would exert positive influences on student achievement across classes in a similar fashion.

At the institutional level, two engagement factors (homework/tasks and time on course-related tasks) were significantly predictive of student engagement. Such evidence implied that these factors had differential influences on student achievement across institutions. While at the student level, a higher level of student engagement in these two

prominent activities would explain a higher academic performance among students in general terms, the random-effect analysis suggested that, to some extent, students tended to benefit from these engagement activities differently across the institutions studied in this present research, suggesting that institutional characteristics/climates would play a significant role in assisting students to capitalize on engaging in homework/tasks and academic readings outside the class.

5.1.3.2.3 Student characteristics, student engagement, and student achievement

When tested together with student characteristics as can be seen in Table 12, student engagement explained about the same amount of the variance in student achievement at the student level, compared to its lone model. However, there was an increase in the amount of the variance in student achievement at the class level (from 0.92 % to 1.83 %) and the institutional level (from 4.02 % to 7.51 %), respectively, indicating that, after controlling for student characteristics, class- and institution-specific effects of student engagement became more pronounced. In total, this model accounted for roughly 25 % of the variation in student achievement, adding nearly 18 percent of the variance explained to what was evident in the student characteristics model.

Despite the inclusion of a host of student characteristics as the controls, this model did not change the results of the significant predictors of student achievement in the previous model substantially, except for precollege academic experience and time on course-related tasks. While a higher level of precollege academic experience tended to explain higher academic achievement among first-year students in the earlier model, the

effect of this factor diminished substantially and became insignificant in predicting student achievement when student engagement factors were incorporated into the model. The disappearance of the important influence of precollege academic experience highlighted the critical role of student engagement in educationally purposeful activities as the prime factors that mattered more to student learning while in a university. Having employment responsibility while in a university remained an important contributor to student achievement.

Student engagement in class participation, class preparation, and homework/tasks remained the significant and positive predictors of student achievement at the student level. Holding students' background and demographic characteristics constant, the HLM analysis showed that engaging in these three activities had significant payoffs in student learning. The same relationship held true for the class effect of active class participation on student achievement, indicating that students from particular classes could benefit more substantially from engaging in whole class participation. With one exception, time on course-related tasks became insignificant in predicting the variability in student achievement at the student level, yet this factor was still statistically significant at the institutional level, indicating that more pronounced effect was observed due to between-institution differences. This result again highlighted the importance of institutional characteristics/climates in fostering the quality of student engagement and its critical role in enhancing student achievement. Homework/tasks also positively predicted student achievement at the institutional level. This result appeared to support the evidence that the influence of homework/tasks was not the same across institutions. At some universities,

students would be able to translate this engagement activity into more productive ends than those at other universities under consideration.

Table 12 The associations of student characteristics, student engagement, and student achievement

Variable	**Beta coefficient**
Intercept	38.36***
Student characteristics	
Gender (1 = female)	-0.69
Age	-0.11
Enrollment status (1 = delayed)	0.20
Living status (1 = outside)	-0.26
Precollege academic experience	0.51
Multiple college attendance (1 = yes)	0.23
Geographical origin (1 = city)	0.95
Parents' college experience (1 = yes)	-0.28
Employment status (1 = employed)	1.46*
Weekly expenses	0.00
Academic resources at home	0.03
Student engagement (Student-level effects)	
Student-teacher interaction	0.15
Active class participation	0.87*
Homework/tasks	1.36**
Peer learning	-0.20
Class preparation	0.74**
Time on course-related tasks	1.58
Student engagement (Class-level random effects)	
Student-teacher interaction	-
Active class participation	1.80***
Homework/tasks	-
Peer learning	-
Class preparation	-
Time on course-related tasks	-
Student engagement (Institution-level random effects)	
Student-teacher interaction	-
Active class participation	-
Homework/tasks	0.86*
Peer learning	-
Class preparation	-
Time on course-related tasks	4.62***

Between-student variance	15.13 %
Between-class variance	1.83 %
Between-institution variance	7.51 %
Total variance explained	24.47 %
Goodness-of-fit test	
Deviance statistics	6158.73
Chi-square statistics	207.52
P-value	< .001

Note: * Significant at 0.05 level; ** Significant at 0.01 level; *** Significant at 0.001

5.1.3.2.4 Student characteristics, student engagement, institutional characteristics, and student achievement

In this model, further controls for institutional characteristics were added to the previous equations to determine the extent to which institutional conditions would play a role in explaining student achievement and to evaluate whether or not the magnitude of influences student engagement factors had on student achievement would be changed when institutional differences were taken into account. Results showed that institutional factors also explained the variability in student achievement exponentially, increasing the total variance by almost 18 %. This result would imply that the selected institutions were likely to provide the learning contexts differently from one another, and such differences mattered to student learning. Of all the institutional characteristics tested, the institutional control (public vs. private) was found to be the significant predictor of student achievement. The level-3 results suggested that the institutional control was negatively related to student achievement. The negative coefficient indicated that private universities were more likely to have had students with significantly lower academic achievement compared to the public counterparts. Other institutional characteristics did not make a difference.

Notwithstanding the influence of the institution-level factor, other results in the previous models did not change substantially. Student engagement factors, in particular, remained the important factors positively associated with student achievement at all levels. Such results highlighted the stability of the student engagement model to a great extent, even after accounting for the institutional differences.

Table 13 The associations of student characteristics, student engagement, institutional characteristics and student achievement

Variable	**Beta coefficient**
Intercept	38.11***
Student characteristics	
Gender (1 = female)	-0.70
Age	-0.10
Enrollment status (1 = delayed)	0.27
Living status (1 = outside)	-0.27
Precollege academic experience	0.45
Multiple college attendance (1 = yes)	0.26
Geographical origin (1 = city)	0.92
Parents' college experience (1 = yes)	-0.30
Employment status (1 = employed)	1.42*
Weekly expenses	0.00
Academic resources at home	0.02
Student engagement (Student-level effects)	
Student-teacher interaction	0.15
Active class participation	0.90*
Homework/tasks	1.39**
Peer learning	-0.19
Class preparation	0.73**
Time on course-related tasks	1.64
Student engagement (Class-level random effects)	
Student-teacher interaction	-
Active class participation	1.77***
Homework/tasks	-
Peer learning	-
Class preparation	-
Time on course-related tasks	-

Student engagement (Institution-level random effects)	
Student-teacher interaction	-
Active class participation	-
Homework/tasks	0.57*
Peer learning	-
Class preparation	-
Time on course-related tasks	5.26***
Institutional characteristics	
Institutional control (1 = private)	-5.42*
Faculty-student ratio	0.01
% of students from the city	-1.39
Admission regulation	2.87
Between-student variance	14.82 %
Between-class variance	1.83 %
Between-institution variance	25.44 %
Total variance explained	42.08 %
Goodness-of-fit test	
Deviance statistics	6151.70
Chi-square statistics	214.56
P-value	< .001

Note: * Significant at 0.05 level; ** Significant at 0.01 level; *** Significant at 0.001

5.1.3.3 Conditional effects of student engagement

This model took into account the conditional effects of student engagement on the academic achievement of students by gender, precollege academic experience, and geographical origin. By adding these cross-product terms to the general effects model, the amount of variability explained in student achievement due to the variables under consideration was improved significantly from about 42 % to roughly 44 %. This implied that the general effects of student engagement could be masked given that the conditional terms were not taken into account. Table 14 presents the general and conditional effects of student engagement on student achievement in detail.

As shown in the table, despite adding the interaction terms to the general effects

model, the results still supported the evidence of fixed and random effects of student engagement on student achievement. These unchanged results implied that, despite the existence of cross-product variables, multicollinearity was not a serious concern. From the statistical standpoint, student engagement factors and its cross-product terms were not strongly related to each other. To some degree, the uncorrelated nature between student engagement factors and its cross-product terms would provide additional evidence that taking the conventional analysis of the relationships between student engagement and student achievement to the level that incorporated the conditional terms of student engagement factors based on specific student subsamples would shed greater light on the understanding of general learning phenomenon that may be embedded within some groups of students.

Table 14 The conditional effects of student engagement on student achievement

Variable	**Beta coefficient**
Intercept	38.83***
Student characteristics	
Gender (1 = female)	-1.07
Age	-0.08
Enrollment status (1 = delayed)	0.27
Living status (1 = outside)	-0.37
Precollege academic experience	0.04
Multiple college attendance (1 = yes)	0.38
Geographical origin (1 = city)	-0.16
Parents' college experience (1 = yes)	-0.31
Employment status (1 = employed)	1.37*
Weekly expenses	0.00
Academic resources at home	0.04
Student engagement (Student-level effects)	
Student-teacher interaction	0.44
Active class participation	1.28**

Homework/tasks	1.41*
Peer learning	-0.44
Class preparation	1.08**
Time on course-related tasks	1.12
Student engagement (Class-level random effects)	
Student-teacher interaction	-
Active class participation	0.88**
Homework/tasks	-
Peer learning	-
Class preparation	-
Time on course-related tasks	-
Student engagement (Institution-level random effects)	
Student-teacher interaction	-
Active class participation	-
Homework/tasks	0.46*
Peer learning	-
Class preparation	-
Time on course-related tasks	3.78***
Institutional characteristics	
Institutional control (1 = private)	-5.24
Faculty-student ratio	0.00
% of students from the city	-1.39
Admission regulation	2.79
Conditional effects	
SS-T* gender	0.75
Active class participation* gender	0.79
Homework/tasks* gender	0.42
Peer learning* gender	0.93*
Class preparation* gender	-0.06
Time on course-related tasks* gender	0.25
SS-T* precollege academic experience	0.14
Active class participation* precollege academic experience	-0.81*
Homework/tasks* precollege academic experience	-0.07
Peer learning* precollege academic experience	-0.71*
Class preparation* precollege academic experience	0.54
Time on course-related tasks* precollege academic experience	0.28
SS-T* geographical origin	-1.26**
Active class participation* geographical origin	-1.33**
Homework/tasks* geographical origin	-0.31
Peer learning* geographical origin	-0.24
Class preparation* geographical origin	-0.74
Time on course-related tasks*geographical origin	0.66
Between-student variance	16.48 %

Between-class variance	2.45 %
Between-institution variance	24.79 %
Total variance explained	43.72 %
Goodness-of-fit test	
Deviance statistics	6110.12
Chi-square statistics	256.13
P-value	< .001

Note: * Significant at 0.05 level; ** Significant at 0.01 level; *** Significant at 0.001

Of all the cross-product variables that were added to the general effects equation of the multi-level regression, five interaction terms were statistically significant, indicating that these factors were likely to exert differential influences on the academic achievement of specific student subpopulations (see Table 14). In terms of gender, the results showed that the cross-product variable of peer learning was the only factor that was significantly and positively related to student achievement ($B = 0.93$, $p < .05$). The presence of the interaction effect of peer learning on student achievement unveiled a blurring effect of this variable when group differences were not considered. In the general equations model, student achievement was not significantly associated with student engagement in peer learning activities. The relationship was even negative (see Table 14). Yet, when peer learning was allowed to interact with students' gender, this cross-product variable began to exert a significant and even positive influence on student achievement. A cross-tabulated result suggests that the negative relationship was only evident among male students (see Table 15). Male students who reported to have a higher level of engagement in peer learning tended to have a lower academic achievement compared to their lower-engaged counterparts. An increasing amount of engagement effort in learning and discussion with

peers, in contrast, had a positive payoff in female students' academic achievement. This conditional association suggested that students' gender concurrently played a mediating role in fostering the desired learning outcomes. This result, therefore, posited that the effect of peer learning on student achievement was more conditional, with advantages more observed for female students.

Table 15 The conditional effect of peer learning on student achievement by gender

Means of student achievement	Below-average engagement in peer learning (A)	Above-average engagement in peer learning (B)	Differences in student achievement (B-A)
Males	39.63	39.06	-0.57
Females	38.73	40.30	1.57

Note: The mean score of peer learning is 3.85.

The examination of the conditional association of student engagement and student achievement based on students' precollege academic experience also showed that the influence of peer learning was rather conditional (B = -0.71, $p < .05$). While the negative relationship between student engagement in peer learning and student achievement was observed for the entire sample of the present study, the negative nature of its relationship was not evident for students who entered university with a below-average academic experience. The conditional effects analysis indicated that peer learning, in turn, had a

moderate compensatory effect on the academic achievement of students who entered university with a below-average academic profile. The presence of this conditional effect again unveiled a blurring effect of peer learning when subsamples were not considered. As shown in Table 16, the effect of peer learning on student achievement was more striking and even positive for students with a lower academic profile, whereas the contrasting influence appeared to hold for those with a higher academic profile. This result suggested that the effect of student engagement in peer interaction was more meaningful for those who were academically challenged.

Table 16 The conditional effect of peer learning on student achievement by precollege academic experience

Means of student achievement	Below-average engagement in peer learning (A)	Above-average engagement in peer learning (B)	Differences in student achievement (B-A)
Below-average precollege experience	35.75	37.92	2.17
Above-average precollege experience	44.48	42.50	-1.98

Note: The mean score of peer learning is 3.85. Average precollege academic experience is a composite mean score of the number of months learning English full time (M = 14.11, SD = 19.78), the number of months learning English part-time (M = 30.20, SD = 23.10), and a self-reported level of English prior to university (M = 2.13, SD = 0.90).

In addition to the conditional influence of peer learning, the interaction effects analysis revealed that student engagement in active class participation had both general and conditional effects on student achievement, with a greater effect for students with a lower

academic profile prior to entering university (B = -0.81, p < .05). Although, in general, students with a higher academic profile appeared to perform better than their lower academic profile peers, the results suggested that the effect of active class participation on student achievement for the former cohort was not as robust as that on the academic achievement of those entering university with a lower academic experience. A higher level of student engagement in class participation would have a more pronounced effect for students who were academically challenged. This result, thus, suggested the presence of a compensatory effect of class participation on the academic achievement of students with disadvantaged academic backgrounds.

Table 17 The conditional effect of class participation on student achievement by precollege academic experience

Means of student achievement	Below-average engagement in class participation (A)	Above-average engagement in class participation (B)	Differences in student achievement (B-A)
Below-average precollege experience	35.05	38.42	3.37
Above-average precollege experience	42.88	44.00	1.12

Note: The mean score of active class participation is 4.15. Average precollege academic experience is a composite mean score of the number of months learning English full time (M = 14.11, SD = 19.78), the number of months learning English part-time (M = 30.20, SD = 23.10), and a self-reported level of English prior to university (M = 2.13, SD = 0.90).

The geographical origin of the students also played a concurrent role in determining the magnitude of influences that particular types of student engagement would have on

student achievement. The data showed that the cross-product terms of student engagement in class participation and interaction with faculty were significantly and negatively related to student achievement. These results hinted that the influences of student-teacher interaction and active class participation on student achievement were not the same for all student subpopulations. Active class participation, for example, had both general and conditional effects on student achievement. The negative coefficient of this factor (B = -1.33, $p < .01$) indicated that the influence of active class participation on the academic achievement of students residing in the city was not as robust as that on those from the provinces. Although, in general, a higher level of active class participation tended to explain higher students' test scores, this factor was likely to have a larger compensatory effect on the academic achievement of students from the provinces. Students in the city tended to gain marginal benefits from engaging in such whole class participation activities.

Table 18 The conditional effect of class participation on student achievement by geographical origin

Means of student achievement	Below-average engagement in class participation (A)	Above-average engagement in class participation (B)	Differences in student achievement (B-A)
Provinces	35.22	39.56	4.34
Phnom Penh City	40.32	41.81	1.49

Note: The mean score of active class participation is 4.15.

Likewise, the results showed that the effect of student-faculty interaction was significantly embedded within students' geographical divide (B = -1.26, $p < .05$). In general terms, student engagement in the interaction with faculty was not the main predictor of student achievement. This would imply that the amount of time and effort invested in this engagement activity was not significantly related to the variability in students' academic performances in this study. However, this result would be misleading with the absence of the interaction effects analysis. Having incorporated group differences into the analysis apparently provided a clearer picture of how the interaction between faculty and students would be meaningful for specific student subpopulations. This was highly evident as the student-faculty interaction factor was found to be a significant predictor of student achievement when students' geographical origin was taken into account. Table 19 shows that although, in general, city students outperformed their peers who were from provinces, a higher level of student engagement in their contact with faculty for academic purposes had a positive effect on the academic achievement of students from the provinces, whereas the contrasting effect held true for those residing in the city. The conditional effects analysis offered marked evidence that, among all the residential (city) students, those who approached their faculty more often were the ones with a lower academic achievement compared to their residential counterparts. Overall, the findings from this study suggested that interacting with faculty for academic causes was more likely to benefit students from the provinces than those whose origin was in the city despite the gap in the mean scores of student achievement between those with below-average and above-average student-faculty interaction among the former group was only

marginal.

Table 19 The conditional effect of student-faculty interaction on student achievement by geographical origin

Means of student achievement	Below-average engagement in student-faculty interaction (A)	Above-average engagement in student-faculty interaction (B)	Differences in student achievement (B-A)
Provinces	37.18	38.14	0.96
Phnom Penh City	41.61	40.10	-1.51

Note: The mean score of student-faculty interaction is 1.96.

5.1.3.4 General effects of faculty behaviors

5.1.3.4.1 The effects of faculty behaviors on student achievement

As shown in Table 10 (pp. 147-148), student characteristics accounted for approximately 7 % of the variance in student achievement, with 1.60 % due to between-student differences, 0.78 % due to between-class differences, and 4.36 % due to between-institution differences. The results showed that students' precollege academic experience and employment responsibility exerted significant and positive influences on student achievement, suggesting that students who attended university with a higher level of academic experience and worked while studying tended to outperform those who attended university with less academic experience and did not work. While these results indicated that student characteristics only had trivial influences on student achievement, excluding

these factors from the analysis would not give a full picture of the relative strength of the faculty behaviors on student achievement. To a degree, the effects of these students' background characteristics would have masked our understanding of the net effect faculty behaviors would have on student achievement. Thus, the host of students' background characteristics was still carried over as the controlled factors in the next step of the data analysis.

Results for the influences of faculty behaviors on students' academic achievement, net of students' background and demographic differences, are shown in Table 20. Adding faculty behaviors to a class-level model (level 2) and its institution-level random effects (level 3) accounted for an additional 13 % of the variance in student achievement, increasing the total variance explained close to 20 %, with 1.32 % due to between-student differences, 4.78 % due to between-class differences, and 13.35 % due to between-institution differences. This skewed partition of the variances explained at the class and institution levels implied that faculty behaviors also played a critical role in determining the desirable learning context that accounted for the differences in student achievement in this present research. This is evident as support and feedback from teachers was significantly and positively related to student achievement across classes despite the fact that its significant evidence was not found at the institutional level. The HLM results showed that classes where faculty placed greater emphasis on the role of support and feedback in teaching boosted student learning exponentially. These results, nonetheless, appeared to point to the fact that the institutional climate associated with faculty's teaching practices would play a negligible role in determining the strength of these factors in

predicting student achievement. Surprisingly, no relations were found for faculty's instructional organization and clarity, their classroom teaching that attempted to challenge students, and student achievement. Taken together, these results suggested that faculty's support and feedback played a more important role if compared to other types of faculty behaviors in predicting student achievement in the context of this present study.

Table 20 The association of faculty behaviors and student achievement

Variable	**Beta coefficient**
Intercept	39.28***
Student characteristics	
Gender (1 = female)	-0.61
Age	-0.20
Enrollment status (1 = delayed)	0.50
Living status (1 = outside)	0.13
Precollege academic experience	1.35*
Multiple college attendance (1 = yes)	0.41
Geographical origin (1 = city)	0.45
Parents' college experience (1 = yes)	-0.27
Employment status (1 = employed)	2.35**
Weekly expenses	0.00
Academic resources at home	0.17
Faculty behaviors	
Instructional organization and clarity	0.43
Support and feedback	7.62**
Class practices to challenge students	0.93
Faculty behaviors (Institution-level random effects)	
Instructional organization and clarity	2.34
Support and feedback	8.84
Class practices to challenge students	0.78
Between-student variance	1.32 %
Between-class variance	4.78 %
Between-institution variance	13.35 %
Total variance explained	19.45 %
Goodness-of-fit test	
Deviance statistics	6326.73

Chi-square statistics P-value	39.52 < .05

Note: * Significant at 0.05 level; ** Significant at 0.01 level; *** Significant at 0.001

5.1.3.4.2 The effects of faculty behaviors and student engagement on student achievement

In this step of the data analysis, the student engagement model was included in the full model that already considered such factors as faculty behaviors and the controlled features of student characteristics. This model examined the extent to which faculty behaviors influenced student achievement when student engagement factors were considered. This approach was used to highlight the importance of faculty behaviors as to whether these factors had direct or indirect influences on student achievement. Incorporating student engagement factors into this step of the data analysis provided extra evidence for our understanding of the interacting nature of teaching and learning and their contributions to student achievement.

As presented in Table 11 (pp. 149-150), student engagement factors, when estimated separately from other models, accounted for about 22 % of the variance in student achievement, with 16.87 % at the student level, 0.92 % at the class level, and 4.02 % at the institutional level. Four types of student engagement were significantly and positively related to student achievement at the student level. The results suggested that students who devoted more time to course-related tasks outside the class, actively engaged in class participation, and often did homework/tasks were more likely to have higher test scores than those having low engagement in these activities. Higher amounts of class preparation

also explained higher students' test scores. Yet, neither time spent on interaction with teachers nor peer learning was the significant predictor of student achievement.

