

FACTORS INFLUENCING COLLEGE STUDENTS' ACADEMIC ACHIEVEMENT IN CAMBODIA: A CASE STUDY

Heng Kreng

Hiroshima University, Japan

Abstract

The purpose of this study is to address achievement gaps among Cambodian students attending an English higher education institution in Cambodia by exploring factors that contribute to their academic achievement. Using a hierarchical multiple regression on second-year students ($N=215$) and teachers ($N=23$), this study examined the relative influence of student engagement behaviors, students' background characteristics, and teacher quality on students' academic achievement. Both general and interaction effects by students' geographical origins were examined. The results suggested a variety of factors that positively predicted student achievement: the importance of students investing more efforts in homework or given tasks and whole-class participation, students' pre-college academic experience, teachers' teaching experience and course workload and difficulty. Interaction effect existed between students' pre-college academic experience and geographical origins. With these findings, some important implications for closing student achievement gaps are discussed.

Keyword: academic achievement; Cambodia; college students; interaction effects

INTRODUCTION

The last decade can be characterized as a period of dramatic growth of English language learning at a collegiate level in Cambodia. With English being considered a *lingua franca* (Clayton, 2002) and vitally linked to long-term academic, economic and occupational necessity, both regionally and internationally, the demand for English education has quickly expanded into university education. In recent years, enrollment in English language program amounts to a comparatively sizeable share of total student enrollment at Cambodian universities (Chet, 2006; The Department of Cambodian Higher Education, 2009). English enrollment is projected to grow given the country's economic growth and plans to improve international relations and regional integration (e.g., ASEAN 2015) (ASEAN Secretariat, 2009).

While there has been a lot of attention on the increasing availability of English programs in colleges, there have been fewer discussions on the quality of student learning. Some actions at the institutional and individual levels have been undertaken in response to public demands, but most of these efforts fail 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). Attempts to understand the quality of student learning and, in particular, the factors impacting students' academic achievement are almost nonexistent (Kwok et al., 2010). Such lack of empirical research in this topic is surprising given growing accountability and transparency demands from society. Thus, without evaluating the quality and achievement of students, the significant progress made in providing students with more access to programs merely signals academic risks and potentially inconsistent achievement among students (Ford, 2003, 2006). Empirical research focusing on students' academic achievement is needed to yield more direct implications for evaluating and improving student learning.

LITERATURE

Students' academic success is a complex area of research in higher education. Over the last few decades, researchers have proposed a number of theories and perspectives to explain possible factors that impact students' academic success. A review of the literature reveals that success in learning, at least in terms of academic achievement, is either tacitly or overtly linked to multiple factors, including sociological, organizational, psychological, cultural and economic ties (Kuh, Kinzie, Buckley, Bridges & Hayek, 2007; Perna & Thomas, 2008; Van Den Berg & Hofman, 2005). However, an examination of these perspectives shows that most explanations shared a theoretical perspective in college impact literature in that desirable learning outcomes are primarily a result of successful integration, both academic and social, with the learning environment (Jansen & Bruinsma, 2005; Keup, 2006; Kuh et al., 2007; Pike & Kuh, 2005; Pascarella, Seifert, & Whitt, 2008; Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996). This concept provides strong support to Tinto's (1975, 1987) interactionist theory (as cited in Bruinsma, 2003) which posits that successful learning is positively correlated to the amount of student engagement in educationally purposeful activities. Basically, students' active participation in a collaborative learning environment and commitment to interacting with their teachers and peers are deciding factors on learning (Kuh, 2001, 2003; Pace, 1979b, as cited in Davis & Murell, 1993).