When all factors were evaluated together, about 15 % of the variance in student achievement was explained at the student level, about 4 % at the class level, and close to 13 % at the institutional level. The introduction of student engagement factors to the model did not change the HLM results substantially. Faculty's support and feedback remained a critical predictor of student achievement. Its coefficient only partially reduced from about 8 to 5 (see its coefficients in Tables 20 and 21). Meanwhile, almost all the same types of student engagement continued to be significant predictors of student achievement, except for the effect of time on course-related tasks whose coefficient became statistically insignificant at the student level. The employment responsibility was the only student characteristic that was significantly and positively related to student achievement when teaching and learning factors were accounted for. This implied that what teachers and students did in college mattered most to student achievement in this study. The presence of joint effects of faculty's support and feedback and student engagement on student achievement suggested that faculty's support and feedback had both direct and indirect impacts on student achievement. The reduction in its coefficient added further evidence that the influence of faculty's support and feedback on student achievement could be concurrently mediated by student engagement in some activities that linked to enhanced learning. The reduced proportions of the variance explained in this model serve as extra evidence. Overall, taking into account the effects of faculty behaviors, student engagement, and student characteristics as the controls, this full equation model explained roughly 32 %

of the variance in student achievement. This adjusted proportion of the variance indicated some degrees of overlapping influences that faculty behaviors might have had on student engagement factors and student achievement given the fact that the proportion of the variance explained would, in reality, total approximately 42 % when the two models were estimated separately (see Tables 11 and 21 for its variances explained). Taken together, the results lent support to the evidence that the relationships between faculty behaviors and student achievement were both direct and indirect, relative to the confounding influences of student engagement in educationally purposeful activities.

Table 21 The associations of student characteristics, faculty behaviors, student engagement, and student achievement

Variable	**Beta coefficient**
Intercept	38.86***
Student characteristics	
Gender (1 = female)	-0.67
Age	-0.12
Enrollment status (1 = delayed)	0.18
Living status (1 = outside)	-0.31
Precollege academic experience	0.57
Multiple college attendance (1 = yes)	0.31
Geographical origin (1 = city)	0.95
Parents' college experience (1 = yes)	-0.28
Employment status (1 = employed)	1.55*
Weekly expenses	0.00
Academic resources at home	0.01
Student engagement (Student-level effects)	
Student-teacher interaction	0.15
Active class participation	0.85*
Homework/tasks	1.29*
Peer learning	-0.20
Class preparation	0.73**
Time on course-related tasks	1.61
Student engagement (Class-level random effects)	
Student-teacher interaction	-

Active class participation	2.01***
Homework/tasks	-
Peer learning	-
Class preparation	-
Time on course-related tasks	-
Student engagement (Institution-level random effects)	
Student-teacher interaction	-
Active class participation	-
Homework/tasks	0.87*
Peer learning	-
Class preparation	-
Time on course-related tasks	5.05***
Faculty behaviors	
Instructional organization and clarity	-1.36
Support and feedback	5.34**
Class practices to challenge students	1.29
Between-student variance	15.19 %
Between-class variance	4.12 %
Between-institution variance	12.67 %
Total variance explained	31.98 %
Goodness-of-fit test	
Deviance statistics	6151.21
Chi-square statistics	214.94
P-value	< .001

Note: * Significant at 0.05 level; ** Significant at 0.01 level; *** Significant at 0.001

5.1.3.4.3 The effects of student characteristics, faculty behaviors, student engagement, and institutional characteristics on student achievement

Institutional factors explained an additional 13 % of the institution-level variance in student achievement, increasing the total variance explained to about 45 %. Taking into account the institutional impacts, thus, provided a better model to predict student achievement, especially to enhance the understanding of the net effect of faculty behaviors on student achievement within this study. As Table 22 indicates, student achievement was significantly associated with the type of an institution where they were enrolled. Like the

student engagement models tested earlier, this model continued to reveal that students being enrolled in the private universities appeared to have had a significantly lower academic performance when compared to other students who were enrolled in the public universities. This result pointed to the fact that differences in the institutional context between the two higher education sectors did matter to student learning and their development. This model also continued to highlight the strength of the student engagement factors and faculty behaviors considering the stability of these variables, even tested at the higher levels of its hierarchy and with the institutional factors. On balance, faculty's support and feedback remained an important teaching dimension that made a difference in student learning in this present research, and its positive payoff was somewhat channeled through the enhanced levels of student engagement in class participation, homework/tasks, and class preparation, the factors that also contributed significantly to desired academic achievement in this study.

Table 22 The associations of student characteristics, faculty behaviors, student engagement, institutional characteristics, and student achievement

Variable	**Beta coefficient**
Intercept	38.43***
Student characteristics	
Gender (1 = female)	-0.67
Age	-0.11
Enrollment status (1 = delayed)	0.26
Living status (1 = outside)	-0.36
Precollege academic experience	0.50
Multiple college attendance (1 = yes)	0.32
Geographical origin (1 = city)	0.86
Parents' college experience (1 = yes)	-0.32
Employment status (1 = employed)	1.47*
Weekly expenses	0.00

Academic resources at home	0.02
Student engagement (Student-level effects)	
Student-teacher interaction	0.15
Active class participation	0.88*
Homework/tasks	1.40*
Peer learning	-0.19
Class preparation	0.73**
Time on course-related tasks	1.60
Student engagement (Class-level random effects)	
Student-teacher interaction	-
Active class participation	2.03***
Homework/tasks	-
Peer learning	-
Class preparation	-
Time on course-related tasks	-
Student engagement (Institution-level random effects)	
Student-teacher interaction	-
Active class participation	-
Homework/tasks	0.47*
Peer learning	-
Class preparation	-
Time on course-related tasks	5.61***
Faculty behaviors	
Instructional organization and clarity	-1.25
Support and feedback	5.81**
Class practices to challenge students	2.36
Institutional characteristics	
Institutional control (1 = private)	-6.17*
Faculty-student ratio	-0.04
% of students from the city	3.29
Admission regulation	2.17
Between-student variance	14.84 %
Between-class variance	4.37 %
Between-institution variance	25.95 %
Total variance explained	45.16 %
Goodness-of-fit test	
Deviance statistics	6142.74
Chi-square statistics	233.51
P-value	< .001

Note: * Significant at 0.05 level; ** Significant at 0.01 level; *** Significant at 0.001

5.1.3.5 Conditional effects of faculty behaviors

The next model explored whether faculty behaviors had varying degrees of influences on the academic achievement of students by gender, precollege academic experience, and geographical origin. To test for the presence of the conditional/embedded effects of faculty behaviors on student achievement, all the cross-product/-level interaction variables were created and entered into the general effects equation that was tested in the previous model. The results, however, revealed that the inclusion of these cross-level interaction effects did not increase the proportion of the variance explained in student achievement substantially. The increment was almost imperceptible, from 45.16 to 45.67 (see Tables 22 and 23). In addition, the cross-level interaction terms among faculty behaviors, students' gender, precollege academic experience, and geographical origin were not statistically significant ($p > .05$), suggesting that the influences of faculty behaviors were the same for all student populations in this study. That is, if certain faculty behaviors were found to be the predictors of student learning, the academic achievement of male and female students, those with varying levels of precollege experiences, and those with urban and non-urban origins would be in the same fashion affected by such behaviors. These results, thus, indicated that no embedded relations were found for faculty's support and feedback and student achievement, even tested within specific student subpopulations, and suggested that faculty's behaviors toward support and feedback had a more general, positive effect on overall student achievement, regardless of student profiles. This can be interpreted that all student populations studying with faculty who tended to provide the supportive and caring classroom climate on a more frequent basis were more likely to

obtain desired learning outcomes than those who lacked such a learning environment. The HLM results also offered additional evidence that, despite accounting for group differences, other dimensions of faculty behaviors in this study remained not the unique factors that accounted for the differences in student achievement. The blurring effects of these factors were not evident even after group differences were taken into account. Overall, despite some fluctuations in the coefficients of the predictor variables tested, the results remained unchanged for the influences of faculty's support and feedback on student learning and for the significant effects of the institutional control and other significant student engagement factors detected in the previous models.

Table 23 The conditional effects of faculty behaviors on student achievement

Variable	**Beta Coefficient**
Intercept	38.10***
Student characteristics	
Gender (1 = female)	-0.65
Age	-0.10
Delayed enrollment (1 = delayed)	0.30
Living status (1 = outside)	-0.24
Precollege academic experience	0.34
Multiple college attendance (1 = yes)	0.31
Geographical origin (1 = city)	1.03
Parents' college experience (1 = yes)	-0.32
Employment status (1 = employed)	1.41*
Weekly expenses	0.00
Academic resources at home	-0.03
Student engagement (Student-level effects)	
Student-teacher interaction	0.19
Active class participation	0.88*
Homework/tasks	1.38*
Peer learning	-0.22
Class preparation	0.74**
Time on course-related tasks	1.62

Student engagement (Class-level random effects)	
Student-teacher interaction	-
Active class participation	2.01***
Homework/tasks	-
Peer learning	-
Class preparation	-
Time on course-related tasks	-
Student engagement (Institution-level random effects)	
Student-teacher interaction	-
Active class participation	-
Homework/tasks	0.52*
Peer learning	-
Class preparation	-
Time on course-related tasks	5.63***
Faculty behaviors	
Instructional organization and clarity	-1.18
Support and feedback	5.46*
Class practices to challenge students	3.14
Institutional characteristics	
Institutional control (1 = private)	-6.27*
Faculty-student ratio	-0.05
% of students from the city	3.28
Admission regulation	1.86
Cross-level conditional effects	
By gender	
Instructional organization and clarity	0.07
Support and feedback	0.39
Class practices to challenge students	0.69
By precollege academic experience	
Instructional organization and clarity	-1.50
Support and feedback	1.08
Class practices to challenge students	-1.39
By geographical origin	
Instructional organization and clarity	1.40
Support and feedback	1.03
Class practices to challenge students	-1.91
Between-student variance	15.38 %
Between-class variance	4.45 %
Between-institution variance	25.84 %
Total variance explained	45.67 %
Goodness-of-fit test	
Deviance statistics	6133.75
Chi-square statistics	232.51
P-value	< .001

Note: * Significant at 0.05 level; ** Significant at 0.01 level; *** Significant at 0.001

5.2 Discussions[4]

The main objectives of this study were to examine what student engagement in academically driven activities and faculty behaviors were related to student achievement, net of student characteristics and institutional factors, and to determine whether these factors affected student achievement differently by taking into account class and institutional levels and the student subpopulations. The HLM analyses were considered for this study to account for the nested structure of the data. On the methodological front, the use of multi-level modeling was a unique addition to this study. Based on the analyses, the use of multi-level modeling proved useful to enhance the understanding of the impacts student engagement and faculty behaviors had on student achievement in both fixed and random terms. The presence of conditional effects results also added further predictive strength to this multi-level analysis. These results, thus, rendered the use of a single-level regression method inadequate to showcase such complex relationships observed. The section that follows will discuss the results at each level of the data in detail.

5.2.1 Effects of student engagement

This study employed a student engagement model to examine the relationships between student engagement in educationally purposeful activities and their academic achievement at the student, class, and institutional levels and in both general and

[4] Student engagement and faculty behaviors data were used for on-line publication at the Asia-Pacific Education Researcher in 2013 and the Educational Research for Policy and Practice in 2014, respectively. Part of the contents from the author's articles in these two journals was incorporated into this dissertation, especially within the discussion section.

conditional terms. Based on the HLM analyses, the amount of time and energy Cambodian students invested in educationally driven activities observed in this study explained about 20 % of the total variance in their academic achievement. Though small in magnitude, this effect is relatively meaningful when compared with that of existing student engagement literature (e.g., Carini et al., 2006; Kuh et al., 2008) considering the nature of the present study which did not account for other highly documented indicators of student engagement—extra-curricular activities/non-academic activities and the dual nature of student engagement which includes other important influences of institutional factors such as organizational structures and institutional programs. This result seemingly provides a meaningful knowledge base for policy makers, educators, and researchers to improve their understanding of what student engagement factors make a difference in student learning in Cambodia and what do not. Overall, three sets of findings emerged from this study. First, having considered the nested nature of class-level and institution-level data, the results of this study have provided some important insights into various student engagement activities that are meaningful for student learning. Second, this study indicated that some highly documented student engagement factors in previous studies, in general terms, had insignificant influences on the academic achievement of first-year university students in Cambodia. Finally, the effects of particular student engagement behaviors on student achievement were not the same for all the student populations. Rather, they would be embedded within certain student subpopulations.

5.2.1.1 Significant effects

5.2.1.1.1 Student level

At the student level, this study identified three main dimensions of student engagement that had general and positive payoffs in student achievement: frequency of doing homework/academic tasks, whole class active participation, and class preparation. The significant effect of the frequency of doing homework/academic tasks on student achievement highlighted the importance of extra-hour study among first-year students in the context of this study in preparation for academic challenges at the university level. One possible reason is that, in a coursework-based learning environment like Cambodia's, homework/academic tasks have long been considered a widely employed tool by teachers to follow-up the extent to which students are supposed to have achieved after a certain period of time. The interview data [5] from teachers and students described that homework/tasks were characterized as the highly guided activities assigned by teachers, whose contents were often, if not always, closely aligned with the course book's, mostly related to vocabulary and grammar exercises and partially utilized for monthly quizzes or revision tests. The most typical forms of homework/tasks were guided exercises prepared in the form of handouts and/or provided in the workbook (e.g., gap-filling, sentence completion, and sentence constructions), whereas reading tasks/assignments were not of much emphasis among teachers. Despite the lack of reading tasks provided/assigned by

[5] Interview data were obtained by asking students (phase I = 22; phase II = 16) and teachers (phase I = 5; phase II = 3) to describe the nature of their engagement activities and their teaching practices, respectively. Since the interview was only used as a complementary tool to the quantitative data analysis, no intact transcription was made. Only the notes of main ideas and relevant descriptions were considered for the analysis.

teachers, the investment in such out-of-class guided activities, both time and energy, may have added-values to students' exam preparation and performance accordingly considering the fact that the exam contents designed by homeroom teachers were reportedly more concentrated on the conventional language inputs that disproportionately tapped students' knowledge of vocabulary and grammatical structures and expressions rather than on reading comprehension and skills. Thus, the commitment to these activities may to a degree have put students at an advantage. This evidence seems to be consistent with that of the recent student engagement literature (e.g., Carini et al., 2006; Kuh et al., 1997, 2008) which underscored the significant payoffs that the allocated tasks outside class had on students' desired learning outcomes such as GPA and other intellectual and cognitive skills. Yet, of noteworthy difference is that this result adds a further case of Cambodian students' learning to the bulk of the literature in that while the nature of homework/tasks in the well-developed higher education context was more likely to engage students in a more critical and independent way of learning, which was a key contribution to desired learning outcomes, guided/more controlled out-of-class homework/tasks proved supportive and useful for first-year Cambodian students' learning and their academic performance.

Results further suggested that whole class active participation was positively associated with student achievement. From a theoretical standpoint, this result delineated the importance of classroom involvement on the part of students, the attribute largely supporting Astin's (1984) involvement paradigm. From a practical standpoint, class participation represented great willingness and motivation that students put forth to capitalize on the restricted availability of a productive time with peers in the class and

particularly with teachers via in-class encounters as even the unofficial out-of-class encounter time with teachers remained limited in the Cambodian higher education context (Chen et al., 2007). This finding offers practical insight into learning and teaching in Cambodia, suggesting that the in-class encounter is the critical time that students can expose themselves to various forms of interactions and learning opportunities, either with teachers or with their peers for academic discussions or consultations. Class participation appears to be critical because the classroom setting remains the only venue for most of the learning opportunities to occur within the Cambodian educational context. Thus, the utilization of classroom settings in the Cambodian context can be one of the most fruitful options for increasing students' learning opportunities, the context that appears to deviate from that of the Western and the US education, where class settings seem to play a secondary role in student learning and where higher levels of out-of-class reading/independent learning, in general, appear to be the deciding factor that promotes student learning and development (Keup, 2006; Kuh et al., 2008).

Evidence that supported the important contribution of class preparation to student achievement adds additional knowledge to the growing body of literature that has only highlighted the predictive relationship between the aggregated student engagement measures and desired learning outcomes (e.g., Kuh et al, 2008; Pike & Kuh, 2005) in that not all forms of academic and social engagement mattered to student achievement. But, specific features of student engagement spoke volumes. The academic preparation was a case in point among first-year university students in Cambodia. This is discernible as the class preparation measure for the most part involved course-related readings outside the

classroom. Reading preparation prior to class represented an advantage as well as the critical inputs for students to keep up with what were to be taught and to be equipped with prior knowledge and inquiry that would help to facilitate their learning and development. The interview with students offered an additional ground that being prepared helped students to gain confidence in classroom interactions and to cultivate their curiosity and initiatives to pose questions—know what to ask the teachers while in class, the advantage that led students to be on track since questioning is a guiding tool for learning (Chet, 2009). Thus, the positive association of this variable and student achievement came as no surprise given that the increased amount of class preparation would ease students into unfamiliar lesson contents and lexis, which would, in turn, help to boost their comprehension and academic performance accordingly.

5.2.1.1.2 Class level

At the class level, class participation was the only student engagement factor that exerted a significant and positive influence on student achievement. The results indicated that the relationship between this factor and student achievement likely varied across classes, suggesting that the coefficients for class participation were not the same for all the study classes. This random effect took the understanding of the relationship between class participation and student achievement to the next level, beyond what has been widely documented in the student engagement literature (e.g., Kuh et al., 1997; Pike & Kuh, 2005) in that the class participation factor not only positively predicted students' learning outcomes due to between-individual student differences or at the student level in general

terms. But, the class-specific effect of this factor was also evident. The presence of differential effects of student engagement in class participation based on class divide reflected the importance of class characteristics and would imply that students from one class to another would not benefit from engaging in this form of the academic activity in the same fashion. As shown in Table 24, the academic achievement gaps between those with a below- and above-average engagement levels in class participation were reportedly uneven across classes. Such evidence indicated that the increased levels of class participation among students did not necessarily translate into meaningful learning outcomes in the same fashion when any class-specific effects were taken into account.

The examination of academic achievement gaps due to the differences in class participation levels among students revealed that the positive effect of class participation was not consistent for all classes. As Table 24 indicates, while the majority of the study classes appeared to have seen an increasing trend in student's test scores when class participation levels increased, such evidence only generally held for classes where students

Table 24 Class participation and mean scores of student achievement by class

Institution	Class	Students with a below-average class participation (A)	Students with an above-average class participation (B)	Differences in means of student achievement (B-A)
1	1	44.50	44.20	-0.30
	2	50.75	32.50	-18.25
	3	36.13	35.88	-0.25
2	4	44.80	45.50	0.70
	5	49.55	47.50	-2.05
	6	52.85	48.95	-3.90
	7	52.69	51.85	-0.84
	8	51.56	48.29	-3.27

	9	45.82	47.50	1.68
	10	49.07	50.58	1.51
3	11	49.22	46.71	-2.51
	12	32.36	38.58	6.22
4	13	34.34	39.61	5.27
	14	36.13	32.32	-3.81
5	15	40.16	43.50	3.34
6	16	31.40	37.34	5.94
	17	35.56	37.90	2.34
	18	31.29	35.38	4.09
7	19	33.71	38.44	4.73
	20	34.30	34.45	0.15
	21	30.50	32.85	2.35
8	22	36.13	36.09	-0.04
	23	28.87	34.55	5.68
	24	34.06	36.28	2.22
	25	32.36	36.78	4.42
9	26	33.75	37.90	4.15
	27	36.93	38.68	1.75
	28	39.14	41.85	2.71
	29	36.13	37.34	1.21
	30	41.80	39.00	-2.80

Note: The mean score of active class participation is 4.15.

had lower academic achievement. The same evidence did not generally hold true for classes where students had higher academic achievement. Differences in students' precollege academic experiences among all the classes may have explained the presence of this random effect result. The ANOVA analysis showed that students' precollege academic experiences varied significantly across classes, F (29, 907) = 10.58, $p < .001$. As will be seen in Figure 3, it is suggestive that the positive effect of class participation that was witnessed in Table 24 was generally detected at classes where students reportedly had lower levels of precollege academic experience. This evidence holds to a degree true given that those classes were largely selected from private universities. It is worth noting here that private universities, as the current survey results demonstrated, tended to lag behind

the pubic counterparts in many respects, especially in terms of student profiles, due to their dubious student admission regulations (Leng, 2010). Separate comparative analyses revealed that private universities tended to have students with disadvantaged profiles, both academic and social, such as those having lower academic experience when entering the university, being the first in the family to enter the university, and graduating high school in the provinces (see Table 8, pp. 144-145). Arguably, study experience among these groups of students would be a critical question considering the far lower educational development in the rural Cambodia (UNESCO, 2011) and the lack of support programs put in place by the study universities. Given these disadvantaged backgrounds, guided support in the classroom settings might have, therefore, represented an additional asset to increase their academic performance.

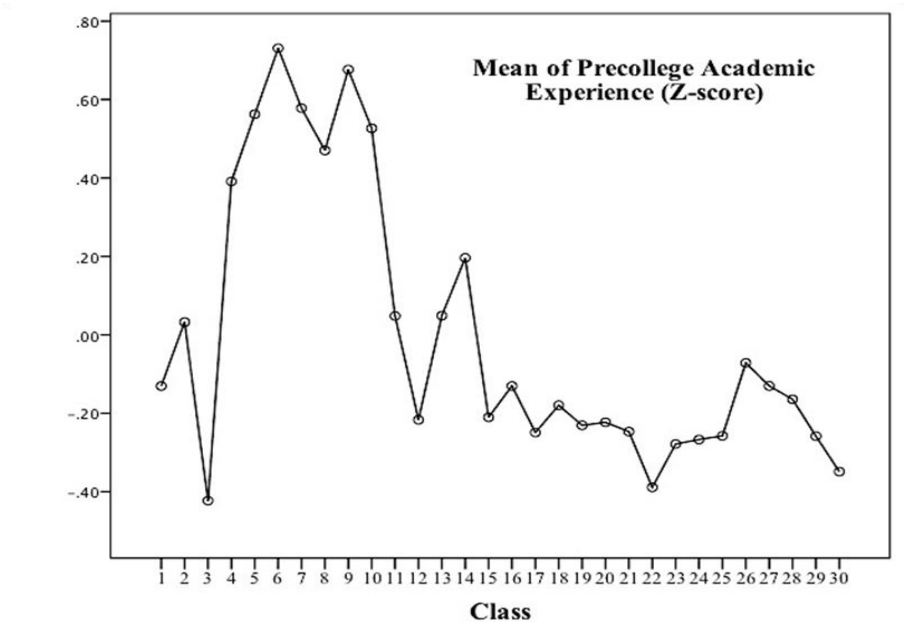


Figure 3 Students' precollege academic experience by class

The effects of class participation on student achievement in the present study were, nonetheless, just marginal and even negative in nature for classes where all the two student cohorts had relatively higher test scores on average, as would be the case of classes 4-10. The small and/or negative association of this factor might have been due to the fact that students from all these study classes reportedly had higher levels of academic experience before entering the university. This is even more obvious given that these classes were randomly selected from the state-run university, reportedly with a higher standard of student recruitment and higher quality of student learning. Higher academic profile students may have possessed prior academic abilities to capitalize on other independent learning activities as well as learning opportunities outside the class. Such precollege academic advantages would attenuate the class participation impact and explain the presence of marginal gaps in the academic achievement between the two cohorts accordingly. Discernibly, a ceiling effect of class participation can be the explanatory factor among the higher academic profile students.

5.2.1.1.3 Institutional level

Two student engagement factors that had positive influences on student achievement were detected at the institutional level, namely homework/tasks and time spent on course-related tasks outside the classroom. These findings added further evidence to the college impact literature in that institution-specific effects of the student engagement variables were evident in a country with an emerging higher education system, where universities with varying sizes and qualities were recruiting students based on a diverse range of

dubious quality standards. Homework/tasks represented the factor that measured the extent to which students were engaged in out-of-class academic activities assigned by their teachers. The significant random effect of this factor provided important evidence that its influences significantly differed across institutions. The presence of the institution-level effect of homework/tasks reflected the uniqueness of the institutional context and would imply that some institutions in the present study would have educational inputs that helped to boost student learning better than the others.

Table 25 Homework/tasks and mean scores of student achievement by institution

Institution	Students with below-average engagement in homework/tasks (A)	Students with above-average engagement in homework/tasks (B)	Differences in means of student achievement (B-A)
1	42.44	40.89	-1.55
2	49.05	48.80	-0.25
3	41.83	41.96	0.13
4	33.23	36.87	3.64
5	42.67	41.36	-1.31
6	33.54	36.07	2.53
7	31.83	35.80	3.97
8	32.90	35.10	2.20
9	35.82	39.88	4.06

Note: The mean score of homework/tasks is 4.78.

A cross-examination of the academic achievement gaps between those with below- and above-average engagement levels in homework/tasks in Table 25 indicated that the gaps were more noticeable at private universities (i.e., universities 4, 6, 7, 8, and 9). Such

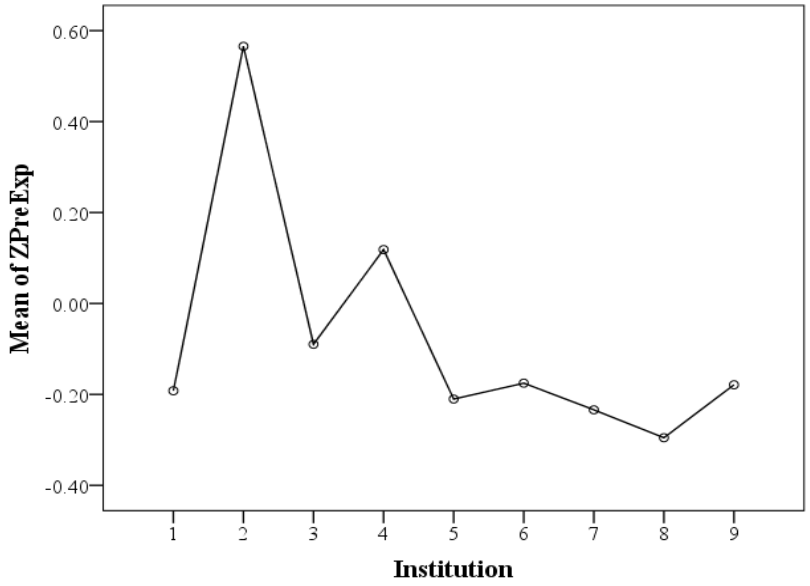


Figure 4 Students' precollege academic experience by institution

an indication suggested that these private universities could have possessed some characteristics that were unique from the public counterparts. Of noteworthy evidence is that these universities were generally characterized by the current data as the ones with larger class sizes (approx. 35-40 students per class or even more) and with students having lower-academic profiles, F (8, 928) = 35.78, $p < .001$ (Figure 4). For some reason, the larger class sizes would arguably limit the learning opportunities among students to some degree. This was deteriorating given that these universities also tended to have recruited students with lower-precollege academic experience, especially those from rural areas who were generally described by the data as the first-generation cohort (the first in the family to enter university) and those who generally entered universities late. Given these disadvantaged characteristics, these students might have been desperate to seek additional learning opportunities beyond the classroom settings to improve their learning. Out-of-

class academic engagement would arguably be an additional means for improvement. Engagement in doing homework/assigned tasks would be one of them given that this form of out-of-class academic enrichment had been highly practiced among teachers in Cambodia. All things considered, the higher levels of student engagement in homework/tasks could be, therefore, translated into a compensatory input for student learning at these institutions.

For public and private universities with smaller class sizes (approx. 35 students per class or less) and/or more stringent recruitment policies, as would be the case of universities 1, 2, 3, and 5, the academic achievement gaps between below- and above-average engagement cohorts were small and for the most part even negative. These results suggested the presence of a ceiling effect among students as the mean scores of student achievement observed across student cohorts at these universities were all relatively higher when compared with those of the other universities (see Table 25). The small gaps in the mean scores of student achievement observed across student cohorts suggested that homework/tasks would not be the main factor that predicted the variability in student learning within these types of universities. This would be indicative that, within universities with higher academic profile students, other engagement factors would matter more.

The results further showed that time on course-related tasks outside the class had positive, but varying degrees of influences on student achievement across universities. A comparative analysis of students' test score means revealed that the effects of time on course-related tasks appeared to be significantly stronger for universities 1, 2, 3, and 5 (see

Table 26). These results contrasted with the previous cross-analysis in this study which suggested that, within these universities, the impacts of homework/tasks on student achievement were not phenomenal. Lower-engaged and higher-engaged students in homework/tasks likely reported to have insignificant differences in their test scores. However, significant gaps observed in their academic achievements materialized due to the variations in their time spent on course-related tasks outside the class. It should be noted that the measure of time on course-related tasks represented the extent to which students devoted additional time and energy to academic activities, such as additional readings of the materials associated with the subject content of interest, other than what were assigned

Table 26 Time on course-related tasks and mean scores of student achievement by institution

Institution	Students with below-average engagement in time on course-related tasks (A)	Students with above-average engagement in time on course-related tasks (B)	Differences in means of student achievement (B-A)
1	37.00	50.22	13.22
2	45.07	53.34	8.27
3	39.85	45.83	5.98
4	35.01	37.00	1.99
5	40.56	45.01	4.45
6	34.05	36.56	2.51
7	34.02	34.86	0.84
8	33.65	36.38	2.73
9	37.76	38.57	0.81

Note: The mean score of time on course-related tasks is 2.69 h/week.

by their faculty. These results, therefore, highlighted the positive and significant contribution of independent learning among students at these four universities. These universities represented both public and private HEIs, whose students significantly outperformed the other universities in the present study. As reflected in the ANOVA results (Figure 5), universities 1, 2, 3, and 5 appeared to have students who scored significantly higher than those in the other universities, F (8, 928) = 65.82, $p < .001$. Thus, although it is not conclusive, it is rather indicative that, at higher performing universities, students' academic achievement gaps were more likely a function of the differences in students' tendencies in devoting their time and energy to self-study outside the classroom context beyond what was assigned by their teachers.

One main explanation is that, at these universities, students may have possessed some academic experiences that proved more useful and effective for out-of-class independent learning, whereas the opposite proposition held true for those from the lower-performing universities. In the former instance, precollege academic abilities may have served as the critical potencies that interacted to enhance their learning and to translate efforts invested in course-related tasks outside the class into a more meaningful academic outcome. This might have related to the fact that these universities[6] had an entrance exam in place to recruit better students for their programs and tended to have full-time faculty

[6] Public universities recruited students based on the entrance exam as well as other requirements such as a grade 12 certificate and the university's quota for student selections in both scholarship and fee-paying schemes. The informal conversations with the deans of English at private universities 1 and 5 about how students were selected hinted that these small universities also started to put a more stringent entrance exam into place. They became more selective by using either a written test or an interview as a means to admit students into their programs.

who would be able to provide some reading tasks for students to explore on their own. These preconditions seemingly explained as to why students at these institutions were more productive in converting these self-study/reading habits into more meaningful ends. Students from the latter universities would, in contrast, lack critical inputs pertaining to study and/or reading skills given their significantly lower levels of precollege academic experience observed in the data (see Figure 4), which, as a consequence, prevented them from substantially benefiting from engaging in this engagement activity.

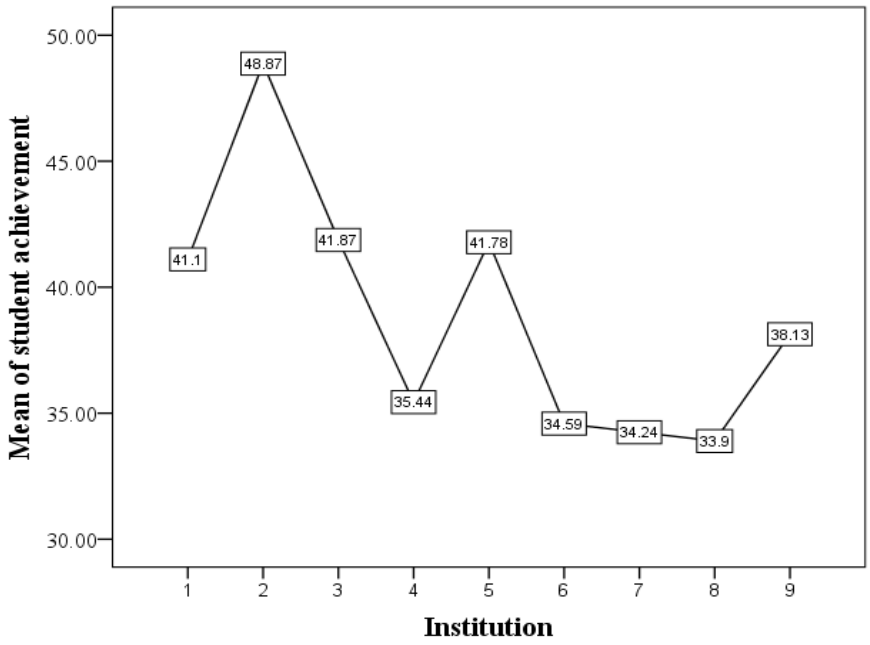


Figure 5 Mean of student achievement by institution

5.2.1.2 Insignificant effects

5.2.1.2.1 Peer learning

The second line of the findings drawn from this study is that the effects of certain

engagement activities were not as meaningful as they should have been. The present study found that the effect of peer learning was statistically insignificant and even in a reverse direction. This finding is in contrast with that of the student engagement literature in that collaborative learning among students has proved useful for student learning and development in many respects (Cabrera et al., 2002; Kuh et al., 1997, 2008; Pike & Kuh, 2005). Previous evidence has shown that collaborative learning served as a scaffolding tool to facilitate academic and social integration among students into the college-learning environment, both on- and off- campus. Yet, this study pointed to a different end, lending support to the contextual understanding of student engagement in academic activities rather than supporting the theoretical grounds that generally underpin the critical role of collaborative learning in students' desired learning outcomes.

There are a few possible explanations for this contradictory result. The first explanation might relate to the fact that peer learning may be relatively new for first-year students in Cambodia as they may be in a transition period from high school to university. The students' account in the interview revealed that most students, especially students from the provinces, reportedly had little opportunities to engage in any group-learning modality before entering university, thanks to the prevailing practice of the traditional teacher-centered approach to teaching throughout the country (Neau, 2003), especially within the context of teaching and learning in the provinces/non-urban areas. First-year students reportedly appeared to lack meaningful clues to make sense of cooperative learning as well as the essence of questioning toward each other during group discussion. Not only that, some students also admitted that they had never spoken English in class

before, let alone their participation in peer learning activities. This led some students to even resort to speaking Khmer[7] during discussion, leaving the group learning productivity in question. The majority of teachers in the interview described that, when assigned in group learning, students tended to work alone in group; otherwise, they digressed from what was supposed to be focused on in discussion. On balance, students may have been in the process of integrating themselves into the university-level learning context and especially reconciling between the traditional learning modality by which they had been influenced at the lower education level (Neau, 2003) and a newer approach at the university that tends to promote independent learning. This would explain as to why the engagement in peer learning did not materialize when tested in general terms.

The lack of self-esteem and confidence among students might also be another explanatory factor that hindered students from significantly benefiting from peer learning. It was reported that although students were with their peers discussing certain topics, they likely felt inferior or pressured when working with higher-ability or more outstanding students. Their participation in group learning would only fall short to a mere physical engagement rather than an active idea sharing and questioning. Arguably, learning opportunities would be limited to some degree for those who lacked self-esteem or confidence. In this regard, students may have found it academically challenging. Working together as a group may, thus, be a real challenge for them at this stage. Benefits from peer collaboration may materialize when they become fully accustomed to this group learning

[7] Khmer is a native and official language of Cambodia.

modality.

The nature of collaborative learning that had been practiced within the first-year university teaching and learning in this study must also be noted. While there seems to be a higher level of student engagement in these collaborative peer-to-peer activities, it remains unclear whether students have found substantial benefits from such engagement efforts. Student engagement in peer learning in the context of this study may instead denote academic difficulty students were already facing, but striving to handle through seeking helps from their peers since two of the four items of peer learning reflect help-seeking behaviors—"asked for help from friends when having (a) learning problem(s)" and "had discussions with other students on learning difficulties". As a consequence, they may have been struggling together as a group or instead may have been seeking help from their peers. This would potentially result in struggling students scoring higher on this variable and, thus, explain the negative relationship with their academic achievement. In addition to this, the interview showed that the group learning that mostly occurred, either in class or outside the class, tended to be content-based and grammar-based practices, with speaking practices particularly considered the ultimate goal of the discussion. Little had been focused on enhancing extensive academic skills for learning. Reading comprehension and skills were, for example, of little focus. Such limited practices would degrade the potencies of peer learning to a great extent.

5.2.1.2.2 Student-teacher interaction

Neither student-teacher interaction nor time spent on course-related tasks outside the

class was the important determinant of student achievement at the student level. The insignificant effects of these factors raise a critical question regarding the nature of student engagement among the first-year university students in this study. There are a few explanations for these contradictory findings. In terms of student-teacher interaction, one reason may be that this communication channel is an uncommon practice in Cambodian education. The majority of students in the interview described that they rarely had opportunities to discuss with their teachers outside the class. The paucity of student-teacher interaction among first-year Cambodian students is in a striking contrast to the existing literature in that the interaction or consultation with faculty is among the widely focused academic activities colleges and universities are striving to promote so as to improve students' levels of engagement in academically purposeful activities. Coupled with the lack of extra-curricular contact with teachers at Cambodian universities (Chen et al., 2007), it remains difficult for students to make use of this so-called limited and informal encounter with their teachers. Even with frequent contact with their teachers for academic purposes, cultural sensitivities may also be a barrier. In Asian societies, including Cambodia's, unquestioning deference towards higher authorities may prohibit students from seriously discussing concerns with their teachers. As Pit and Ford (2004) stressed, Cambodian students rarely pose questions to their teachers even within the official teaching hours since this can be viewed as an impertinent and socially undesirable behavior towards teachers. The interview data appeared to support this notion, with students reportedly holding a view that they were afraid of their teachers and felt that asking more questions would irritate their teachers, the barrier that would explain the lack of initiatives to discuss with their

teachers with regard to study skills or any learning problems. Reportedly, students seemed to approach their peer first or their siblings first when having learning problems. All in all, these challenging realities may have thwarted the quality of student-teacher interaction to an unknown degree and, thereby, would have rationalized the trivial importance of this factor to student learning.

5.2.1.2.3 Time on course-related tasks

The insignificant effect of time spent on course-related tasks outside the class that was observed at the student and class levels, but not at the institutional level, offered important evidence that different practices among students across universities spoke volumes for student achievement. This result draws a meaningful picture of the learning context among first-year Cambodian students and provides new evidence in contrast to that of the existing literature that utilized the NSSE as a tool to tap the effects of student engagement on academic outcomes (e.g., Kuh et al., 2008) in that the relationship between time spent on course-related tasks outside the class and student achievement was only meaningful due to institution-climate differences rather than between individual- and class-differences.

The low engagement levels in course-related tasks among students and the homogeneity of classroom contexts within each university would play a role in compromising the significant effect of this factor at the lower levels of its hierarchy. By and large, students appeared to have low levels of engagement in time spent on course-related tasks (i.e., reading) (M = 2.69 h/week, SD = 2.39). To a degree, such low

engagement and a small deviation would limit the amount of the variance in this variable and mask the potential of statistical testing accordingly. The small number of classes within universities selected for this study would also be a critical factor that may have affected its class-level variance and its random effect, respectively.

The fact that students appeared to pay negligent attention to additional readings beyond class is largely consistent with Chet (2006) although he did not specifically point to English language programs. This result is not surprising as students may not have had well-developed reading habits outside the class. That Chet attributed this to low quality of many programmes at Cambodian HEIs may, to an unknown extent, reflect the contextual view of students in this current research toward readings. Low quality of many programmes at Cambodian HEIs can, of course, be a contributing factor to the low level of reading among students. The loosely regulated current higher education system is a case in point as it appears to enable students to take two university degrees at the same time at ease, which inevitably limits their learning opportunities outside the classroom settings. Otherwise, this may be due to a lack of reading habits in the Khmer language (Cambodia's mother tongue) among Cambodian learners as stimulating reading materials and libraries are not widely available (Pit & Ford, 2004). The lack of reading skills among Cambodian students may have prevented them from fully capitalizing on such additional reading activities. Another possible reason is because the tasks or activities students were required to fulfill might have been more summative or exam-oriented in nature. As a result, students tended to have higher involvement in mere score-assigned activities, while neglecting other necessary extensive or intensive readings outside the class. On balance, although additional

research is needed to provide empirical inputs with regard to these disengagements, the finding of this study is fairly clear that self-induced out-of-class reading activities remain less focused among students. And such lack of reading habits would attenuate the quality of reading and the predictive strength of this factor in relation to their learning outcomes to some degree.

5.2.1.3 Conditional effects

The conditional associations of student engagement factors and student achievement pointed to the evidence that the effects of student engagement on student achievement were, in some ways, conditional. In all instances, the effects of some engagement factors were greater for students who had been traditionally described as the academically and/or economically disadvantaged or challenged individuals, such as females and low-academic profile students. This evidence underlined the important influences of increased levels of engagement in academically relevant activities among these types of students, additionally suggesting the presence of compensatory effects of student engagement factors on their academic performances. These findings are in line with that of the studies in the US or the Western context where the quality of student engagement reportedly had compensatory effects on students from disadvantaged backgrounds (e.g., Carini et al., 2006; Kuh et al., 2008; Pascarella et al., 2004). The results from this study also shed additional light on the understanding of how urban and non-urban students learn and how differences in their learning speak volumes for their academic performances.

5.2.1.3.1 Peer learning by gender

The results showed that the cross-product variable of peer learning and gender was the one that had a significant and positive influence on student achievement by suggesting that the effect was more robust for females. This finding should come as a surprise as peer learning, in general, had an insignificant relation to student achievement and the relationship was even negative. One possible reason is that female students might have had better time management, study skills, and peer relation that would help them to convert peer-to-peer collaborations into a more meaningful end (Berger & Milem, 1999; Jansen & Bruinsma, 2005). These characteristics hold true to a degree given that females could have been more competitively selected to university in Cambodia than their male peers, as indicated by their lower access rate (see Table 7, pp. 137-138; Chapman, 2009). As a more selective/competitive group, females would have better academic engagement qualities that might have made a difference in learning from group work although the group learning modality might be new to them. In contrast to this, male counterparts would lack such critical inputs and be, thus, striving to capitalize on this group learning modality. This is even evident given that male and female students tended to be selected from groups with similar background characteristics, particularly in terms of precollege academic experience, t (932) = 0.18, $p > .05$, and employment responsibility, $\chi^2 = 0.15$, $p > .05$, the two factors that were significantly predictive of student achievement in the student characteristics model. These resemblances suggested that students' background characteristics would have a marginal impact on male and female students' learning, yet implying that the quality of engagement in peer learning between females and males would be an

explanatory factor that determined the academic achievement gaps between these two cohorts.