Along this line of research emphasizing the effects of student engagement on academic achievement, prior literature also points to student characteristics as another important factor in explaining students' academic gains. Though mixed in results, the studies asserted that student achievement can be related to a multitude of individual factors such as gender (Jansen, 2004), parental education (Alnabhan, Al-Zegoul, & Harwell, 2001; Pike & Kuh, 2005), pre-college academic achievement (Atkinson, 2006; Keup, 2006), career orientation (Himelstein, 1992) and ethnicity (Greene, Marti, & McClenney, 2008). These characteristics are thought to determine students' college experiences in some ways that affect learning. The experiences students have in college, in turn, are expected to determine their attitudes toward the learning environment; these perceptions, in many ways, enhance students' institutional commitment and positively predict academic achievement (Frick, Chadha, & Watson, 2009; Hoy, Tarter & Hoy, 2006; Pascarella et al., 2008).

Another line of research highlights the quality of teachers on academic achievement (Umbach & Wawrzynski, 2005). Apart from the traditionally vetted influence of teachers' backgrounds (Stronge, Tucker & Hindman, 2004) faculty members' in-class teaching behaviors are a critical input that has a substantial impact on student learning. Among the teacher behaviors studied, teachers who were less prepared and informed (Sheehan & Duprey, 1999), had difficulty delivering clear and organized instruction and failed to utilize interaction with and among students (Cabrera, Colbeck & Terenzini, 2001) ultimately put student learning at a disadvantage. The quality of student learning is also linked to the intensity of course workload or difficulty set by teachers (Marsh, 1991a, as cited in Marsh &

Dunkin, 1997). Taken together, the success in learning is largely determined by student efforts devoted to academic experience, but teacher educational practices also play a part to enhance student learning process and academic achievement.

Therefore, to enrich our understanding of student learning in the present research context, multifaceted factors need to be taken into account. This study took a combined approach to examine what impacts students' academic achievement at college by looking at comparative effects of student engagement behaviors, students' background and their perceptions of the learning environment and teacher quality on academic achievement in both general and conditional terms. The rationale explaining this study's framework is as follows: First, although student engagement behaviors have been extensively examined in recent decades as evidenced by the dominantly used survey instrument, i.e. the National Survey of Student Engagement (NSSE) (Kuh, 2001), research has yet to pay adequate attention to its practicality and applicability in different local contexts. No prior work has focused on the emerging higher education context like that of Cambodia. Specifically, little is known about the effect of student engagement behaviors on student achievement in English language programs, leaving its generalizability across disciplines in question. Second, since student engagement may be masked by the changing nature of students' backgrounds and attitudes from one context to another, these changes should not be neglected if achievement is to serve as an indicator of college success. This is especially true in the context of this present research given that the effects of school efforts to engage students may be complicated by the gaps in students' background inputs. Third, being able to understand an environment where teachers can make a difference through their teaching will be important to foster student engagement and academic performance (Umbach & Wawrzynski, 2005). Finally, while previous studies have focused attention on conditional effects on student achievement by gender (Alnabhan et al., 2001), first generation status (Terenzini et al., 1996), race and ethnicity and pre-college achievement (Kuh, Cruce, Shoup, Kinzie & Gonyea, 2008), only a handful of work examined how the influencing factors interact with the dynamics surrounding students' geographical differences. This study takes into account the conditional effects of a set of significant predictors of student achievement that might be embedded within students' geographical characteristics. Understanding the nature of these relationships will yield more fruitful knowledge for educational practitioners to enhance practices relevant to certain groups of students.

Purpose of the Study

This study explores factors that contribute to students' academic achievement by examining how student engagement in educationally driven activities impacts academic achievement and assessing whether additional effects are accounted for by student background characteristics and other confounding variables. It also examines whether the effects of student engagement and other variables in this study differ in magnitude by students' geographical origins. Three questions guide this study:

- 1- To what extent does student engagement in educationally purposeful activities contribute to students' academic achievement?
- 2- Can students' academic achievement be additionally explained by student background characteristics and other confounding variables?
- 3- Do the effects of student engagement and other variables studied vary by students' geographical origins?

METHOD

Participants

A total of 215 second year Cambodian college students (male= 103; female= 112) and 23 teachers (male=20; female=3) from the Institute of Foreign Languages (IFL) in Phnom Penh city, the country's premier faculty of English, participated in the survey. The selection of IFL as the study school was premised on the discrepancy between the school's local reputation as a key institution for providing English language education to the public as well as serving as a training center for secondary school English teachers and the lack of evidence and empirical data to support the program quality and success of student learning. Given its average number of annual student enrollment compared to other comparable higher education institutions, such lack of supporting evidence undermines the quality of student learning.

Students were randomly selected from all study periods (31.2 percent from the morning, 38.1 percent the afternoon and 30.7 percent the evening) (a response rate of 77 percent). They ranged in age from 18 to 32 years, with a mean of 21.17 ($SD=2.18$). Seventy-eight percent of the students were city residents; 43.3 percent were students graduating from a preparatory course offered at the institute. The majority of students were double-degree takers (70 percent).

The selection of teachers was not random since the author expected to be able to approach all of them in person. However, due to their personal constraints, a small number of teachers did not manage to complete the questionnaires. Of the 34 teachers, 23 completed the questionnaires (a response rate of 68 percent), comprising mostly young teachers with an average age of 28.43 ($SD=4.58$). Teachers' previous English teaching experience ranged from 6 months (in case of new recruits) to 10 years ($Mean=72$ months, $SD=46.32$). This wide variation in teaching experience reflects the reality that IFL is currently in need of more teaching staff to supplement the existing small group of senior faculty members. The majority of teachers were full-time faculty members teaching at least 24 hours per week ($Mean= 22.30$, $SD=5.02$).

Instruments and Measures

Data were collected using two sets of self-reported questionnaires. The first set of questionnaires focused on students' background characteristics and perceptions of the learning environment which included an evaluation of teachers' teaching behaviors and student engagement behaviors, among others. The second set collected information about the background characteristics of teachers, including age, years of teaching experience, educational attainment and number of work hours.

Students' background characteristics were measured on the following variables: age, gender (0=male; 1=female), geographical origins (0= urban; 1=non-urban), pre-college academic experience (number of months of learning English before college), enrollment in a preparatory class (0=enrolled; 1=not enrolled), multiple institutional enrollment (0= yes; 1= no), priority of English in occupation (0= yes; 1= no) and parental education (1= did not finish high school; 2= finished high school; 3= completed a two-year associate's degree; 4=completed a bachelor's degree; 5=completed a master's degree; 6= completed a doctoral degree). To measure students' perceptions of the learning environment, students were asked to rate the level of course interest in four subjects (Core English—General English, Literature Studies, Global Studies and Writing Skills) and satisfaction with the existing school facilities and services such as classrooms, library services and the availability of extra-curricular activities.

To ensure a more reliable rating, the assessment of teaching behaviors was based on students' rating of the four measures of teaching effectiveness adapted from Marsh's (1991a) teaching effectiveness tool, i.e. Students' Evaluation of Educational Quality (SEEQ) (Marsh & Dunkin, 1997). These four measures covered teachers' in-class behaviors (19 items) such as teaching organization/clarity (7 items), group interaction (4 items), individual support (5 items) and workload/difficulty (3 items).

Student engagement behaviors were operationally defined as the estimate of efforts that students exhibit in both in- and out-of-class academic activities in a one semester time period, be it related to individual, peer or group work. The constructs of engagement behaviors were adapted from Kuh's (2001) three scales of engagement model consisting of 25 items: the amount of academic challenge (10 items), active and collaborative learning (10 items) and student-teacher interaction (5 items). Overall, behaviors were measured on a four-point Likert scale with 1 denoting a negative response and 4 denoting a positive response (1=never; 2=sometimes; 3=often; 4=very often).

Since measures of student engagement and teaching behaviors were not adapted completely from the existing validated instruments (i.e., Kuh's, 2001) engagement model and Marsh's (1991a) SEEQ, its relevance and consistency within the context of this study were weakly guaranteed. To address this, factor analyses using a principal component analysis and a varimax rotation were employed. The analyses produced six distinct factors on students' engagement behaviors ($\alpha=.814$) and four factors on the measures of teaching behaviors ($\alpha=.783$) with three items and five items respectively removed to ensure the internal reliability of the scales (see Appendix).