5.2.1.3.2 Peer learning by precollege academic experience

Peer learning also had an embedded effect on the academic outcome of students with different levels of precollege academic experience. Based on the HLM analyses, lower-academic profile students appeared to have benefited more from peer-to-peer academically oriented activities. Peer learning seemed to provide an additional learning platform for academically challenged students to bridge their academic spaces although substantial benefits for all students remained to be seen. This may be due to the limited learning opportunities at Cambodian universities. Previous evidence showed that faculty-student consultation time was limited in Cambodia's higher education system (e.g., Chen et al., 2007; Heng, 2012), let alone the counseling hours to be offered by the university. These realities would prompt lower-academic profile students to resort to their peers when it came to learning issues. Another explanation is that lower-academic profile students compared with their higher-academic profile peers were those likely from the provinces ($\chi^2 = 59.67$, $p < .001$), where educational resources and literacy levels are seriously in question. Given their disadvantaged characteristics, these students may have viewed peer learning activities more importantly than their higher-academic profile counterparts. Their commitment and motivation to get rid of poverty may have served as a strong push that boosted their learning. Conversely, the minimal influence of engagement in peer learning on the academic achievement of students with higher levels of academic profile would be

possible as most of the peer learning items denoted help-seeking behaviors. In that sense, though with precollege advantages, this group of students would be instead characterized as those in serious problems with learning. Having invested time and energy in peer-to-peer collaboration activities might also have competed for their study time spent on other useful academic activities to some degree. Overall, with their commitment to and quality of engagement in question, it would be plausible that their engagement in peer learning only had a trivial effect on their learning.

5.2.1.3.3 Class participation by precollege academic experience

Class participation was also found to have a compensatory effect on the academic achievement of students with a lower level of precollege academic experience. This result pointed to the evidence that class participation was deemed more useful for lower-academic profile students. The lack of academic experience among these students would play a role in this. Lower-academic profile students would find it challenging when it came to self-study or other forms of intensive out-of-class independent learning. Thus, class settings can be a desirable learning platform where they can optimize their engagement and learning experience. Higher-academic profile students also benefited from engaging in whole class participation activities. But the effect was smaller. Higher academic experience would play a critical role in attenuating the influence of class participation on their academic achievement. Higher-academic profile students may have had sufficient experiences and capacities to foster the quality of their class participation, thereby reducing the gaps in their academic achievement accordingly. Otherwise, the ceiling effect would be

a factor that minimized the class participation impact given the fact that higher-academic profile students (M = 43.38) were observed in the data as those having scored significantly higher than their lower-academic profile peers (M = 36.83), t (675) = -10.49, p < .001.

5.2.1.3.4 Class participation by geographical origin

Class participation had a more pronounced effect on the academic achievement of students from the provinces. This result supported the presence of a compensatory effect of this factor on the academic achievement of students with disadvantaged social and economic backgrounds and added more evidence to what has been widely documented in the student engagement literature (e.g., Carini et al., 2006; Kuh et al., 2008; Pascarella et al., 2004). Of noteworthy evidence is the differences in student learning that might be due to geographical divide, the factor that previous research has often overlooked. This finding should come as no surprise given that students from the provinces may not possess sufficient academic experience prior to university, particularly in terms of background knowledge and study skills. The t-test result indicated that students from the provinces had significantly lower precollege academic experience than their urban counterparts, t (860) = -9.40, p < .001. As literature has suggested, students who attended university with lower academic experience may lack prior academic preparation, a factor that is common among students in many Asian countries, including Cambodia (Chapman, 2009). These students might be in a trial and error process to search for appropriate learning strategies to compensate for their lack of learning experience. This is quite true in a country like Cambodia where the provision of preparatory courses before and/or after the university

entry and/or comprehensive course orientations by the universities is not fully in place. All things considered, these challenging realities might have affected their view toward out-of-class engagement activities negatively, yet might have in turn drawn their attention more to the in-class engagement activities. To compensate for such constraints, they might have put more commitment to the face-to-face class interaction, either with peers or with their teacher. Conversely, the fact that marginal gaps in academic achievement were observed among residential students pointed to the proposition that the impact the class participation factor would have on their learning is not robust. Higher levels of precollege academic experience and higher academic performances are among the important forces that may mitigate the role of this factor, despite different levels of class participation examined among these students. Taken together, as for residential (city) students, the results appeared to suggest that other engagement factors would speak volumes for the variances in their academic achievement.

5.2.1.3.5 Student-faculty interaction by geographical origin

The effect of student-faculty interaction was found statistically significant when taking into account students' geographical origin. The interaction effect analysis showed that student-faculty interaction, despite small in magnitude, tended to exert a meaningful influence on the academic achievement of students from the provinces. Non-urban students benefited more from this form of academic engagement than their urban counterparts. This indication seems to offer new evidence beyond what has been discovered in the previous research (e.g., Kuh & Hu, 2001; Kuh et al., 1997; Laird & Cruce, 2009; Pike & Kuh, 2005)

in a way that faculty-student interaction is not meaningful for all student populations when students' geographical divide is considered.

This conditional effect may reflect academic advantages non-urban students benefited from having invested their time and energy in consulting with their faculty. This proposition is plausible since the data showed that students from Cambodia's provincial or rural areas tended to have lower learning experience, t (860) = -9.40, $p < .001$, and lower academic performance, t (929) = -5.74, $p < .001$, largely due to the lack of access to learning a foreign language, let alone the quality of language education. This holds true given the fact that educational development within the country is far more concentrated in the city (UNESCO, 2011). Thus, despite the fact that a limited consultation time with faculty and cultural sensitivity are among the prevalent factors that limit the impact of student-teacher interaction on the academic performance of all the student populations (as discussed earlier), the inputs gained from consulting learning problems and study skills with faculty would be somewhat more evident for non-urban students given their disadvantaged characteristics at the entry point to university compared to that of their urban counterparts. Students in the city, in contrast, appeared to be those with higher levels of academic experience and higher academic abilities. With these advantageous academic inputs, benefits gained from the enhanced faculty interaction would be undoubtedly trivial. Approaching faculty more would, instead, only denote their academic difficulty and challenges to an unknown degree.

5.2.2 Effects of faculty behaviors

5.2.2.1 Significant effects

5.2.2.1.1 Class level

This study examined the effects of faculty behaviors on student achievement in both direct and indirect terms by hypothesizing that student engagement factors were the main mediators of faculty behaviors in influencing student achievement and that the effects of faculty behaviors on student achievement could vary by specific student subpopulations. Results from the HLM analyses demonstrated that faculty's support and feedback was the unique factor significantly predictive of student achievement. This result is consistent with similar studies conducted in developed countries (e.g., Bjorklund et al., 2004; Cabrera et al., 2001), yet contrasts with that of Pascarella et al. (2008, 2011), who posited that faculty's organized and clear instruction was the important factor that determined students' desired learning outcomes such as student persistence into the second year of college. The positive and significant effect of faculty's support and feedback highlighted the critical role of faculty in assisting first-year students in Cambodia to cope with the university-level learning problems. This might be due to the fact that students may have lacked prior academic preparation, a factor that is common among students in many Asian countries, including Cambodia (Chapman, 2009). And such lack of prior academic preparation occurs at the time when there is still limited early academic support at Cambodian universities, such as support for the transition between high school and university, the academic orientation, adequate preparatory programs, and academic skills development workshops. The dearth of the independent learning culture among first-year Cambodian students may

also be a qualified reason that dictated the importance of direct academic assistance from teachers in this study. In Cambodia, although evidence remains scarce toward the knowledge of students' learning culture, it may be very likely that the independent learning culture among students is still limited given the fact that Cambodian students have remained highly dependent on teachers as the main source of knowledge (Chet, 2006, 2009). With such challenges, the role of faculty in nurturing student learning and progress is critical to improve their academic achievement.

5.2.2.1.2 Institutional level

None of the variables representing faculty behaviors examined in this study was found statistically significant at the institutional level. The absence of institution-level random effects of faculty behaviors on student achievement suggested that the effects were different across the classroom contexts rather than across the institutional contexts. This might have related to differential student characteristics nested within each class. Noted evidence can be viewed through the significant differences in students' precollege academic backgrounds observed across classes in the present study, F (29, 907) = 10.58, p < .001. Such variations may have dictated the impact of faculty's teaching behaviors on student learning in its respective manner, depending on the nature of student characteristics within each class. The paucity of institution-level random effects might also have been related to the limited number of universities selected for this study. It should be noted that only nine universities were selected for the present research. Though with preset criteria such as student enrollment and university type, the majority of the universities (seven out

of nine) represented private universities, conceivably with dubious quality standards when recruiting students. This small university sample size would arguably mask the understanding of the faculty impact across universities to an unknown degree. More universities are warranted to increase the understanding of institution-level effects associated with faculty behaviors and its predictive strength for student learning.

5.2.2.2 Insignificant effects

The results revealed that faculty's instructional organization and clarity and practices to challenge students did not make a difference in student achievement. These findings contrast with much of the research in other countries (e.g., Bray et al., 2004; Cabrera et al., 2001; Pascarella et al., 2008, 2011; Patrick & Smart, 1998). The insignificant effect of the faculty's instructional organization and clarity is counter-intuitive, but it may have related to the fact that Cambodian teachers have long been influenced by a top-down approach to teaching (Neau, 2003). The interview with teachers revealed that teachers for the most part followed a similar teaching method—the PPP (presentation, practice, and production), usually starting with review and recall questions, followed by some contents/language presentations and students' practices[8]. Directed by this teaching philosophy, teachers may have followed a similar trend in teaching, which, thus, limited the amount of the variance in this factor. With regard to a challenging class context, teachers' ability to challenge

[8] Teachers (phase I = 5; phase II = 3) reported that PPP was the most typical teaching method having been applied for students in this study, with the belief that inputs from teachers remained truly important to engage students in the first place although the use of a student-centered approach was strongly encouraged by their institutions.

students was an uncertain factor. Although evidence suggested that teachers were also aware that students became more involved when challenged, it was sporadic perhaps as a result of the discord between the traditional top-down teaching philosophy and the newer teaching approaches that promote independent learning and critical thinking. Frustrations from the inability to reconcile these two approaches may have affected teaching quality in this current study.

5.2.2.3 Direct and indirect effects

Further results indicated that student engagement in time on course-related tasks, class participation, assigned homework/tasks, and class preparation at different levels exerted positive and significant influences on student achievement. The presence of these factors implied that the amount of time and energy students devoted to learning seemed to mediate the effect of faculty's support and feedback on student achievement to a degree, indicating that students in the classroom context where teachers were more aware of their learning difficulty and progress were likely to be more engaged in these academic activities. Engaging in these activities, in turn, had significant positive payoffs in student achievement. These results were plausible given that much of these engagement activities were related to self-study outside class. In a country lacking extra-curricular academic activities like Cambodia, reinforcements from teachers are unsurprisingly needed to promote these self-study efforts and to translate them into productive ends. This is evident, particularly for first-year students who may lack study skills and are struggling to cope with university-level challenges due to the limited university orientations and/or

workshops offered to them. Such lack of support from university places greater importance and dependence on support and feedback from teachers to ensure students are truly learning as a result of their engagement efforts.

5.2.2.4 Conditional effects

The cross-level interaction analysis revealed that faculty's support and feedback was likely to have a more general effect on student achievement. This result deviated from previous research in that good educational practices tended to have compensatory effects on the learning outcomes of students with disadvantaged backgrounds (Carini et al., 2006; Kuh et al., 2008; Pascarella et al., 2004). This contradictory finding may be due to the divergent qualities of students from each subpopulation, especially among those from the city and with a higher level of precollege academic experience. Due to the absence of stringent regulations of student enrolment among Cambodian universities, it remains difficult to ensure that students from these high-profile cohorts are of similar qualities or possess higher abilities than their low-profile counterparts. The lack of independent learning among students may have also played a key role in this. It is common that Cambodian students view teachers as a source of knowledge. Although recently there is increasing attention to students' pursuing independent learning, students remain highly dependent on direct academic assistance from their teachers (Chet, 2006, 2009). Therefore, it is understandable that faculty's support and feedback, in general, play a crucial role in fostering the academic achievement of Cambodian students during the first year of university.

5.2.3 Institutional effects

The institution-level analysis pointed out that a huge variance in students' test scores was explained by the type of an institution where students were enrolled. The results showed that, the institutional control was the unique factor that accounted for significant differences in student achievement in this study, suggesting that public universities were the higher-performing institutions. No relations were found for other institutional descriptors studied in this study on student achievement. This result offers significant knowledge of the public and private higher education sectors in Cambodia as well as further explanations of the results obtained in this study. Of particular evidence relates to the explanations of the random effects evident in the analyses considering that the presence of these factors were largely associated with the institutional context where students were enrolled, i.e., within either public or private universities.

Differences in admission policies may explain this result. According to student rating, public universities reportedly had in place a better policy of student recruitment ($M_{\text{public}} = 4.11$, $SD = 0.95$; $M_{\text{private}} = 3.24$, $SD = 1.03$), $t\ (575) = 12.62$, $p < .001$). Public universities were perceived to have stricter student recruitment requirements than the private counterparts. As presented earlier in the descriptive results section, public universities had the entrance exam more strictly in place and did not admit students without a certificate of grade 12 and used the grade 12 examination grade as one of the criteria to select students in line with the allocated scholarship schemes or the proposed number of students in fee-paying programs to the MoEYS that were run in parallel with the scholarship ones. In this regard, public universities would likely be able to recruit better students. In contrast,

private universities in general lacked a rigorous admission policy. This result shared with that of Leng (2010), who found that there were easier and fewer entry requirements at the private higher education sector. Leng (2010) went on to describe that the entrance exam set at the private universities only existed on the surface, instead allowing all the people who applied to pass. Some private universities, possibly the newly established institutions, also admitted students without a grade 12 certificate in order to attract more students, thus likely to recruit lower quality students, especially the disadvantaged students from the provinces such as first-generation (first person in the family to attend university) and lower-academic profile students who failed to get enrolled in the public higher education sector. The quality of students would, thus, be a key factor explaining the differences in student achievement between the two sectors.

The quality of teachers may also be a contributing factor. The 2010-2011 data from the Department of Higher Education of Cambodia showed that the faculty-student ratios at public and private universities in this study were significantly different from each other, with a larger faculty-student ratio observed within the public universities (average faculty-student ratio $_{public}$ = 1:60; average faculty-student ratio $_{private}$ = 1:28). The higher ratio at public universities would reflect higher workload among faculty as well as their full-time tenure, whereas the much smaller faculty-student ratio at private universities would suggest lower workload among faculty and dictate the assumption that teachers were more likely to hold a part-time title. These ratios, however, presented somewhat tricky tips for interpretations with regard to teachers' workload in Cambodia's higher education, especially within the private sector. Considering the fact that teaching has been the main

source of income among teachers in Cambodia (Kwok et al., 2010), it is possible that teachers at private universities were also likely to engage in teaching services/full-time work at another place, a case which is typical of the contemporary university teachers in Cambodia[9]. Should this really be the case, although private universities had greater financial resources to employ better teaching staff (Ford, 2006; Leng, 2010; Pit & Ford, 2004), their commitment to teaching would be in question. This would negatively affect the quality of teaching at private universities to an unknown degree.

[9] For further account, see "For many, it's a matter of degrees" by Shane Worrell at http://www.phnompenhpost.com/national/many-it%E2%80%99s-matter-degrees and "Cambodia's educational system is a system utterly in need" by Kenneth Wilson at http://www.cambodiadaily.com/opinion/cambodias-educational-system-is-a-system-utterly-in-need-32937/.

CHAPTER SIX

CONCLUSIONS, IMPLICATIONS, AND FUTHER RESEARCH

6.1 Conclusions

This study adds to the scarce literature on higher education teaching and learning in the developing world, especially Cambodia, and to the literature on student achievement at the university in relation to the influences of student engagement in educationally purposeful activities and faculty behaviors, net of other factors such as student and institutional characteristics linked with desired learning outcomes. Knowing what is crucial in determining student achievement and especially what academic activities benefit specific groups of students across institutional settings are of utmost importance for policy, research, and practice. Overall, the results of the current analyses point to a number of conclusions.

First, the results of this study generally corroborate evidence that the nature of student engagement plays dominant roles in fostering desirable student achievement. Although recent studies in the US and Western settings have largely supported the collective power of overall student engagement in educationally relevant activities, this study provides evidence that this is not so. This study has shown that specific dimensions of student engagement are better than others in fostering student achievement. Overall, this study has found that differences in student achievement are the result of their differences in the amount of time and energy invested in homework/tasks, class preparation, and whole class active participation. Higher engagement in these academic activities leads to higher

academic achievement. Differences in the levels of student engagement in peer learning, time spent on course-related tasks outside the classroom, and faculty-student interaction, however, do not provide compelling evidence linked to the differences in student achievement when tested in general terms. The significant effects of homework/tasks, class preparation, and whole class active participation are not unexpected in part because these are the conventional types of academic activities students may be more likely to capitalize on when engaged due to their extensive exposure to these activities throughout the course of learning since high school. The paucity of any meaningful impacts of peer learning, time spent on course-related tasks outside the classroom, and faculty-student interaction on first-year university students' academic achievement in this study is, however, surprising and presents a contradictory picture from what has been widely documented in the student engagement literature, especially among those utilizing the NSSE as a survey tool (e.g., Kuh & Hu, 2001; Kuh et al., 2007, 2008). The current analyses suggest that these insignificant results may be in part attributable to the lack of independent and cooperative learning cultures and the low levels of out-of-class encounters with faculty among first-year Cambodian students in this study.

Based on the HLM's level-one results, this research appears to support the notion that it is not "how much" students are engaged in academic activities while at the university that matters, but the question goes to "what" academic activities are relevant to and appropriate for students in realistic terms. This study proves that the linkage between the nature of student engagement and their previous learning culture is really a crucial factor. Of critical evidence is that differences in student efforts devoted to independent and

cooperative learning cultures are not really the key factor that contributes to academic achievement gaps among all the student populations studied. Such findings, thus, seem to imply that first-year students in this study in general have yet to fully develop the independent and cooperative learning cultures in order to maximize their learning outcomes. This study suggests that only engaging in academic activities that likely fit their existing study experiences makes a difference.

Second, although a large body of previous research has focused attention on fixed/general associations of student engagement and their desired learning outcomes, the evidence from this study suggests that the effects of specific dimensions of student engagement on student achievement are more complex. A similar conclusion has been found in Cruce et al. (2006). The present research has shown that the effects of specific dimensions of student engagement are one way or another varied and conditional in nature. The findings of the current study lend credence to evidence that some engagement activities are particularly important for certain classes and institutions. The current research has found that the effects of class participation and homework/tasks are greater or more meaningful for classes and institutions with lower-performing students, respectively, while, for some others classes and institutions with higher-performing students, the effects are weaker and even negative. On the contrary, time spent on course-related tasks outside the classroom appears to have a greater impact on student learning within the institutions with higher-performing students. Such different pieces of findings support the idea that different engagement activities appear to fit different groups of students in different fashions, with more efforts devoted to independent learning activities (i.e., self-study/reading) being more

effective for those who are high performing because of their higher academic backgrounds. Less is true with regard to the effect of this type of academic engagement for lower-performing students. And this research suggests that such random associations are likely to lie in where students are enrolled since the results of this study has found that higher-performing students are generally more likely to be those studying at the public universities rather than attending the private ones due to the latter usually lagging behind in terms of student recruitment quality and possibly teaching quality. On balance, this study indicates that higher-performing universities appear to benefit more from promoting academic activities that involve students in a more independent learning mode; whereas, for the lower-performing counterparts, more controlled activities such as whole classroom interactions and assigned homework/tasks may function more effectively to improve the status quo of their student learning.

This study provides further insights that certain features of student engagement (i.e., class participation, peer learning, and student-faculty interaction) have conditional effects on student achievement by gender, precollege academic experience, and geographical origin. The results suggest that the effect of peer learning is embedded within students' gender and precollege academic experience. In both instances, peer learning has a positive payoff to the academic achievement of females and students with lower precollege academic experience. Class participation has a compensatory effect on students from the provinces and with a lower-academic profile when entering the university. Surprisingly, student-faculty interaction also emerges as a significant contributor to the academic outcome of students from the provinces. The presence of these conditional effects indicates

that the one-size-fits-all notion of a student engagement model applicable to all student populations may be overstated in this study. The evidence from this study suggests that the same academic activities may not have the same effects for all student populations. Also, it is suggested that the insignificant contributions of student engagement in certain educationally purposeful activities may be misleading without taking into account student subpopulations. The consideration of conditional terms in this study, of course, addresses this problem. Although the presence of the conditional effects did not substantially increase the amount of the variance explained in student achievement in this present research, the examination of the conditional effects of student engagement on student achievement proved vitally important to reveal the blurring effects of some important variables (e.g., peer learning and student-faculty interaction) that would have been masked within specific student subpopulations had they been only tested in the general effects model. Overall, these findings, though not conclusive, are rather indicative that higher levels of class participation and interaction with peers and faculty might benefit females and those with a lower-academic background and from the provinces more than their peers. This evidence reflects the need for academic support among these groups of students as they usually enter university with disadvantaged academic backgrounds, especially females and those from the provinces.

Third, the findings from this study highlight the evidence that the effect of faculty behaviors was fixed and general. Results from this study expand the understanding of the nature of faculty behaviors and its added-values to student learning in the Cambodian higher education context. In general, the results lend support to the idea that faculty's

support and feedback matter most to student achievement compared to other measures of faculty behaviors and that the increased amount of support and feedback in teaching can benefit students from all different profiles, regardless of their gender, precollege academic experience, and geographical origin. This study has shown that the magnitude of the influence faculty behaviors have on student achievement does not vary across institutions either, suggesting that the institutional context did not play a key role in dictating any specific effects of faculty's support and feedback across institutions. Rather, the results point to the differences in individual teaching styles among faculty in each class that matter, of which the amount of support and feedback given to students makes a unique and positive impact. In this study, such academic support proves more effective than other teaching practices in closing the academic gaps as well as increasing the academic performance among students. The evidence from this study, therefore, suggests that the practical and direct academic assistance from faculty may be the current necessity for first-year students in Cambodia due to their predisposed cultural dependency on teachers in learning (Chet, 2006, 2009).