Student achievement was assessed using the aggregated and standardized final English exam scores from four subjects (Core English, Literature Studies, Global Studies and Academic Writing). There are three explanations for this decision. First, using final exam scores greatly reduces disparity in the exam content coverage, weighting and difficulty level. Second, aggregating scores across the four subjects provides a more meaningful and reliable representation of academic performance since these four subjects cover a broad range of language skills and abilities such as reading, writing, thinking skills and so on. Finally, given that exam paper of each subject differed from one shift to another (i.e. morning, afternoon and evening), standardization was necessary to make scores comparable across samples.

Data Analyses

Data were analyzed using four regression models. The first model estimated the relationships between student engagement behaviors and achievement. The second model additionally measured the effects of students' backgrounds and the perceptions of the learning environment. Teachers' influence across classes was estimated in model 3 by adding two variables of teachers' backgrounds and four factorially derived scales of effective teaching behaviors to the previous model. Originally, teacher's age and educational attainment were considered, but due to the lack of variation in these variables (mostly young teachers and bachelor holders), only teachers' teaching experience and work hours were included in this model. To determine if certain relationships between the predictor variables and a dependent variable in the model vary based on the nature of student samples, another model considering the interaction effects of student engagement behaviors, previous academic experience and teaching behaviors by students' geographical origins (0=urban resident; 1=non-urban resident) was assessed. In this model, five new interaction variables were created and added to the data analysis (see Model 4). Taking into account the interaction effects could reduce a risk of accepting the main effects at face value while

underestimating the overall effects of the observed variables on student achievement (Pascarella & Terenzini, 2005) as some factors may have exerted more pronounced influences on the academic achievement of students from specific populations. Variance inflation factor (VIF) was examined to detect the risk of having multi-collinearity among predictor variables. However, since the VIF values centered tightly around 1 (*Mean*=1.3), multi-collinearity was not a serious concern in this study (Field, 2009).

RESULTS

Findings for Research Questions 1 and 2

A summary of regression results in Table 1 provides answers to the research questions in the current study. In model 1, the effects of student engagement on achievement were solely estimated without controlling for any other influencing variables. This model accounted for 13 percent of the variance in achievement, $F(6, 187) = 4.66$, $p < .001$. The results revealed that achievement was better among students who were actively involved in whole class participation and had put more effort in homework and tasks. However, students who had frequent contact with teachers tended to report lower academic achievement compared to students who had less contact with teachers. Among these engagement behaviors, efforts in doing homework and tasks was found to exert the strongest impact on achievement.

Students' background differences and perceptions toward the learning environment explained an additional 9.7 percent of the variance in achievement, $F(16, 177) = 3.26$, $p < .001$. However, even after introducing these confounding variables, student achievement remained positively related to students' efforts in doing homework and tasks and class participation. Only the effect of student-teacher contact on achievement became less obvious and statistically insignificant. The data further showed that student achievement was positively related to students' pre-college academic experience and course interest and negatively associated with students' satisfaction with school services. This finding suggests that students' different background characteristics especially pre-college academic experience and attitudes toward the courses also mattered to a certain extent.

When adding teacher effects to the previous model, the data revealed that teachers had a relatively strong and statistically significant impact on student achievement, increasing the total variance in achievement to 32 percent, $F(22, 171) = 3.58$, $p < .001$. Beyond student engagement behaviors, higher student achievement was also related to teachers' years of teaching experiences and appropriate level workload and difficulty of assignments for the students. Teachers' individual rapport with students was also another significant predictor of student achievement. However, the relationship was negative. Interestingly, variation in student achievement was not strongly linked to the teachers' organization and clarity of lessons, nor teachers' behaviors towards group interaction. Taken together, while the positive influences of students' effort in doing homework and tasks and class participation on student achievement were apparent in this study, student achievement was jointly related to other important predictors such as the differences in students' pre-college academic experience and course interest, teachers' course workload and difficulty, and years of teaching experience.

Table 1 Standardized coefficients of predictors on academic achievement

	Model 1	Model 2	Model 3	Model 4
SS-T interaction	-.153*	-0.092	-0.046	-0.041
Active learning	.191**	.155*	.132*	.155*
Discussion with peers about performance	-0.132	-0.101	-0.07	-0.098
Homework and tasks	.205**	.164*	.152*	.183*
Discussion with peers about learning tasks	-0.039	-0.084	-0.074	-0.089
Class preparation	-0.079	-0.102	-0.105	-0.106
Gender		0.049	0.02	0.023
Geographical origins		-0.031	-0.016	-.301*
Pre-college academic experience		.202**	.259***	.171*
Enrolment in a preparatory course		0.075	0.074	0.065
Multiple institutional enrolment		-0.068	-0.119	-0.109
Priority to English in occupation		0.111	0.095	0.124
Mother's education		-0.014	-0.032	-0.034
Father's education		-0.057	-0.046	-0.063
Perceived course interest		.159*	.199**	.177*
Satisfaction with school services		-.158*	-.156*	-0.126
Individual rapport			-.170*	-.181*
Workload/difficulty			.318***	.293**
Organization and clarity			-0.018	-0.024
Group discussion			-0.062	-0.083
Years of teaching English			.216*	.227*
Work hours			0.115	0.152
Geographical origins*active learning				-0.116
Geographical origins*homework and tasks				-0.055
Geographical origins*pre-college academic experience				.361**
Geographical origins*individual rapport				-0.072
Geographical origins*workload/difficulty				0.06

Note: R^2 for model 1= .130; R^2 for model 2= .227; R^2 for model 3= .315; R^2 for model 4=.345

(* $p < .05$, ** $p < .01$, *** $P < .001$)

Findings for Research Question 3

By entering a set of interaction effects between the statistically significant student engagement behaviors, pre-college academic experience, teaching behaviors and students' geographical origins into the model, there was a small but statistically significant increase in the total explained variance from 32 percent to 35 percent, $F(27, 166) = 3.25$, $p < .001$, indicating that the existing relationships in the previous model to a certain extent differed by students' geographical differences (see Table 1). Surprisingly, only the interaction effect of students' pre-college academic experience was obvious. This was evident since the general effect of precollege academic experience diminished significantly (from $\beta = .259$ to $\beta = .171$). The data indicated that pre-college academic experience had a significant compensatory effect on the achievement of students who were not city residents. As will be seen in Figure 1, pre-college academic experience had a greater positive influence on the achievement of urban students provided that both groups of students had less than four-year English learning experience before college. However, this effect drastically changed in favor of students from the provinces when students from these two groups had more than four-year English learning experience before attending college. With this result, it becomes clear that to a great extent the effect of precollege academic experience on achievement was not

straightforward. Although the result in the last model (Model 4) showed students from non-urban areas, in general, tended to have lower academic achievement compared to their counterpart ($\beta = -.301, p < .05$), this trend did not hold for all student cohorts, but was rather embedded within their learning experience before college.