Finally, this study shows that faculty's support and feedback has both direct and indirect influences on student achievement, with the evidence that student engagement factors play a mediating role in this. The presence of the indirect effect of faculty's support and feedback suggests that the direct academic assistance from teachers is among the key factors linked with students' increased levels of engagement in academically productive activities, the factors that also contribute to enhanced learning in this study. These interrelated relationships point to the evidence that guided learning is a needed area among

first-year students in Cambodia. That is, to be effective in learning, while students need to invest more time and energy in the academic activities that fit them the most, the direct academic assistance from their teachers is indeed an additional asset. Again, the prevailing cultural dependency on teachers in learning among Cambodian students may do justice to the presence of the critical role of faculty in fostering effective learning in the present research through the provision of direct academic support and feedback to students in the classroom teaching.

6.2 Implications

This study has important implications for policy and practice. With regard to the student engagement impacts, two major implications can be drawn from this study. First, this study offers support to the idea that not all the academic activities students got engaged in are necessarily useful for increasing their academic achievement. One clear implication of this evidence is the need to enhance the understanding of what engagement activities fit most into students' learning realities and, of course, their existing learning culture. The results that showed the differences in student achievement were linked to the levels of engagement in homework/tasks, class participation, and class preparation, for example, suggest that the academic activities students are likely to capitalize on are those that closely match their prior learning experiences. Thus, while promoting student engagement in a more frequent and systematic manner is a needed area to bridge the academic gaps among students within the context of the present research, the understanding of students' prior learning culture is an additional necessity. The results that

cooperation among peers, time on course-related tasks outside the classroom, and student-faculty interaction failed to make unique contributions to student achievement highlight the importance of the quality, not necessarily the quantity, of practice among students. Because peer learning, reading independently, and interaction with faculty are new, limited, and challenging, the approaches that HEIs or teachers have long been introducing to students should be reconsidered. More attention should also be given to the quality of academic engagement among students with prior academic challenges and, of course, to their previous learning culture, too. Extra-curricular programs that promote independent reading culture and study skills should also be emphasized so as to enable students to fully capitalize on this form of a student-centered approach at Cambodian universities in the long run.

Second, the findings from this study lend support to the evidence that some engagement activities (i.e., class participation, homework/tasks, and time spent on course-related tasks outside class) tend to have skewed effects on student achievement, either by class or by institution. These results have an important implication for universities to specifically inject financial resources into educational programs for particular students so as to improve institutional quality. The results of this study call for the use of multiple approaches to enhance student learning at different type of institutions, especially between public and private HEIs. Another, but related implication is that the class and institutional climates need to be further explored, along with special attention to the uniqueness of student characteristics at each university, if educational leaders are to enhance their understanding of student achievement in greater detail. Specifically, since mostly

educationally and economically disadvantaged students appeared to make some meaningful gains in the academic achievement from their engagement, it is recommended that a tracking system be put in place to provide further academic support for this group if addressing the academic achievement gaps among students is the priority. More importantly, given that the effects of student engagement were reportedly larger for students with a low academic profile, bridging programs to enhance their study and reading skills should be made available at this early stage of university in order to allow this group to catch up with their counterparts in the subsequent years. And the attention should be directed to the situations of student learning at the private universities, especially among the small, emerging private universities.

Major implications for policy and practice can also be drawn from the understanding of the faculty impacts under consideration and its nature of influences on student learning and achievement. For example, the results of this study showed the important effect of faculty's support and feedback on first-year Cambodian students' academic achievement. The presence of the unique effect of faculty's support and feedback lends support to the idea that educational specialists as well as the faculty members need to take a bold action to increase the amount of support and feedback for students in order to address the existing academic achievement gaps among them since students may not be accustomed to the learning culture that promotes self-study or independent learning. Such a finding indicates that a supportive and caring class climate is the needed area that faculty should particularly consider in teaching to promote student achievement, at least in the first year of university. In addition, these findings seem to suggest that HEIs would do better to improve teacher

quality by concentrating on the enrichment program that specifically boosts teachers' motivation strategies and student assessment skills rather than on general teacher professional development programs. Furthermore, the results revealed that faculty's instructional organization and clarity and their teaching practices that challenge students academically have insignificant effects on student achievement. Though these results are counter-intuitive, such evidence expands our understanding of effective teaching from a practical standpoint that faculty members need to do something beyond the conventional teaching practices that only highlight their active role in the classroom to foster student learning and development. A related implication of this evidence is that special attention should be given to the teaching practices that specifically promote students' active roles in the learning process. The irrelevance of these forms of teaching behaviors to student achievement also warrants further investigation into the quality of such teaching inputs on top of its quantity and, in particular, the characteristics of students within respective classroom teaching contexts. Overall, these findings offer important evidence, though not exhaustive, that the understanding of faculty impact from a broader view, contrary to what was particularly evident in studies by Bray et al. (2004), Bjorklund et al. (2004), and Pascarella et al. (2011), not only helps to cancel out the inconsistent results that may be falsely due to measurement differences as observed within previous college faculty impact research but also suggests a better informed policy and practice, as discussed earlier, to improve higher education teaching and learning.

The indirect association of faculty' support and feedback and student achievement posits that increasing the amount of faculty's support and feedback may have positive

payoffs in promoting student engagement in both in-class and out-of-class academic activities, the factors that also contribute to higher student achievement. As such, classroom assessment policies that underscore the quality of support and feedback provided to students would be highly beneficial for promoting both teacher quality and the levels of student engagement in academically relevant activities. Additionally, the findings that some engagement factors, especially out-of-class academic activities, mattered most to student learning highlight the need for additional institutional support programs to promote on-campus engagement among students as most out-of-class study likely takes place at home, which may not be effective for economically disadvantaged students where home quality and resources are more limited. The presence of the moderating effect of student engagement supports the findings of Umbach and Wawrzynski (2005) and, thereby, posits that a one-sided focus on either faculty behaviors or student engagement in both policy and research may not be the ideal approach to enhance students' learning outcomes given the related nature of these two measures. Overall, given that about one third of the variance in student achievement was explained by the amounts of student engagement and the nature of faculty behaviors studied, the findings from this study suggest that policies and professional practices on student quality assessment that center on the understanding of teaching and learning behaviors seem to be more realistic in empowering teacher and student quality. This evidence adds a critical knowledge base to what has been lacking in higher education research in Cambodia and to the current practice of institutional assessment in the country.

Having considered student profile differences, the HLM analysis showed that faculty'

support and feedback had a more general effect on student achievement, regardless of their gender, geographical origin, and precollege academic experience. The results that underline the necessity of faculty's support and feedback for all students from different academic and social backgrounds imply that specifically focusing on the academic needs of students from low-profile backgrounds may not be the best way to close the quality gaps among students currently enrolled in Cambodian universities. Although literature tends to suggest the presence of conditional effects of good educational practices on the academic outcomes of students with economically and academically challenged backgrounds (e.g., Kuh et al., 2008; Pascarella et al., 2004), the lack of conditional associations of faculty behaviors and student achievement in this study provides unique evidence that, regardless of initial differences in profiles, be it academic or social, students would benefit from studying with faculty who are more aware of their study progress in a similar fashion. Though not conclusive, these results are suggestive that tracking a student's work, understanding, and progress on a more frequent basis may be the salient teaching behaviors to mitigate the achievement gaps among all students with different profiles in the long run.

6.3 Further research

As the preliminary study on student achievement in the Cambodian higher education context, this study has pointed to a number of directions for future research. First, the HLM results offer a critical perspective to educational researchers to consider the nested nature of the data at class, institutional, and even district levels should data are available. Related to this, further studies that incorporate class and institutional characteristics in greater

detail, using the multi-level approach, are warranted. Second, while this study found compensatory effects of some engagement factors on the academic performance of some student subpopulations, any detailed investigation into these phenomena would offer additional insight into student characteristics and their learning across groups. Third, the investigation into the impacts of student engagement and faculty behaviors across year levels is recommended to track as to whether or not the effects vary year-by-year or whether there are any delayed effects across year levels. The longitudinal research would paint a more thorough picture of teaching and learning context in Cambodia's higher education and its predictive relationships with student learning and development. Finally, the examinations of what constitutes effective teaching and learning based on the student engagement perspective by academic program/discipline are necessary so as to cast new light on the nature of teaching and learning and its influences across academic programs/disciplines. While, from the comparative viewpoint, this type of study is extremely useful for policy and practice, empirical evidence remains scarce, particularly within the context of countries with emerging higher education systems and skewed academic program development. The comparative study of this kind is, thus, warranted.

REFERENCES

Alnabhan, M., Al-zegoul, E., & Harwell, M. (2001). Factors related to achievement levels of education students at Mu'tah University. *Assessment and Evaluation in Higher Education, 26*(6), 593–604.

Appleby, R., Copley, K., Sithirajvongsa, S., & Pennycook, A. (2002). Language in development constrained: Three contexts. *TESOL Quarterly*, *36*(3), 323–346.

ASEAN Secretariat. (2009). *Roadmap for an ASEAN Community 2009-2015*. Jakarta: Author. Retrieved July 3, 2012 from http://www.aseansec.org/publications/Roadmap ASEAN Community.pdf.

Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Personnel, 25*(4), 297–308.

Astin, A. W. (1993). What matters in college? *Liberal Education, 79*(4), 4–15.

Ayres, D. (2000). *Anatomy of a crisis: Education, development, and the state in Cambodia, 1953-1998*. Honolulu: University of Hawaii Press.

Atkinson, S. (2006). Factors influencing successful achievement in contrasting design and technology activities in higher education. *International Journal of Technology and Design Education, 16*(2), 193–213.

Bean, J. P. (1983). The application of a model of turnover in work organizations to the student attrition process. *The Review of Higher Education, 6(2)*, 129–148.

Beretvas, N. (2007). Hierarchical linear modeling. In J. P. Stevens (Ed.), *Intermediate statistics: A modern approach* (3rd ed.) (pp. 321–363). New York: Lawrence Erlbaum

Associates.

Berger, J. B., & Lyon, S. C. (2005). Past to present: A historical look at retention. In A. Seidman (Ed.), *College student retention: Formula for student success* (pp. 1–29). Westport: Praeger Publishers.

Berger, J. B., & Milem, J. F. (1999). The role of student involvement and perceptions of integration in a casual model of student persistence. *Research in Higher Education*, *40*(6), 641–664.

Bai, H., & Pan, W. (2009). A multilevel approach to assessing the interaction effects on college student retention. *Journal of College Student Retention, 11*(2), 287–301.

Bray, G. B., Pascarella, E. T., & Pierson, C. T. (2004). Postsecondary education and some dimensions of literacy development: An exploration of longitudinal evidence. *Reading Research Quarterly, 39*(3), 306–330.

Bjorklund, S. A., Parente, M., & Sathianathan, D. (2004). Effects of faculty interaction and feedback on gains in student skills. *Journal of Engineering Education, 93*(2), 153–160.

Bruinsma, M. (2003). *Effectiveness of higher education: Factors that determine outcomes of university education*. Veenendaal: Universal Press.

Bunlay, N., Wright, W. E., Sophea, H., Bredenburg, K., & Singh, M. (2009). *Active learning pedagogies as a reform initiative: The case of Cambodia* (EQUIP1 research report). Washington, DC: American Institute for Research. Retrieved May 31, 2012 from http://www.equip123.net/docs/E1-ActiveLearningPedagogy-Cambodia.pdf.

Cabrera, A. F., Crissman, J. L., Bernal, E. M., Nora, A., Terenzini, P. T., & Pascarella, E. T. (2002). Collaborative learning: Its impact on college students' development and

diversity. *Journal of College Student Development*, *43*(1), 20–34.

Cabrera, A. F., Colbeck, C. L., & Terenzini, P. T. (2001). Developing performance indicators for assessing classroom teaching practices and student learning: The case of engineering. *Research in Higher Education, 42*(3), 327–352.

Carini, R. M., Kuh, G. D., & Kleint, S. P. (2006). Student engagement and student learning: Testing the linkages. *Research in Higher Education, 47*(1), 1–32.

Chandler, D. (1993). *A history of Cambodia*. Chiang Mai: Silkworm Books.

Chapman, D. W. (2009). Education reforms and capacity development in higher education. In Y. Hirosato & Y. Kitamura (Eds.), *The political economy of educational reforms and capacity development in Southeast Asia: Cases of Cambodia, Laos and Vietnam* (pp. 91–109). Dordrecht: Springer.

Chen, C. Y., Sok, P., & Sok, K. (2007). Benchmarking potential factors leading to educational quality: A study on Cambodian higher education. *Quality Assurance in Education, 15*(2), 128–148.

Chet, C. (2006). Cambodia. In UNESCO, *Higher education in South-East Asia* (pp.13-33). Bangkok: UNESCO Bangkok.

Chet, C. (2009). Higher Education in Cambodia. In Y. Hirosato & Y. Kitamura (Eds.), *The political economy of educational reforms and capacity development in Southeast Asia: Cases of Cambodia, Laos and Vietnam* (pp. 153–165). Dordrecht: Springer.

Chhinh, S. (2003). Effect of pupil factor on mathematics achievement in Cambodian urban primary school. *Asia Pacific Education Review, 4*(2), 151–160.

Chhinh, S., & Tabata, Y. (2003). Teacher factors and mathematics achievement of

Cambodian urban primary school pupils. *Journal of International Development and Cooperation, 9*(2), 29–41.

Christie, R. L., & Hutcheson, P. (2003). Net effects of institutional type on baccalaureate degree attainment of "traditional" students. *Community College Review, 31*(2), 1–20.

Clayton, T., & Ngoy, Y. (1997). Cambodia. In G. A. Postiglione & G. C. L. Mak (Eds.), *Asian higher education* (pp. 21–36). Westport: Greenwood Press.

Clayton, S. (2008). The problem of 'choice' and the construction of the demand for English in Cambodia. *Language Policy*, *7*(2), 143–164.

Clayton, T. (1998). Building the new Cambodia: Educational deconstruction and construction under the Khmer Rouge, 1975-1979. *History of Education Quarterly, 38*(1), 1–16.

Clayton, T. (2002). Language choice in a nation under transition: The struggle between English and French in Cambodia. *Language Policy*, *1*(1), 3–25.

Coates, H. (2006). *Student engagement in campus-based and online education: University connections.* London: Routledge.

Cruce, T. M., Wolniak, G. C., Seifert, T. A., & Pascarella, E. T. (2006). Impacts of good practices on cognitive development, learning orientations, and graduate degree plans during the first year of college. *Journal of College Student Development, 47*(4), 365–383.

Davis, T. M., & Murell, P. H. (1993). A structural model of perceived academic, personal, and vocational gains related to college student responsibility. *Research in Higher Education, 34*(3), 267–289.

Devlin, M., & Samarawickrema, G. (2010). The criteria of effective teaching in a changing higher education context. *Higher Education Research and Development, 29*(2), 111–124.

Duggan, S. J. (1996). Education, teacher training and prospects for economic recovery in Cambodia. *Comparative Education, 32*(3), 361–375.

Duggan, S. J. (1997). The role of international organization in the financing of higher education in Cambodia. *Higher Education, 34*(1), 1–22.

Field, A. (2009). *Discovering statistics using SPSS* (3rd ed.). Dubai: Oriental Press.

Ford, D. (2003). Cambodian accreditation: An uncertain beginning. *International Higher Education, 33*, 12–13.

Ford, D. (2006). Cambodian higher education: Growing pains. *International Higher Education, 44*, 10-11.

Ford, D. (2013). Cambodian higher education—Subprime degrees? *International Higher Education, 70*, 15–16.

Frick, T. W., Chadha, R., Watson, C., Wang, Y., & Green, P. (2009). College student perceptions of teaching and learning quality. *Educational Technology Research and Development*, *57*(5), 705-720.

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2012). *How to design and evaluate research in education* (8th ed.). New York: McGraw-Hill.

Greene, T. G., Marti, C. N., & McClenney, K. (2008). The effort-outcome gap: Differences for African American and Hispanic community college students in student engagement and academic achievement. *The Journal of Higher Education, 79*(5), 513–539.

Hativa, N., Barak, R., & Simhi, E. (2001). Exemplary university teachers: Knowledge and beliefs regarding effective teaching dimensions and strategies. *Journal of Higher Education, 72*(6), 699–729.

Harackiewicz, J. M., Barron, K. E., Tauer, J. M., & Elliot, A. J. (2002). Predicting success in college: A longitudinal study of achievement goals and ability measures as predictors of interest and performance from freshman year through graduation. *Journal of Educational Psychology, 94*(3), 562–575.

Hamrick, F. A., & Stage, F. K. (2004). College predisposition at high-minority enrollment, low-income schools. *The Review of Higher Education*, *27*(2), 151-168.

Heng, K. (2012). College student involvement in English language learning in Cambodia: Trends and patterns. *Journal of International Development and Cooperation, 19*(1), 13–23.

Hurtado, S., Dey, E. L., Gurin, P. Y., & Gurin, G. (2003). College environments, diversity, and student learning. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 18, pp. 145–189). Dordrecht: Kluwer.

Hurtado, S., Milem, J. F., Clayton-Pedersen, A. R., & Allen, W. (1998). Enhancing campus climates for racial/ethnic diversity: Educational policy and practice. *Review of Higher Education, 21*(3)*,* 279–302.

Jansen, E. P. W. A. (2004). The influence of the curriculum organization on study progress in higher education. *Higher Education, 47*(4), 411–435.

Jansen, E. P. W. A., & Bruinsma, M. (2005). Explaining achievement in higher education. *Education Research and Evaluation*, *11*(3), 235–252.

Kahu, E. R. (2013). Framing student engagement in higher education. *Studies in Higher Education, 38*(5), 758–773.

Keuk, C. N. (2008). English language variety in Cambodia. In K. Im (Ed.), *CamTESOL conference on English language teaching: Selected papers* (Vol. 4, pp. 98–107). Phnom Penh: CamTESOL.

Keuk, C. N. (2009). How intelligible is Cambodian English variety? A look from foreigners' perspectives. In K. Im (Ed.), *CamTESOL conference on English language teaching: Selected papers* (Vol. 5, pp. 23–35). Phnom Penh: CamTESOL.

Keuk, C. N., & Tith, M. (2006). Learners' attitudes towards strategies for teaching literature at the Royal University of Phnom Penh, Institute of Foreign Languages: A case study. In R. Kieng (Ed.), *CamTESOL conference on English language teaching: Selected papers* (Vol. 2, pp. 1–8). Phnom Penh: CamTESOL.

Keup, J. R. (2006). Promoting new student success: Assessing academic development and achievement among first-year students. *New Directions for Student Services*, *114*, 27–46.

Khan, B. (2008). Moves and strategies in letters of application by a group of Cambodian college graduates. In K. Im (Ed.), *CamTESOL Conference on English language teaching: Selected papers* (Vol. 4, pp. 108–119). Phnom Penh: CamTESOL.

Kuh, G. D. (2001). Assessing what really matters to student learning: Inside the National Survey of Student Engagement. *Change,* 33(3), 10–17.

Kuh, G. D. (2003). What we are learning about student engagement from NSSE. *Change, 35*(2), 24–32.

Kuh, G. D. (2009). The national survey of student engagement: Conceptual and empirical foundations. *New Directions for Institutional Research, 141*, 5–20.

Kuh, G. D., Cruce, T. M., Shoup, R., Kinzie, J., & Gonyea, R. M. (2008). Unmasking the effects of student engagement on first-year college grades and persistence. *The Journal of Higher Education, 79*(5), 540–563.

Kuh, G. D., & Hu, S. (2001). The effects of student-faculty interaction in the 1990s. *The Review of Higher Education, 24*(3), 309–332.

Kuh, G. D., Kinzie, J., Buckley, J. A., Bridges, B. K., & Hayek, J. C. (2007). Piecing together the student success puzzle. *ASHE Higher Education Report, 32*(5), 1–182.

Kuh, G. D., Pace, C. R., & Vesper, N. (1997). The development of process indicators to estimate student gains associated with good practices in undergraduate education. *Research in Higher Education, 38*(4), 435–454.

Kwok, K., Chan, S., Heng, C., Kim, S., Neth, B., & Thon, V. (2010). *Scoping study: Research capacities of Cambodia's universities*. Retrieved July 28, 2011 from http:// www. drfcambodia.net/profiles/blogs/scoping-study-research.

Leng, P. (2010). *Students' perceptions toward private sector higher education in Cambodia* (Master's thesis). Retrieved from https://etd.ohiolink.edu/.

Laird, T. F. N., & Cruce, T. M. (2009). Individual and environmental effects of part-time enrollment status on student-faculty interaction and self-reported gains. *The Journal of Higher Education, 80*(3), 290–314.

Ly, S., Chea, T., & Sou, V. (2007). Guided individual learning center: A non-classroom learning environment. In N. Tao (Ed.), *CamTESOL Conference on English language*

teaching: Selected papers (Vol. 3, pp. 46–52). Phnom Penh: CamTESOL.

Lizzio, A., Wilson, K., & Simons, R. (2002). University students' perceptions of the learning environment and academic outcomes: Implications for theory and practice. *Studies in Higher Education, 27*(1), 27–52.

Ministry of Education, Youth and Sport. (2005). *Education strategic plan 2006-2010*. Phnom Penh: Author.