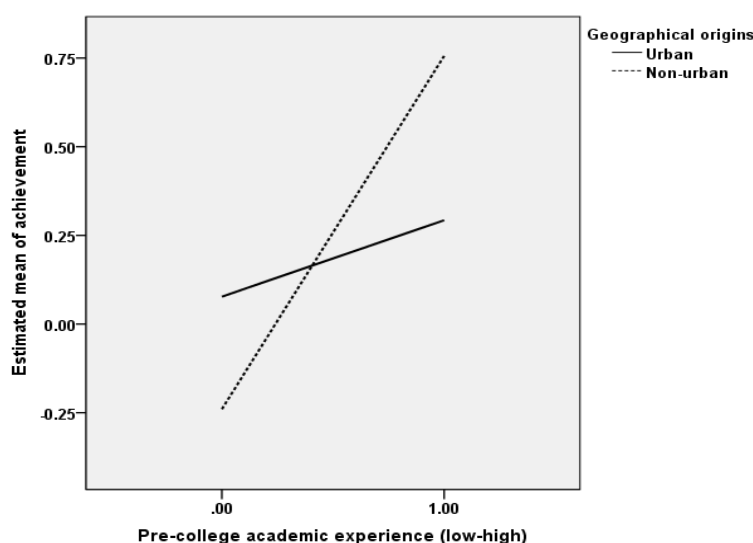


Figure 1. Effect of pre-college academic experience by geographical origins

Note: 0= below mean (*Mean*= 4 years)

1= above mean

LIMITATIONS

Some caveats in the current study merit attention. First, although students were randomly selected from all study periods, it appeared that the samples overwhelmingly represented young age cohort and city residents. Thus, they may not be typical of all students attending a four-year English language program at the study school. Similar caveat is concerned with the use of one institute as a case study. Further study should extend the scope beyond this horizon. Another limitation was that the outcome variable used in this study (i.e. students' academic achievement) was measured by only the final examination scores at the end of the semester, while on-going assessment scores such as quizzes, revision tests and class participation were ignored. Technically, the inclusion of these on-going outcome indicators may have changed the results in unknown ways. Finally, it should be noted that the results of multiple regression analysis were limited in power of prediction due to the exclusion of some important variables such as students' economic status, pre-test scores as a pre-college ability, and motivational factors. Differences in these factors may have substantial effects on student engagement behaviors and academic achievement. Further research should take into account these confounding influences.

DISCUSSION

Partly consistent with previous studies advocating the impact of engaging in educationally purposeful activities (Carini, Kuh & Kleint, 2006; Kuh, 2003; Kuh & Hu, 2001; Kuh, Pace & Vesper, 1997; Zhao & Kuh, 2004), findings of this study suggest that students' effort in doing homework and tasks and in-class active learning made a difference in student achievement. These results highlight the importance of self-study outside class and whole

class participation. This is discernible as homework and tasks and whole class interaction are the main follow-up tools teachers commonly used to measure students' understanding of each chapter's language points and content knowledge. In an exam-based system like that of the higher education institution in this present study, the investment in such activities, both time and energy, may have added-values to students' exam preparation and performance accordingly. This may also explain the fact that cooperation among students and teacher-student contact were not corroborated in this study. Contextually, this institute has strongly adhered to communicative language teaching and learning modalities. The emphasis on peer learning/collaborative learning activities, thus, becomes one of the most favorite teaching styles among teachers; this practice subconsciously turns into a frequent learning activity among students. Driven by this situation, the amount of student involvement in these educationally driven activities may not be a core factor that makes a difference in student achievement as students may have reported similarly high on this peer learning variable. With regard to student-teacher contact, the insignificant impact of this factor seems logical due to the fact that students' official contact hours with teachers beyond the allocated class hours have yet to be in place at the current study school. Students may have had limited time to discuss learning issues with teachers outside class. Low amount of academic discussion/counseling with teachers among students may play a role in this insignificant result.

Further results suggested that certain students' background and attitudes toward the learning environment also shared some confounding influences to achievement. Consistent with findings of Atkinson (2006), Jansen and Bruinsma (2005), Keup (2006) and Mackenzie and Schweitze (2001) students' previous learning experience shared a large and positive effect on achievement. Similar to Ramsden (1979), students who reported higher course interest also achieved better academic performance. These relative influences were plausible as higher precollege academic experience and course interest can be the indicators of students' better preparedness and learning skills and enhanced motivation respectively. Contrary to previous studies (Frick et al., 2009; Hoy et al., 2006; Keup, 2006; Pascarella et al., 2008), satisfaction with school services had an adverse effect on academic achievement. Though it is counter-intuitive, it is worth noting that because school services were non-academic measures, it is far from clear that students' motivation and commitment to learning, the indicators that were positively related to students' learning effort, was also the product of this heightened level of satisfaction. Another explanation may be that high performing students were more demanding for improved school services necessary for their study than their counterpart and, thus, became less satisfied with the current so-called university-level school services in Cambodia.