Moore, S. H., & Bounchan, S. (2010). English in Cambodia: Changes and challenges. *World Englishes*, *29*(1), 114–126.

Marshall, J. H., Chinna, M. U., Nessay, P., Ngo Hok, U., Savoeun, V., Tinon, S., & Veasna, M. (2009). Student achievement and education policy in a period of rapid expansion: Assessment data evidence from Cambodia. *International Review of Education, 55*(4), 393–413.

Marsh, H. W., & Dunkin, M. J. (1997). Students' evaluation of university teaching: A multidimensional perspective. In R.P. Perry & J.C. Smart (Eds.), *Effective teaching in higher education: Research and practice* (pp. 241–319). New York: Agathon Press.

Mackenzie, K., & Schweitzer, R. (2001). Who succeeds at university? Factors predicting academic performance in first year Australian university students. *Higher Education Research and Development*, *20*(1), 21–33.

National Survey of Student Engagement. (2002). *From promise to progress: How colleges and universities are using student engagement results to improve collegiate quality.* Bloomington: Center for Postsecondary Research, Indiana University.

National Survey of Student Engagement. (2003). *Converting data into action: Expanding*

the boundaries of institutional improvement. Bloomington: Center for Postsecondary Research, Indiana University.

Neau, V. (2003). The teaching of foreign languages in Cambodia: A historical perspective. *Language, Culture and Curriculum*, *16*(3), 253–268.

Ngo, F. J. (2013). The distribution of pedagogical content knowledge in Cambodia: Gaps and thresholds in math achievement. *Educational Research for Policy and Practice, 12*(2), 81–100.

Pace, R. (1990). *The undergraduates: A report of their activities and progress in college in the 1980's*. Los Angeles: University of California.

Pascarella, E. T. (2001). Cognitive growth in college: Surprising and reassuring findings. *Change, 33*(6), 20–27.

Pascarella, E., Edison, M., Nora, A., Hagedorn, L., & Braxton, J. (1996). Effects of teacher organization/preparation and teacher skill/clarity on general cognitive skills in college. *Journal of College Student Development, 37*, 7–19.

Pascarella, E. T., Palmer, B., Moye, M., & Pierson, C. (2001). Do diversity experiences influence the development of critical thinking? *Journal of College Student Development, 42*(3), 257–271.

Pascarella, E. T., Pierson, C. T., Wolniak, G. C., & Terenzini, P. T. (2004). First-generation college students: Additional evidence on college experiences and outcomes. *The Journal of Higher Education, 75*(3), 249–284.

Pascarella, E. T., Salisbury, M. H., & Blaich, C. (2011). Exposure to effective instruction and college student persistence: A multi-institutional replication and extension.

Journal of College Student Development, 52(1), 4–19.

Pascarella, E. T., Seifert, T. A., & Whitt, E. J. (2008). Effective instruction and college student persistence: Some new evidence. *New Directions for Teaching and Learning, 115*, 55–70.

Patrick, J., & Smart, R. M. (1998). An empirical evaluation of teacher effectiveness: The emergence of three critical factors. *Assessment & Evaluation in Higher Education, 23*(2), 165–178.

Pascarella, E. T., & Terenzini, P. T. (1991). *How college affects students: Findings and insights from twenty years of research*. San Francisco: Jossey-Bass.

Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students: A third decade of research* (Vol.2). San Francisco: Jossey-Bass.

Pascarella, E. T., Wolniak, G. C., Cruce, T. M., & Blaich, C. F. (2004). Do liberal arts colleges really foster good practices in undergraduate education? *Journal of College Student Development*, *45*(1), 57-74.

Perna, L. W., & Thomas, S. L. (2008). Theoretical perspectives on student success: Understanding the contributions of the disciplines. *ASHE Higher Education Report, 34*(1), 1–87.

Pike, G. R., & Kuh, G. D. (2005). First- and second-generation college students: A comparison of their engagement and intellectual development. *The Journal of Higher Education, 76*(3), 276–300.

Pike, G. R., & Kuh, G. D. (2006). Relationships among structural diversity, informal peer interactions and perceptions of the campus environment. *The Review of Higher*

Education, 29(4), 425–450

Pike, G. R., Kuh, G. D., McCormick, A. C., Ethington, C. A., & Smart, J. C. (2011). If and when money matters: The relationships among educational expenditures, student engagement, and students' learning outcomes. *Research in Higher Education, 52*, 81–106.

Pike, G. R., Smart, J. C., Kuh, G. D., & Hayek, J. C. (2006). Educational expenditures and student engagement: When does money matter? *Research in Higher Education, 47*(7), 847–872.

Pit, C., & Ford, D. (2004). Cambodian higher education: Mixed visions. In P. G. Altbach & T. Umakoshi (Eds.), *Asian universities: Historical perspectives and contemporary challenges* (pp. 333–362). Baltimore: John Hopkins University Press.

Raudenbush, S. W., Bryk, A. S., Cheong, Y. F., Congdon, R., & du Toit, M. (2004). *HLM6: Hierarchical linear and nonlinear modeling*. Chicago: Scientific Software International.

Richardson, J. T. E., & Woodley, A. (2003). Another look at the role of age, gender and subject as predictors of academic attainment in higher education. *Studies in Higher Education, 28*(4), 475–493.

Saroyan, A., Amundsen, C., McAlpine, L., Weston, C., Winer, L., & Gandell, T. (2004). Assumptions underlying workshop activities. In A. Saroyan & C. Amundsen (Eds.), *Rethinking teaching in higher education* (pp. 15–29). Sterling, VA: Stylus.

Shah, C., & Burke, G. (1999). An undergraduate students' flow model: Australian higher education. *Higher Education, 37*(4), 359–375.

Sheehan, E. P., & Duprey, T. (1999). Student evaluations of university teaching. *Journal of Instructional Psychology*, *26*(3), 188–193.

Simonite, V. (2003). A longitudinal study of achievement in a modular first degree course. *Studies in Higher Education, 28*(3), 293–302.

Sloper, D. (1999). Higher education in Cambodia: An overview and key issues. In D. Sloper (Ed.), *Higher education in Cambodia: The social and educational context for reconstruction* (pp. 1–24). Bangkok: UNESCO Principal Regional Office for Asia and the Pacific.

Spady, W. G. (1970). Dropouts from higher education: An interdisciplinary review and synthesis. *Interchange, 1*(1), 64–85.

Sudman, S., & Bradburn, N. M. (1982). *Asking questions: A practical guide to questionnaire design*. San Francisco: Jossey-Bass.

The Department of Cambodian Higher Education. (2009). *Statistics of students in academic year 2008-2009*. Phnom Penh: Author.

Terenzini, P. T., Springer, L., Yaeger, P. M., Pascarella, E. T., & Nora, A. (1996). First-generation college students: Characteristics, experiences, and cognitive development. *Research in Higher Education, 37*(1), 1–22.

Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research, 45*(1), 89–125.

Tinto, V. (2007). Research and practice of student retention: What next? *Journal of College Student Retention, 8*(1), 1–19.

Umbach, P. D., & Wawrzynski, M. R. (2005). Faculty do matter: The role of college

faculty in student learning and engagement. *Research in Higher Education, 46*(2), 153–184.

Van Den Berg, M. N., & Hofman, W. H. A. (2005). Student success in university education: A multi-measurement study of the impact of student and faculty factors on study progress. *Higher Education*, *50*(3), 413–446.

Van der Hulst, M., & Jansen, E. (2002). Effects of curriculum organization on study progress in engineering studies. *Higher Education, 43*(4), 489–506.

Wolniak, G. C., & Engberg, M. E. (2010). Academic achievement in the first year of college: Evidence of the pervasive effects of the high school context. *Research in Higher Education, 51*(5), 451–467.

Young, S., & Shaw, D. G. (1999). Profile of effective college and university teachers. *Journal of Higher Education, 70*(6), 670–686.

UNESCO. (2011). *Education and fragility in Cambodia*. Paris: International Institute for Educational Planning.

APPENDIXES

Appendix A-1: A questionnaire survey (English version)

The main purpose of this study is to examine what learning experiences are effective for student learning at Cambodian universities. Your **HONEST** responses will be very important for the improvement of your learning as well as Cambodian higher education institutions to develop effective strategies to promote conditions that work for students with different profiles.

For your privacy, information that shares your individual backgrounds and perspectives toward learning and teaching will **NOT** be, in any ways, reported to your university or teachers. **NO** name or student ID is required. Your answers will be 100% confidential and will **NOT** be used other than the purpose of this study. Your participation in this study is truly voluntary.

Thanks for your cooperation. Should you have any questions, please contact me at 012 877 860.

School/class code: ___/___
Questionnaire code: _____

Background characteristics

Please ***HONESTLY*** provide the following information. Circle one of the following answer choices or fill out the gap where it is necessary.

Q1. Gender: A. Male B. Female

Q2. Age: _____

Q3. Where did you finish high school? What year?

A. Phnom Penh B. Province (please specify:_____)

Year: _____

Q4. What year did you attend this university? _____

Q5. Where do you live during this current school year?

A. House with parents
B. House with relatives
C. Pagoda
D. Rented apartment

Q6. How long have you been learning full-time English (from 2.5 to 3 hours per day and more than three days per week) before entering the current university?

_____ (number of months or years)

Q7. How long have you been learning part-time English (1.5 hours per day or less) before entering the current university? _____ (number of months or years)

Q8 (A) what was the highest level of English class you last attended before you were enrolled at the current university?

A. Pre-intermediate

B. Intermediate

C. Upper-intermediate

D. Advanced

Q8 (B) What kind of class is it?

A. Full-time English

B. Part-time English

Q9. At present, do you study at any other university?

A. Yes (If "Yes", please specify your major_____)

B. No

Q10. At present, how many hours do you work per week? _____ (Write "Zero" if you are not employed)

Q11. What is the highest level of education that your parent(s) completed? (Circle ONE answer in each of the following options) (6 = completed a doctoral degree; 5 = completed a master's degree; 4 = completed a bachelor's degree; 3 = completed an associate's degree; 2 = completed high school; 1 = did not finish high school)

Mother	6	5	4	3	2	1
Father	6	5	4	3	2	1

Q12. What are your parents' jobs? (If he/she is not working now, please report his last job.)

Father: _____

Mother: _____

Q13. On average, how much money do you have or are you provided for YOUR overall living (daily expenses such as food, petrol…etc.) and study costs (excluding school fee and family expenses) PER WEEK?

_____ (in Riels)

Q14. Do you have any concern about paying your school fee?

5 = very much 4 = a lot 3 = some 2 = very little 1 = none

Q15. How many English books do you have at home? _____ (Write "Zero" if you don't have)

Q16. Which of the following do you have in your home?

A. A desk to study	Yes	No
B. A room of your own	Yes	No
C. A quiet place to study	Yes	No
D. A computer you can use for school work	Yes	No
E. Internet service	Yes	No
F. A dictionary	Yes	No

Other information

Q17. In the ***PAST TWO MONTHS***, how many hours a week (on average) did you usually spend outside class on activities related to your study? Write Zero if you've never done any of the activities below. This question refers to Core English subject ONLY.

A. Reading course-related materials at home _____

B. Reading course-related materials at school/library _____

C. Doing homework at home _____

D. Doing homework at school/library _____

Q18. Did you ever do each of the following activities in the ***PAST TWO MONTHS***?

This question refers to Core English subject **ONLY**. Response options: 6 = ***always (100%)***; 5 = ***very often (80%)***; 4 = ***often (60%)***; 3 = ***sometimes (40%)***; 2 = ***rarely (20%)***; 1 = ***never (0%)***

1. Came to class without completing the assigned readings.	6	5	4	3	2	1
2. Turned in homework late.	6	5	4	3	2	1
3. Turned in homework with poor quality.	6	5	4	3	2	1
4. Came to class without completing homework.	6	5	4	3	2	1

5. Did additional readings on topics introduced in class.	6	5	4	3	2	1
6. Read new materials as a preparation for the next class.	6	5	4	3	2	1
7. Summarized information from your class notes or readings.	6	5	4	3	2	1
8. Used a dictionary to search for the meaning of new words before class.	6	5	4	3	2	1
9. Contributed ideas to whole class discussions.	6	5	4	3	2	1
10. Asked questions in class when you don't understand.	6	5	4	3	2	1
11. Took detailed notes during class.	6	5	4	3	2	1
12. Made a class presentation from your group work.	6	5	4	3	2	1
13. Used a dictionary to search for the meaning of new words during class.	6	5	4	3	2	1
14. Worked actively with other students on the assigned task(s) in small group activities in class.	6	5	4	3	2	1
15. Discussed ideas from your readings or classes with other students outside class.	6	5	4	3	2	1
16. Asked for help from friends when having a learning problem.	6	5	4	3	2	1
17. Taught or helped other students regarding learning.	6	5	4	3	2	1
18. Had reviews of your performance on homework or quizzes with other students.	6	5	4	3	2	1
19. Had discussions with other students on learning difficulties.	6	5	4	3	2	1
20. Asked your teacher for suggested reading materials.	6	5	4	3	2	1
21. Discussed your learning difficulties with your teacher.	6	5	4	3	2	1

22. Discussed with your teacher how to improve your study skills.	6	5	4	3	2	1
23. Received prompt comments/feedback on your academic work (e.g. homework, quizzes, tests or assignments).	6	5	4	3	2	1
24. Discussed ideas from your readings or classes with your teacher.	6	5	4	3	2	1

Q19. Below are statements about your Core English teacher's teaching behaviors in class. What would best describe his or her teaching behaviors in the ***PAST TWO MONTHS***? Response options: 6 = ***always (100%)***; 5 = ***very often (80%)***; 4 = ***often (60%)***; 3 = ***sometimes (40%)***; 2 = ***rarely (20%)***; 1 = ***never (0%)***

1. His/her presentation of course material was well organized.	6	5	4	3	2	1
2. He/she was well prepared for class.	6	5	4	3	2	1
3. Class time was used effectively.	6	5	4	3	2	1
4. Course goals and requirements were clearly explained.	6	5	4	3	2	1
5. He/she did not have a good command of what he/she was teaching.	6	5	4	3	2	1
6. He/she gave clear explanations.	6	5	4	3	2	1
7. He/she made good use of examples and illustrations to explain difficult points.	6	5	4	3	2	1
8. He/she effectively reviewed and summarized the material.	6	5	4	3	2	1
9. He/she interpreted abstract ideas and theories clearly.	6	5	4	3	2	1
10. He/she gave you homework that helped in learning the course material.	6	5	4	3	2	1

11.	He/she gave you extra reading material that helped in learning the course material.	6	5	4	3	2	1
12.	He/she encouraged you to express divergent thinking with peers.	6	5	4	3	2	1
13.	He/she did not provide opportunities for you to work with other students.	6	5	4	3	2	1
14.	He/she raised challenging questions for discussion.	6	5	4	3	2	1
15.	He/she encouraged questions and comments from you.	6	5	4	3	2	1
16.	He/she used students' work as the basis of discussion.	6	5	4	3	2	1
17.	He/she asked you to explain the materials in class.	6	5	4	3	2	1
18.	He/she asked you to point out the difficult points of the materials in class.	6	5	4	3	2	1
19.	He/she got involved in your group discussion.	6	5	4	3	2	1
20.	He/she enabled students of different abilities to answer the questions.	6	5	4	3	2	1
21.	He/she offered helps to you when you had a problem(s).	6	5	4	3	2	1
22.	He/she praised you when you did well.	6	5	4	3	2	1
23.	He/she effectively checked your homework.	6	5	4	3	2	1
24.	He/she effectively checked your understanding through quizzes.	6	5	4	3	2	1
25.	He/she checked if you had learnt the material well before going on to new material.	6	5	4	3	2	1
26.	He/she gave feedback that helped improve your understanding.	6	5	4	3	2	1

27. He/she gave you feedback on assessment tasks timely.	6	5	4	3	2	1
28. He/she was serious about your performance.	6	5	4	3	2	1

Q20. Overall, how satisfied are you with the education you are receiving at the current university?

A. very satisfied B. satisfied C. neither satisfied nor dissatisfied

D. dissatisfied E. very dissatisfied

Q21. What would best describe the following aspects of the university at which you are attending? Response options: 5 = ***Very strict***; 4 = ***Strict;*** 3 = ***Somewhat strict***; 2 = ***less strict;*** 1 = ***not strict at all***

A. School admission	5	4	3	2	1
B. Regulations on student attendance/absenteeism	5	4	3	2	1
C. Regulations on cheating during quizzes or tests	5	4	3	2	1

Q22. In the ***PAST TWO MONTHS***, were you ever been given opportunities to attend each of the activities below at your current university? Please write down the ***NUMBER* of *TIMES*** or ***ZERO*** if you have never been given any opportunities.

A. Workshops on learning/study skills _____

B. Study clubs _____

C. Counseling services _____

Thanks for your cooperation.

Appendix A-2: A questionnaire survey (Cambodian language version)

លេខកូដ:……

កម្រងសំនួរ

គោលបំណងនៃការសិក្សាស្រាវជ្រាវខាងក្រោមនេះ គឺដើម្បីស្វែងយល់អំពីបទពិសោធន៍នៃការសិក្សាទាំងឡាយដែលមាន **ប្រសិទ្ធភាពសំរាប់ការសិក្សារបស់និស្សិតកម្ពុជា** នាពេលបច្ចុប្បន្ន និងពិនិត្យមើលបញ្ហាពាក់ព័ន្ធដែលជាឧបសគ្គធ្វើអោយនិស្សិតមិនអាចទទួលបានលទ្ធផលល្អក្នុងការសិក្សា។

ចំលើយដ៏***ស្មោះត្រង់***បស់អ្នកគឺមានសារៈសំខាន់ណាស់ចំពោះការសិក្សារបស់អ្នកនិងនិស្សិតដែលកំពុងសិក្សានៅបណ្តាគ្រឹះស្ថានឧត្តមសិក្សានានា។ ទន្ទឹមនឹងនេះលទ្ធផលនៃការសិក្សានេះអាចជាព័ត៌មានដ៏សំខាន់មួយសំរាប់ការអភិវឌ្ឍន៍នូវយុទ្ធសាស្ត្រផ្សេងៗដើម្បីផ្តល់នូវបរិយាកាសសិក្សាដ៏សមស្របមួយដល់និស្សិតដែលមកពីប្រភពផ្សេងៗ។

ដើម្បីរក្សាភាពសម្ងាត់ រាល់ព័ត៌មានទាក់ទងនឹងប្រវត្តិរូបឬការសិក្សារបស់អ្នកគឺនឹង***មិនបង្ហាញឬរាយការណ៍***ទៅអ្នកគ្រូ លោកគ្រូ ឬក៏សាលារបស់អ្នកឡើយ ទោះក្នុងរូបភាពណាក៏ដោយ។ ចំលើយរបស់អ្នកគឺនឹងត្រូវបានរក្សាភាពសម្ងាត់ ១០០% និងមិនយកទៅប្រើប្រាស់ក្រៅពីគោលបំណងនៃការស្រាវជ្រាវនេះឡើយ។ ការចូលរួមឆ្លើយសំនួរទាំងឡាយខាងក្រោមនេះគឺជា***ការស្ម័គ្រចិត្ត***។

សូមអរគុណយ៉ាងជ្រាលជ្រៅសំរាប់ពេលវេលានិងការសហការរបស់អ្នក។ ប្រសិនបើមានសំនួរបញ្ជាក់បន្ថែម សូមទាក់ទងមកលេខ ០១២ ៨៧៧ ៨៦០ ។

ព័ត៌មានផ្ទាល់ខ្លួន

សូមផ្តល់ព័តិមានឬឆ្លើយសំនួរដូចខាងក្រោមដោយ***ស្មោះត្រង់*** តាមរយៈការ ***គូសរង្វង់*** ឬ ***បំពេញចន្លោះ***ទៅតាមប្រភេទនៃសំនួរ នីមួយៗ

១.ភេទ: ក.ប្រុស ខ.ស្រី

២.អាយុ:……

៣.មកពីវិទ្យាល័យ: ……ខែត្រឬក្រុង:……

បញ្ចាប់វិទ្យាល័យនៅ ខែ ឆ្នាំ:……

៤.ចូលរៀននៅមហាវិទ្យាល័យភាសាអង់គ្លេសនេះនៅខែ ឆ្នាំ:……

៥.បច្ចុប្បន្នស្នាក់នៅ

ក.ជាមួយឪពុកម្តាយ ខ.ជាមួយសាច់ញាតិ គ.រស់នៅខាងក្រៅ

(សូមបញ្ជាក់បន្ថែម:……)

៦.តើអ្នកធ្លាប់រៀនភាសាអង់គ្លេសពេញម៉ោង (Full-time English) រយៈពេលប៉ុន្មានខែឬឆ្នាំមុនពេលចូលរៀននៅមហាវិទ្យាល័យដែលអ្នកកំពុងសិក្សានាពេលបច្ចុប្បន្ន?**(ភាសាអង់គ្លេសពេញម៉ោងគឺគិតចាប់ពី *២ម៉ោងកន្លះទៅ៣ម៉ោងក្នុងមួយថ្ងៃ*និង *លើសពី៣ថ្ងៃ*ក្នុងមួយសប្តាហ៍)**.....

៧.តើអ្នកធ្លាប់រៀនភាសាអង់គ្លេសក្រៅម៉ោង (Part-time English) រយៈពេលប៉ុន្មានខែឬឆ្នាំមុនពេលចូលរៀននៅមហាវិទ្យាល័យដែលអ្នកកំពុងសិក្សានាពេលបច្ចុប្បន្ន?**(ភាសាអង់គ្លេសក្រៅម៉ោងគឺគិតពីចំនួន *មួយម៉ោងកន្លះក្នុងមួយថ្ងៃ ឬ តិចជាង*)** .....

៨(ក).តើកម្រិតភាសាអង់គ្លេសខ្ពស់បំផុតដែលអ្នកបានរៀននាពេលចុងក្រោយគេបង្អស់គឺកម្រិតណា?

ក.ថ្នាក់ក្រោមមធ្យម(pre-intermediate) **គ.**ថ្នាក់លើមធ្យម(upper-intermediate)

ខ.ថ្នាក់មធ្យម(intermediate) **ឃ.**ថ្នាក់ខ្ពស់(advanced)

៨(ខ).តើ **៨(ក)** ជាវគ្គភាសាអង់គ្លេសពេញម៉ោង (Full-time English) ឬ ភាសាអង់គ្លេសក្រៅម៉ោង(Part-time English)?

ក.ភាសាអង់គ្លេសពេញម៉ោង(Full-time English)

ខ.ភាសាអង់គ្លេសក្រៅម៉ោង(Part-time English)

៩.សព្វថ្ងៃតើអ្នករៀននៅមហាវិទ្យាល័យដ៏ទៃទៀតដែរឬទេ?

ក.រៀន(មុខជំនាញអ្វីខ្លះ?..... .....) **ខ.**មិនរៀន

១០. តើអ្នកធ្វើការប៉ុន្មានម៉ោងក្នុង ***មួយសប្តាហ៍***?(ចូរសរសេរលេខ ***"0"*** បើសិនអ្នកមិនមានធ្វើការងារអ្វីទេ) .....

១១.តើឪពុកម្តាយរបស់អ្នកមានកម្រិតវប្បធម៌កម្រិតណា? ចូរគូស***វង់***លើជំរើសណាមួយនៃចំលើយដូចខាងក្រោម*(៦=បញ្ចប់ថ្នាក់បណ្ឌិត, ៥=បញ្ចប់ថ្នាក់អនុបណ្ឌិត, ៤=បញ្ចប់ថ្នាក់បរិញ្ញាបត្រ, ៣=បញ្ចប់ថ្នាក់បរិញ្ញាបត្រវង, ២=បញ្ចប់វិទ្យាល័យ, ១=មិនបានបញ្ចប់វិទ្យាល័យ, ០=គ្មានចំលើយ)*

ម្តាយ	៦	៥	៤	៣	២	១	០
ឪពុក	៦	៥	៤	៣	២	១	០

១២.តើសព្វថ្ងៃឪពុកម្តាយរបស់អ្នកមានមុខរបរអ្វី?(ចូរប្រាប់ពីមុខរបរចុងក្រោយបង្អស់របស់គាត់ ប្រសិនបើគាត់គ្មានការងារទេក្នុងពេលបច្ចុប្បន្ននេះ)

ម្តាយ:……

ឪពុក:……

១៣.***ជាមធ្យម*** តើអ្នកមានប្រាក់ផ្ទាល់ខ្លួនឬក៏ទទួលប្រាក់ឧបត្ថម្ភពីគ្រួសារចំនួនប៉ុន្មាន***ក្នុងមួយសប្តាហ៍*** សំរាប់ចំណាយលើការរស់នៅ (ដូចជាម្ហូបអាហារ មធ្យោបាយធ្វើដំណើរ) និងសម្ភារៈសិក្សា? **(ចំណាយមិនរាប់បញ្ចូលថ្លៃបង់សាលាប្រចាំត្រីមាស ឆមាស និង ឆ្នាំនិងចំណាយ គ្រួសារទាំងមូល)**

……. ……..*(សូមគិតជាប្រាក់រៀល)*

១៤.តើសព្វថ្ងៃអ្នកមានការព្រួយបារម្ភលើបញ្ហាបង់ថ្លៃសាលាដែរឬទេ?

ក.ព្រួយបារម្ភយ៉ាងខ្លាំង **ខ.**ព្រួយបារម្ភខ្លាំង **គ.**ព្រួយបារម្ភខ្លះដែរ **ឃ.**ព្រួយបារម្ភបន្តិចបន្តួច **ង.**មិនព្រួយបារម្ភ

១៥.តើអ្នកមានសៀវភៅជាភាសាអង់គ្លេសប៉ុន្មានក្បាលនៅផ្ទះ? ……(ចូរសរសេរលេខ ***"0"***បើសិនអ្នកមិនមាន)

១៦.តើអ្នកមានអ្វីខ្លះនៅផ្ទះ?

ក.តុសំរាប់សិក្សា	មាន	មិនមាន
ខ.បន្ទប់ផ្ទាល់ខ្លួន	មាន	មិនមាន
គ.កន្លែងស្ងាត់សំរាប់សិក្សា	មាន	មិនមាន
ឃ.កុំព្យូទ័រប្រើសំរាប់ធ្វើកិច្ចការសាលា	មាន	មិនមាន
ង.សេវា Internet	មាន	មិនមាន
ច.វចនានុក្រមភាសាអង់គ្លេស	មាន	មិនមាន

ឆ. សម្ភារៈផ្សេងៗដែលជាជំនួយដល់ការសិក្សារបស់អ្នក……

ព័ត៌មានផ្សេងៗ

១៧.ក្នុងកំឡុងពេល ***២ខែចុងក្រោយនេះ*** តើអ្នក ***ជាមធ្យម*** ចំណាយពេលប៉ុន្មាន ***ម៉ោងក្នុងមួយសប្តាហ៍*** លើសកម្មភាពរៀនក្រៅថ្នាក់សំរាប់មុខវិជ្ជា Core English? (ចូរសរសេរលេខ ***"0"*** ប្រសិនបើអ្នកមិនបានចំណាយពេលអ្វីសោះ)

ក. អានឯកសារមេរៀនឬទាក់ទងនឹងមេរៀននៅផ្ទះ ……

ខ. អានឯកសារមេរៀនឬទាក់ទងនឹងមេរៀននៅសាលាឬបណ្ណាល័យ ……

គ. ធ្វើកិច្ចការសាលានៅផ្ទះ ……

ឃ. ធ្វើកិច្ចការសាលានៅសាលាឬបណ្ណាល័យ ……

១៨.ក្នុងកំឡុងពេល ***២ខែចុងក្រោយនេះ*** សំរាប់មុខវិជ្ជា Core English តើអ្នកធ្លាប់ធ្វើសកម្មភាពទាំងឡាយដូចខាងក្រោមដែរឬទេ? *ចូរគូស**រង្វង់**ពីលើលេខ (**៦, ៥, ៤, ៣, ២, ១**) ដែលត្រូវនឹងអ្នក។*

៦=តែងតែឬ សឹងតែអនុវត្តគ្រប់ពេល(Always=១០០%)

៥=ជាធម្មតា (Usually=៨០%)

៤=ជារឿយៗ (Often=៦០%)

៣=ជួនកាល (Sometimes=៤០%)

២=ដោយកម្រ (Rarely=២០%)

១=មិនដែល (Never=0%)

១.មករៀនមិនបានអាននូវឯកសារដែលគ្រូកំណត់	៦	៥	៤	៣	២	១
២.ប្រគល់កិច្ចការសាលា(លំហាត់)អោយគ្រូយឺត	៦	៥	៤	៣	២	១
៣.ប្រគល់កិច្ចការសាលា(លំហាត់)មិនពេញលេញឬមិនសូវល្អអោយគ្រូ	៦	៥	៤	៣	២	១
៤.មករៀនមិនបានធ្វើកិច្ចការសាលា(លំហាត់)	៦	៥	៤	៣	២	១
៥.អានឯកសារបន្ថែមទាក់ទងនឹងអ្វីដែលគ្រូបានបង្រៀន	៦	៥	៤	៣	២	១
៦.អានឯកសារពាក់ព័ន្ធ នឹងមេរៀនម៉ោងក្រោយ ទុកជាមុន	៦	៥	៤	៣	២	១

៧.សង្ខេបកំណត់ត្រាឬព័ត៌មានដែលបានអាន	៦	៥	៤	៣	២	១
៨.ប្រើវចនានុក្រមដើម្បីស្វែងយល់អត្ថន័យនៃពាក្យថ្មីៗ មុននឹងទៅសាលា	៦	៥	៤	៣	២	១
៩.ផ្តល់គំនិតឬយោបល់ក្នុងការពិភាក្សារួមនៅក្នុងថ្នាក់	៦	៥	៤	៣	២	១
១០.សួរសំនួរគ្រូឬមិត្តភ័ក្តិនៅពេលមិនយល់	៦	៥	៤	៣	២	១
១១.កត់ត្រាលំអិតនូវអ្វីដែលរៀនក្នុងថ្នាក់	៦	៥	៤	៣	២	១
១២.ធ្វើបទបង្ហាញតំណាង ក្រុមកិច្ចការ	៦	៥	៤	៣	២	១
១៣.ប្រើវចនានុក្រមដើម្បីស្វែងយល់អត្ថន័យនៃពាក្យថ្មីៗ នៅពេលកំពុងរៀនក្នុងថ្នាក់	៦	៥	៤	៣	២	១
១៤.ចូលរួមយ៉ាងសកម្មជាមួយសិស្សដ៏ទៃទៀតនាពេលធ្វើកិច្ចការជាក្រុមនៅក្នុងថ្នាក់	៦	៥	៤	៣	២	១
១៥.ពិភាក្សាអ្វីដែលអានឬធ្វើក្នុងថ្នាក់ជាមួយសិស្សដ៏ទៃទៀត នៅខាងក្រៅថ្នាក់	៦	៥	៤	៣	២	១
១៦.សុំយោបល់ពីមិត្តភ័ក្តិនៅពេលមានបញ្ហានឹងការសិក្សា	៦	៥	៤	៣	២	១
១៧.បង្រៀនឬជួយសិស្សដ៏ទៃពីអ្វីដែលទាក់ទងការសិក្សា	៦	៥	៤	៣	២	១
១៨.ពិភាក្សាវែកញែកលើលទ្ធផលនៃកិច្ចការសាលាឬលំហាត់ខ្លីៗដែលបានធ្វើជាមួយសិស្សដ៏ទៃ	៦	៥	៤	៣	២	១
១៩.ពិភាក្សាជាមួយសិស្សដ៏ទៃ លើបញ្ហាលំបាកទាក់ទងនឹងការសិក្សា	៦	៥	៤	៣	២	១
២០. សុំយោបល់ផ្សេងៗពីគ្រូរបស់អ្នក អំពីឯកសារដែលគួរអាន	៦	៥	៤	៣	២	១
២១. ពិភាក្សាលើភាពលំបាកទាក់ទងនឹងការរៀនរបស់អ្នកជាមួយគ្រូរបស់អ្នក	៦	៥	៤	៣	២	១
២២. ពិភាក្សាអំពីរបៀបបង្កើននូវជំនាញនៃការរៀនជាមួយគ្រូរបស់អ្នក	៦	៥	៤	៣	២	១

២៣. ទទួលយោបល់ឬការឆ្លើយតបលើការសិក្សារបស់អ្នកពីគ្រូរបស់អ្នក	៦	៥	៤	៣	២	១
២៤. ពិភាក្សានូវអ្វីដែលអ្នកបានអានឬរៀនក្នុងថ្នាក់ជាមួយគ្រូរបស់អ្នក	៦	៥	៤	៣	២	១

១៩.របាយការណ៍ខាងក្រោមនេះបង្ហាញពីសកម្មភាពបង្រៀនរបស់គ្រូមុខវិជ្ជាCore Englishរបស់អ្នក។ តើ ក្នុងកំឡុងពេល***២ខែចុងក្រោយនេះ*** គាត់មានសកម្មភាពបង្រៀនយ៉ាងដូចម្តេច?*ចូរគូស**រង្វង់**ពីលើលេខ (៦, ៥, ៤, ៣, ២, ១) ដែលត្រូវនឹងគ្រូរបស់អ្នក។*

៦=តែងតែឬ សឹងតែអនុវត្តគ្រប់ពេល(Always=១០០%)

៥=ជាធម្មតា (Usually=៨០%)

៤=ជារឿយៗ (Often=៦០%)

៣=ជួនកាល (Sometimes=៤០%)

២=ដោយកម្រ (Rarely=២០%)

១=មិនដែល (Never=0%)

របាយការណ៍	**Always ១០០%**	**Usually ៨០%**	**Often ៦០%**	**Sometimes ៤០%**	**Rarely ២០%**	**Never 0%**
១.គាត់បង្រៀនតាមលំដាប់លំដោយបានល្អ	៦	៥	៤	៣	២	១
២.គាត់មានការរៀបចំបានល្អសំរាប់ការបង្រៀន	៦	៥	៤	៣	២	១
៣.គាត់ប្រើប្រាស់ពេលវេលាក្នុងការបង្រៀនយ៉ាងប្រសិទ្ធភាព	៦	៥	៤	៣	២	១
៤.គាត់ពន្យល់នូវគោលបំណងឬអ្វីដែលត្រូវរៀនក្នុងមេរៀននីមួយៗ បានច្បាស់	៦	៥	៤	៣	២	១
៥.គាត់មិនមានការយល់ដឹងខ្ពស់នូវអ្វីដែលកំពុងបង្រៀន	៦	៥	៤	៣	២	១

៦.គាត់ពន្យល់មេរៀនបានយ៉ាងល្អនិងច្បាស់លាស់	៦	៥	៤	៣	២	១
៧.គាត់ផ្តល់ឧទាហរណ៍ឬការបកស្រាយដើម្បីពន្យល់លើចំនុចលំបាកៗ បានល្អ	៦	៥	៤	៣	២	១
៨.គាត់រំលឹកឬសង្ខេបមេរៀនយ៉ាងល្អនិងមានប្រសិទ្ធភាព	៦	៥	៤	៣	២	១
៩.គាត់បកស្រាយទ្រឹស្តីឬគំនិតដែលពិបាកយល់ បានច្បាស់ល្អ	៦	៥	៤	៣	២	១
១០.គាត់ផ្តល់កិច្ចការសំរាប់ធ្វើនៅផ្ទះដែលជួយដល់ការសិក្សារបស់អ្នក	៦	៥	៤	៣	២	១
១១.គាត់ផ្តល់ឯកសារសំរាប់អានបន្ថែមដែលជួយដល់ការសិក្សារបស់អ្នក	៦	៥	៤	៣	២	១
១២.គាត់លើកទឹកចិត្តអ្នកឲ្យបញ្ចេញយោបល់ផ្សេងៗជាមួយមិត្តដ៏ទៃ	៦	៥	៤	៣	២	១
១៣.គាត់មិនផ្តល់ឱកាសឲ្យអ្នកធ្វើការងារជាមួយមិត្តដ៏ទៃ	៦	៥	៤	៣	២	១
១៤.គាត់លើកយកសំនួរលំបាកៗ (challenging questions) សំរាប់ឲ្យអ្នកធ្វើ ការពិភាក្សាជាក្រុម ដើម្បីស្ទាបស្ទង់សមត្ថភាពរបស់អ្នក	៦	៥	៤	៣	២	១
១៥.គាត់លើកទឹកចិត្តអ្នកឲ្យមានការចោទសួរឬបញ្ចេញយោបល់ក្នុងថ្នាក់	៦	៥	៤	៣	២	១
១៦.គាត់យកចំនុចខ្វះខាតនៃកិច្ចការ ឬការយល់ដឹងរបស់អ្នកជាមូលដ្ឋាន សំរាប់ធ្វើ	៦	៥	៤	៣	២	១

ការពិភាក្សាក្នុងថ្នាក់						
១៧.គាត់តម្រូវឲ្យអ្នកពន្យល់មេរៀនក្នុងថ្នាក់	៦	៥	៤	៣	២	១
១៨.គាត់បានឲ្យអ្នកលើកចំនុចលំបាកៗនៃមេរៀន មកពិភាក្សានៅក្នុងថ្នាក់	៦	៥	៤	៣	២	១
១៩.គាត់ចូលរួមជាមួយក្រុមពិភាក្សារបស់អ្នក	៦	៥	៤	៣	២	១
២០.គាត់ផ្តល់ឱកាសឲ្យអ្នកឆ្លើយសំនួរផ្សេងៗក្នុងពេលរៀន	៦	៥	៤	៣	២	១
២១.គាត់ផ្តល់ជាយោបល់គាំទ្រផ្សេងៗនៅពេលដែលអ្នកមានបញ្ហា ក្នុងការសិក្សា	៦	៥	៤	៣	២	១
២២.គាត់សរសើរអ្នកនៅពេលដែលអ្នកធ្វើកិច្ចការបានល្អ	៦	៥	៤	៣	២	១
២៣.គាត់ពិនិត្យកិច្ចការសាលារបស់អ្នកយ៉ាងប្រសិទ្ធភាព	៦	៥	៤	៣	២	១
២៤.គាត់ពិនិត្យការយល់ដឹងរបស់អ្នកតាមរយៈលំហាត់ខ្លីៗយ៉ាងប្រសិទ្ធភាព	៦	៥	៤	៣	២	១
២៥.គាត់ពិនិត្យមើលថាតើអ្នកបានយល់ពីអ្វីខ្លះក្នុងមេរៀនចាស់ មុននឹងបន្តរទៅមេរៀនថ្មី	៦	៥	៤	៣	២	១
២៦.គាត់ផ្តល់ការវាយតម្លៃ ឬយោបល់តបមកវិញ ដែលអាចជួយដល់ការយល់ដឹងរបស់អ្នក	៦	៥	៤	៣	២	១
២៧.គាត់ផ្តល់យោបល់មកវិញទាន់ពេលវេលា	៦	៥	៤	៣	២	១

២៨.គាត់តឹងតែងក្នុងការវាយតម្លៃលើសមត្ថភាពរបស់អ្នក	៦	៥	៤	៣	២	១

២០.ជារួមតើអ្នកមានភាពពេញចិត្តកម្រិតណាទៅលើការអប់រំដែលអ្នកទទួលបានពីមហាវិទ្យាល័យដែលអ្នកកំពុងសិក្សានាពេលបច្ចុប្បន្ន?

ក.ពេញចិត្តខ្លាំង **ខ.**ពេញចិត្ត **គ.**ពេញចិត្តជាមធ្យម **ឃ.**មិនសូវពេញចិត្ត

ង.មិនពេញចិត្តសោះ

២១.តើសាលារបស់អ្នកមានគោលការណ៍ឬវិន័យយ៉ាងដូចម្តេច?

(៥ = តឹងរឹងយ៉ាងខ្លាំង , ៤ = តឹងរឹង , ៣ = តឹងរឹងជាមធ្យម, ២ = មិនសូវតឹងរឹង, ១ = មិនតឹងរឹងសោះ)

ក.ការជ្រើសរើសសិស្សចូលរៀន	៥	៤	៣	២	១
ខ.ការដាក់វិន័យលើអវត្តមានសិស្ស	៥	៤	៣	២	១
គ.ការដាក់វិន័យលើការចំលងឯកសារនាពេលប្រលងផ្សេងៗ	៥	៤	៣	២	១

២២.ក្នុងកំឡុងពេល***២ខែចុងក្រោយនេះ***តើសាលារបស់អ្នកបានធ្លាប់ផ្តល់ឱកាសឲ្យអ្នកចូលរួមសកម្មភាពដូចខាងក្រោមដែរឬទេ?(ចូរសរសេរជា***ចំនួនដង*** ឬលេខ***"0"*** ប្រសិនបើសាលារបស់អ្នកមិនបានធ្លាប់ផ្តល់ឱកាសអ្វីទេ)

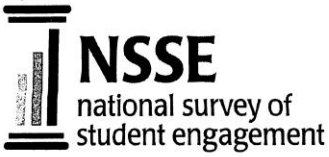
ក.សិក្ខាសាលាទាក់ទងនឹងការសិក្សាឬជំនាញផ្សេងៗនៃការសិក្សា ……

ខ.ក្លឹបសិក្សាផ្សេងៗ ……

គ.ការផ្តល់សេវាប្រឹក្សាដល់សិស្ស ……

សូមអគុណ

Appendix B: Requests to use NSSE survey items and item usage agreement



REQUESTS TO USE NSSE SURVEY ITEMS

The National Survey of Student Engagement's (NSSE) survey instrument, *The College Student Report*, is copyrighted and the copyright is owned by The Trustees of Indiana University. Any use of survey items contained within *The College Student Report* is prohibited without prior written permission from Indiana University.

In addition, as a non-subsidized, cost-recovery project, the NSSE program may ask researchers who wish to borrow from, adapt, or translate the NSSE instrument to pay a fair price for the time and effort the NSSE staff put into forming such Agreements, and as reasonable estimate of the value of NSSE's intellectual property.

"National Survey of Student Engagement", "NSSE", and the NSSE logo are registered with the U.S. Patent and Trademark Office. Except when citing the items source, these elements may not be incorporated without permission in materials developed under this agreement, including but not limited to surveys, Web sites, reports, and promotional materials.

In addition, such Agreements typically entail the following terms briefly described below, but to appear in formal legal detail in the actual Agreement:

1. That all details of the license be negotiated in advance and in writing, which is incorporated by reference into the Agreement;
2. The Agreement does not include any right to sublicense others. Any different or repeated use of the item(s) require an additional license;
3. The researcher agrees:
    a. To provide to NSSE frequency distributions and means on the licensed item(s);
    b. On the survey form itself, and in all publications or presentations of data obtained through the licensed item(s), to note that the items were used with permission from Indiana University;
    c. To provide to NSSE a copy of all surveys that include NSSE items or modified items; and
    d. To provide to NSSE a copy of all reports, presentations, analyses, or other materials in which the borrowed item(s) are presented, discussed, or analyzed.
4. The Agreement will include an expiration date.
5. Other terms as deemed necessary to govern the Agreement as determined by either party.

Indiana University Center for Postsecondary Research
1900 East Tenth Street • Eigenmann Hall, Suite 419 • Bloomington, IN 47406
Phone: (812) 856-5824 • Fax: (812) 856-5150 • E-mail: nsse@indiana.edu • Web Address: www.nsse.iub.edu
Last revised June 2006

NSSE
national survey of
student engagement

Proposal to Use Items from *The College Student Report*

Contact information:

June 11, 2013
Date

HENG	KRENG
Last Name	First Name

College student
Title

Hiroshima University, Japan
Institution

Office

Hiroshima Prefecture, Higashi-Hiroshima City, Saijo-Cho Jike 7939-5 B 104
Address

Hiroshima	Higashi-Hiroshima	739-0041	Japan
City	State/Province	Zip or Postal Code	Country

090-9412-7544	
Phone	Fax

hkr_ifl@yahoo.com
Email

NSSE
national survey of
student engagement

Please answer the following questions in as much detail as possible. Feel free to attach additional documents in support of the proposal.

1. State the objective of your survey:
   As a partial fulfillment of a PhD completion

2. Identify the specific item(s) to be used:
   In a questionnaire survey (Q 18-20)

3. To whom will the survey be administered?
   First-year students at nine universities in Phnom Penh City, Cambodia

4. How will the survey be administered—through oral interviews, on paper, electronically, a combination of methods, other?
   A questionnaire survey

5. Describe your sampling methodology.
   Cluster sampling

6. State your maximum number of survey recipients.
   937

7. List your expected start and end dates for survey administration. Please indicate if you intend to use these items on a continuing basis (e.g., each semester or year).
   From December 2011-January 2012 (a one shot-survey)

8. Append a copy of the proposed survey instrument to be used, noting where the NSSE items are located.
   Q 18-20 (Please see the attached file)

9. Please list all sponsoring organizations and funding sources for this study.
   None (Personal expenses on the survey)

10. If your institution is NSSE eligible, will a NSSE administration be under way at the same time as your proposed research?
    No

11. Provide the name, title, and organization of your principal investigator, if different from the contact person described above.
    The research was the investigator.

12. If you are a student working on your dissertation or other research, please list your advisor.
    Hotta Taiji, Hiroshima University

Indiana University Center for Postsecondary Research
1900 East Tenth Street • Eigenmann Hall, Suite 419 • Bloomington, IN 47406
Phone: (812) 856-5824 • Fax: (812) 856-5150 • E-mail: nsse@indiana.edu • Web Address: www.nsse.iub.edu
Last revised June 2006

NSSE
national survey of
student engagement

The College Student Report
Item Usage Agreement

The National Survey of Student Engagement's (NSSE) survey instrument, *The College Student Report*, is copyrighted and the copyright is owned by The Trustees of Indiana University. Any use of survey items contained within *The College Student Report* is prohibited without prior written permission from Indiana University. When fully executed, this Agreement constitutes written permission from the University, on behalf of NSSE, for the party named below to use an item or items from *The College Student Report* in accordance with the terms of this Agreement.

In consideration of the mutual promises below, the parties hereby agree as follows:

1) The University hereby grants **Kreng Heng** ("Licensee") a nonexclusive, worldwide, irrevocable license to use, reproduce, distribute, publicly display and perform, and create derivatives from, in all media now known or hereafter developed, the item(s) listed in the proposal attached as Exhibit A, solely for the purpose of including such item(s) in the survey activity described in Exhibit A, which is incorporated by reference into this Agreement. This license does not include any right to sublicense others. This license only covers the survey instrument, time frame, population, and other terms described in Exhibit A. Any different or repeated use of the item(s) shall require an additional license.

2) "National Survey of Student Engagement", "NSSE", and the NSSE logo are registered with the U.S. Patent and Trademark Office. Except as provided in part 3c below, these elements may not be incorporated without permission in materials developed under this agreement, including but not limited to surveys, Web sites, reports, and promotional materials.

3) In exchange for the license granted in section 1, Licensee agrees:

   a) there will be no licensing fee to use NSSE items for the purposes described in Exhibit A;

   b) to provide to NSSE frequency distributions and means on the licensed item(s);

   c) on the survey form itself, and in all publications or presentations of data obtained through the licensed item(s), to include the following citation: "Items *xx* and *xx* used with permission from *The College Student Report,* National Survey of Student Engagement, Copyright 2001-13 The Trustees of Indiana University";

   d) to provide to NSSE a copy of any derivatives of, or alterations to, the item(s) that Licensee makes for the purpose of Licensee's survey ("modified items"), for NSSE's own nonprofit, educational purposes, which shall include the use of the modified items in *The College Student Report* or any other survey instruments, reports, or other educational or professional materials that NSSE may develop or use in the future. Licensee hereby grants the University a nonexclusive, worldwide, irrevocable, royalty-free license to use,

Indiana University Center for Postsecondary Research
1900 East Tenth Street • Eigenmann Hall, Suite 419 • Bloomington, IN 47406
Phone: (812) 856-5824 • Fax: (812) 856-5150 • E-mail: nsse@indiana.edu • Web Address: www.nsse.iub.edu

NSSE
national survey of
student engagement

reproduce, distribute, create derivatives from, and publicly display and perform the modified items, in any media now known or hereafter developed; and

e) to provide to NSSE, for its own nonprofit, educational purposes, a copy of all reports, presentations, analyses, or other materials in which the item(s) licensed under this Agreement, or modified items, and any responses to licensed or modified items, are presented, discussed, or analyzed. NSSE shall not make public any data it obtains under this subsection in a manner that identifies specific institutions or individuals, except with the consent of the Licensee.

4) This Agreement expires on January 31, 2012.

The undersigned hereby consent to the terms of this Agreement and confirm that they have all necessary authority to enter into this Agreement.

For The Trustees of Indiana University:

Alex McCormick — 21 June 2013
Alexander C. McCormick — Date
Director
National Survey of Student Engagement

For Licensee:

Kreng Heng — 4 July 2013
Kreng Heng — Date
Doctoral Student
Hiroshima University

Hotta Taiji — 4 July, 2013
Hotta Taiji — Date
Dissertation Advisor
Hiroshima University

Indiana University Center for Postsecondary Research
1900 East Tenth Street • Eigenmann Hall, Suite 419 • Bloomington, IN 47406
Phone: (812) 856-5824 • Fax: (812) 856-5150 • E-mail: nsse@indiana.edu • Web Address: www.nsse.iub.edu

Appendix C: An English achievement test

Code: _____

REVISION TEST (55 minutes)

SECTION I: VOCABULARY (25 marks)

A. COLLOCATION

Choose the correct answer a, b, or c to fill in each of the following sentences. Write your answers in the BOXES provided. (5 marks)

1. The company is (A) _____a large profit, but in the meantime they're (B)_____ a lot of damage to the environment.
2. She was asked to (A) _____ a quick speech, but she (B) _____ her time.
3. After we've (A) _____ our homework, we should (B) _____ the washing up.
4. (A)_____ a look at all these mistakes you've (B) _____!
5. At first, he (A) _____ a great effort to (B) _____ an interest in his lessons.

1. (A)	a. making	b. taking	c. doing
(B)	a. making	b. taking	c. doing
2. (A)	a. make	b. take	c. do
(B)	a. made	b. took	c. did
3. (A)	a. done	b. taken	c. made
(B)	a. make	b. do	c. take
4. (A)	a. do	b. make	c. take
(B)	a. taken	b. done	c. made
5. (A)	a. took	b. made	c. did
(B)	a. take	b. do	c. make

Write your answers here.

1		2		3		4		5	
A	B	A	B	A	B	A	B	A	B

B. WORD FORMATION

Complete the following sentences with an appropriate form of word provided in the bracket by using the following prefixes or suffixes (-tion, -ary, un-, -y, -al, -ist, -er, -ee,-ance, -ed, -ment). ***NOT ALL*** *prefixes or suffixes are used, and* ***SOME*** *can be used* ***TWICE***. (10 marks)

Example:

0. John had been ____***un****employ****ed*****(employ)*** for almost six months. He's looking for a job now.

1. The twentieth century brought about_____ ***(revolution)*** changes in our lifestyles.
2. She complained to the company about its awful service and they sent her a written _____ ***(apologize)***.
3. Unfortunately, he lacked experience and the appropriate _____ ***(qualify)***.
4. It is an _____ ***(economic)*** car to run: it can do 20 kilometers on a liter of petrol.
5. He completed the course and was able to fill one of the _____ ***(vacant)*** at the company.
6. As a new _____ ***(employ)***, he found it difficult at first to work with other workers.
7. After a while, his _____ ***(attend)*** dropped as he found the work more demanding.
8. He stated that he didn't want to get rid of such an _____ ***(experience)*** worker.
9. Our request for permission to travel met with a complete _____ ***(refuse)*** from the authorities.
10. John agreed that he hadn't been doing very well, and offered his _____ ***(resign)***.

Write your answers here.

0. ***unemployed***

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

C. **SENTENCE COMPLETION (10 marks)**

Choose a suitable word to fill in each space in each sentence and write your answers in the ***BOXES*** *provided. Notice: There is one word that is not used.*

A. masterpiece	E. hectic	I. inconvenience
B. sensitive	F. commercial	J. terrified
C. sketch	G. bargain	K. noticeable
D. banquet	H. laughter	

1. His movie is not a _____success. He did not make a lot of money from it. He should have learnt more about his audiences' needs.
2. What a _____ day! I don't even have time to have dinner with my family.
3. There is a _____improvement of local people's income as the country's economy continues to grow.
4. After a long discussion, he and his friend had made a _____ to tell each other everything.
5. We apologize for the delay and regret any _____ it may have caused to your application. We will improve our services.
6. I think they are having a party now as their house is full of _____. They must have lots of fun.
7. John was really surprised to see his work become a _____ in the art gallery. He's going to be famous soon.
8. Mike is really talented. When I visited his house, he could quickly draw a _____ of his house in just a few minutes.
9. The police in my area are very slow to react to people's complaints. They need to be more _____to the needs of local communities.
10. Jane was _____ of losing her new boyfriend after having bad experiences with other men.

Write your answers here.

1	2	3	4	5	6	7	8	9	10

SECTION II: GRAMMAR (25 marks)

A. PRESENT SIMPLE AND PRESENT CONTINUOUS (5 marks)

*Choose the best endings for sentences 1-8. Write your answers (A or B) in the **BOXES** provided.*

Example:

0. Fiona is watching television	Ⓐ because her favorite film star is on.
	B. when she has time.
1. I am having my lunch	A. at one o'clock every day.
	B. early today as I have an appointment.
2. I do shopping	A. at the same time every week.
	B. today for a friend who's ill.
3. What are you doing	A. to your sister when she behaves badly?
	B. to your sister? Leave her alone!
4. The company's financial situation is improving	A. now that it has a new Chief Executive.
	B. when there is greater demand for its products.
5. Serge is thinking of retiring early	A. every time something bad happens at work.
	B. because he isn't happy at work anymore.

Write your answers here.

0	1	2	3	4	5
A					

B. FUTURE FORMS (5 MARKS)

*Choose the correct answer A, B, or C to fill in each gap and write your answers in the **BOXES** provided.*

1. Never walk under a ladder or you _____ ten years' bad luck.
   A. will have B. are going to have C. are having
2. Details of the president's visit are now confirmed. He _____ at the Castle Hotel for two days.
   A. will stay B. is going to stay C. is staying
3. I hear the government's announced they _____ taxes again.

A. will raise B. are going to raise C. are raising

4. I took these trousers back to the shop, but they _____ them without a receipt.
   A. won't change B. are not going to change C. are not changing
5. I've talked to my boss, but he's very unhelpful and _____ anything about the problem.
   A. won't do B. isn't going to do C. is not doing

Write your answers here.

1	2	3	4	5

C. MIXED TENSES (15 marks)

*Choose the correct tense A, B, C, or D given below the text and fill in each gap and write your answers in the **BOXES** provided.*

Mrs. Hay **(1)** _____ along a country road when she **(2)** _____ a man at the side of the road. He **(3)** _____ and pointing at his car. Mrs. Hay **(4)** _____ and **(5)** _____ the man if he was all right. "My car's broken down," said the man. "Where do you want to go?" asked Mrs. Hay. "London," replied the man.

"Well, I **(6)** _____ to London, but I **(7)** _____ you a lift to the station, if you like." On the way to the station they chatted. "**(8)** _____ you _____ in London?" asked Mrs. Hay. No, I don't. I **(9)** _____ my own business in Oxford. But today I **(10)** _____ dinner with a friend in London. We **(11)** _____ dinner together on the last Friday of every month. I promised to meet her at six o' clock.

'There's a train at 1.30. I don't think you **(12)** _____ late. 'When they arrived at the station, a train **(13)** _____ at the platform. "That's your train," said Mrs Hay. "You **(14)** _____ it if you're quick." After the man had got out of the car, Mrs Hay **(15)** _____.

1.	A. is driving	B. will drive	C. drove	D. was driving
2.	A. was seeing	B. saw	C. sees	D. is seeing
3.	A. is waving	B. was waving	C. waved	D. will be waving
4.	A. was stopping	B. was going to stop	C. stopped	D. stops
5.	A. asks	B. asked	C. was asking	D. will ask
6.	A. am not going	B. won't go	C. didn't go	D. was not going
7.	A. will give	B. give	C. gave	D. would give
8.	A. Did…work	B. Are…working	C. Do…work	D. Were you working
9.	A. am running	B. was running	C. run	D. ran
10.	A. have	B. had	C. am having	D. will have
11.	A. always have	B. always had	C. are always having	D. will always have
12.	A. are	B. will be	C. were	D. are being late
13.	A. was standing	B. stood	C. had stood	D. is standing
14.	A. are going to catch	B. would catch	C. catch	D. will catch
15.	A. was driving away	B. would drive away	C. drove way	D. is driving away

Write your answers here.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

SECTION III: READING (21 marks)

A. *Choose the best ending A, B, C or D for each paragraph. Write your answers in the* ***BOXES*** *provided.*

1. Long before there were airplanes, people wanted to be able to fly. Early scientists studied birds' wings to see how they worked. Then they tried to build wings of feathers. But when they actually tried to fly, they never
   A. spread their wings enough.
   B. stayed up for long.
   C. hurt themselves.
   D. fell to the ground.

2. Until recently the kiwi fruit was rare in most countries. All the kiwis came from far away New Zealand. They were transported a great distance and so they were expensive. Not many countries grow kiwis. The supply of this fruit has greatly increased and so

A. it has become even more expensive.
B. it is harder to get.
C. New Zealand has stopped producing it.
D. it has become less expensive.

3. We all know that monkeys are smart animals, but sometimes their intelligent is surprising. A psychologist once wanted to see just how smart a monkey was. He hung a banana high up in a monkey's cage. He put in several larges boxes and a stick. He wanted to see if the monkey could use the boxes and the stick to get the banana. The monkey looked at the banana, the boxes, and the stick. Then it took the psychologist's hand and led him to where the banana was hanging. It jumped up onto his shoulder and
   A. looked at the banana.
   B. reached the banana from there.
   C. jumped down onto one of the boxes.
   D. hit him with the stick.

4. Many people are afraid of snakes. It is true that poisonous snakes can make you very ill or even kill you. However, very few snakes are poisonous. Most snakes are harmless. In fact, they usually are afraid of people. If you meet a snake in your garden, it will probably
   A. bite you.
   B. slide quickly away.
   C. stay and watch you.
   D. come closer.

5. Vitamins are very important for good health. One vitamin that you need to have regularly is vitamin C. Certain fruits and vegetables are rich in this vitamin. Some examples are oranges, lemons, and grapefruits, as well as, red peppers and tomatoes. Vitamin C can be destroyed by heat, so it is a good idea
   A. to eat only cooked fruits and vegetables.
   B. to eat only vegetables that have vitamin C.
   C. to eat lots of uncooked fruits and vegetables.
   D. never to eat uncooked fruits and vegetables.

Write your answers here.

1	2	3	4	5

B. *Read this article and answer the questions choosing A, B, C or D. Write your answers in the BOXES provided.*

Farming for the future

Every year, more people face poverty and hunger and more of the earth's resources are ruined. The problems are enormous, but many experts believe that the situation is not hopeless. The solution will require big changes in how we think about agriculture, food, and our planet.

First of all, farmers everywhere need to develop methods that are less destructive to the environment. The change from single crop farming to a mixed crop system would be one important step. The planting of various crops improves the soil and helps prevent erosion. Erosion could further be prevented by planting trees to protect the fields from the wind. Another way farmers could improve their soil is to stop deep plowing. In fact, only a light plowing is necessary, or sometimes no plowing at all.

If the soil were treated better, farmers would not need to use chemical fertilizers. They could use natural animal and vegetable products instead. With mixed crops, farmers would also not need as much or any chemical insecticides. They could use other biological methods of controlling insects and disease.

Farmers could also help save some of the earth's precious supplies of water and petroleum. To save water, they could plant less "thirsty" crops, instead of the standard types of wheat or corn. They could also use watering systems that are much less wasteful. To save petroleum, farmers could make use of bio-gas generators for energy. These generators could be fueled by the vegetable and animal wastes of the farms. In less developed countries, bio-gas generators could reduce the need for firewood and so help save forests, as well.

In less developed countries, the small farmers need help. They need to learn more about crops that are better suited to the local conditions. They need to learn how to limit erosion and make the best use of their resources. But these farmers will never be successful without land for themselves and economic aid. This should be the aim of governments and

international agencies. The present policies of encouraging industry and cash crops are only making the situation worse.

The industrialized countries could use their economic resources to help bring about these changes. They also could make some changes in their own policies. At present, much food is wasted in these countries for political reasons. In Europe alone mountains of food and dairy products are thrown away every year. Eating habits, too, could be changed in these countries. For example, people often eat foods from distant places instead of local foods. The transportation of the imported foods adds to the global pollution problem. People in the industrialized countries also eat a lot of meat, especially beef. In fact, a large percentage of the grain grown in these countries is used for feeding cattle. If people in these countries ate less meat, there would be more grain to feed the hungry people of the world.

1. This article is about
   A. biological methods of farming.
   B. how we can change the way food is produced worldwide.
   C. how millions of people are facing hunger and poverty.
   D. farming around the world.

2. We can understand from this passage that single crop farming
   A. is destructive to the environment.
   B. is good for the environment.
   C. is cheaper for the farmer.
   D. does not cause erosion.

3. Deep plowing of the soil
   A. prevents erosion.
   B. improves the soil.
   C. causes erosion.
   D. helps the plants grow.

4. Mixed crop farming
   A. reduces erosion and the need for insecticides.
   B. increases erosion and the need for insecticides.

C. eliminates erosion and the need for insecticides.

D. does not affect erosion and the need for insecticides.

5. We can understand from this passage that farmers at present

A. use very little water on average.

B. are now very careful about their water use.

C. always use too much water.

D. often waste a lot of water.

6. Bio-gas generators on farm would

A. mean an increase in the use of other fuels.

B. encourage farmers to raise cash crops.

C. reduce the need for other fuels.

D. help farmers raise cattle.

7. The governments of less-developed countries

A. should encourage the growing of cash crops.

B. need to encourage people to less beef.

C. should increase the size of the farms.

D. need to help small farms.

8. People in industrialized countries could help by

A. eating more meat.

B. raising more cattle.

C. reducing the amount of beef they eat.

D. reducing the amount of grain they eat.

Write your answers here.

1	2	3	4	5	6	7	8

This is the end of the exam.

Appendix D-1: Interview protocol for students

Background information

Gender: _____ University attendance: _____

Age: _____ Place of origin: _____

Part one

1. What do you think about study at the university?
2. Based on your current learning experience, what types of ***learning activities*** are you more likely to invest more time and energy? Why?

    - Related-course reading outside class
    - Reading for pleasure
    - Academic preparation
    - Homework (late or poor in quality)
    - Whole class individual participation
    - Collaborative learning
    - Teacher-student interaction (on study problems, skills and feedback)

3. Based on your current learning experience, what types of ***learning activities*** are you less likely to invest more time and energy? Why?

4. What ***learning behaviors*** would help you do well in CE subject?
   What would not?

5. What kinds of things make it difficult for you to do well in college?

Part two

6. What do you think about your teacher's teaching?
    - Flow of lesson (teaching clarity and organization)
    - Time on discussion or self-learning (spoon-fed approach or student-centered /problem-based approach)
    - Support and feedback
    - Classroom practices to challenge students

7. Which one is typical of your teacher's teaching behaviors? Why?

8. What teaching conditions would help you do well in learning? What would not?

9. Overall, what are important factors that help you do well in college?

Appendix D-2: Interview protocol for teachers

Part one

1. How would you describe university students nowadays?

2. Based on your current teaching experience in class A, what types of ***learning activities*** are your students more likely to invest more time and energy? Why?

   - Related-course reading outside class
   - Reading for pleasure
   - Academic preparation
   - Homework (late or poor in quality)
   - Whole class individual participation
   - Collaborative learning
   - Teacher-student interaction (on study problems, skills and feedback)

3. Based on your current teaching learning experience in class A, what types of ***learning activities*** are your students less likely to invest more time and energy? Why?

4. What ***learning behaviors*** would help your year-one students do well in learning? What would not?

5. What makes it difficult for your students to do well in college?

Part two

6. What are your typical teaching behaviors?

   A. Flow of lesson (teaching clarity and organization)
   B. Time on discussion or self-learning (spoon-fed approach or student-centered /problem-based approach)
   C. Support and feedback
   D. Classroom practices to challenge students

7. What teaching conditions would help your year-one students do well in learning? What would not?

8. Overall, what are important factors that help your students do well in college?