In addition to the functions of students, teachers appeared to add relative values to student learning. Evidently, students studying with more experienced teachers tended to report higher academic achievement. This finding should come as no surprise as more teaching experience can be an indicator of improved teaching skills that, in turn, foster effective teaching (Stronge, 2002; Stronge et al., 2004). Consistent with findings of Lizzio, Wilson and Simons (2002) and Trigwell and Prosser (1991) course workload and difficulty positively impacted student achievement. One explanation is that appropriate workload and level of course difficulty might have a desirable effect on students' learning motivation and time management accordingly. Such a relationship may, in turn, be linked to the potential of using a deep approach to learning. Though not expected, teachers' individual rapport negatively influenced student achievement. This is disappointing as teachers' effort to close the performance gaps failed to see any meaningful gains. Yet, it should be noted that lower achievement may be explained by the quality, not necessarily the amount, of support from teachers. Possibly, the support from teachers will have a subsequent effect on student learning in the next year level.

Finally, the result revealed that, among other significant predictors, pre-college academic experience had a significant compensatory effect on non-urban students provided that their learning experience was heightened above the threshold level (more than four years of English learning experience before college). This relationship was complex since students from Cambodian provincial or rural areas are generally perceived to have lower learning experience and academic performance largely due to the lack of access to learning a foreign language, let alone the quality. However, given this difficult situation, those having exposed to a considerable amount of learning before college may, in turn, possess stronger academic and professional pursuit and possibly the determination to get rid of illiteracy and poverty, the issues that remain a grave concern in rural Cambodia. Students in the city, in contrast, may not hold this strong mentality due to the so-called easy access to learning. Meticulous study on this preliminary result is warranted, though.

Conclusions and Implications

The current findings appear to provide additional evidence to a growing body of college student success literature suggesting that differences in student engagement efforts do matter to the quality of student learning. However, unlike its predecessors', this study has shown that only two learning behaviors (i.e. students' effort in whole classroom interaction and the practice of homework and tasks) made the impact. Further results from regression analyses have shown that differences in achievement rather got a relatively strong influence from a multitude of other confounding factors. In general, achievement was positively related to students' pre-college academic experience and course interest, teachers' teaching experience and course workload and difficulty. Among others, pre-college academic experience had a significant compensatory effect on non-urban students' achievement.

These results have a number of implications for closing the achievement gaps among Cambodian students at least at the university in the current research. In terms of student engagement, it is particularly important for teachers to beware the disparity in students' classroom participation and individual efforts outside class. The findings from this study highlight the needs for further attention from teachers to consider alternative approaches to readdress the learning opportunity gaps between and among students with varying profiles. This is important if the institute is serious about improving the quality of student learning.

School may also make use of this study for policy and practice, having known the gap in students' pre-college academic experience and its importance to student achievement at the outset. The interventions from schools may be more cost-effective. It is, for example, useful for schools to take into account ability differences when assigning students to each class. Schools may be better informed to make sure that students are placed in a heterogeneous classroom condition so that maximal learning experience can be enhanced for all groups of students. Schools may also have a better understanding of the needs of specific student populations and, thus, be able to provide academic support and/or workshops that emphasize study skills appropriate and necessary for different students.

Finally, the fact that the quality of individual teachers to a certain extent varies from one class to another seems to suggest that any efforts to improve student learning need to take into account the specific nature of teaching across classes. For example, given the evidence that course workload/ difficulty may substantially affect students' academic performance, it is useful for teachers to be aware of these factors and to find various ways to balance the amount of workload and level of course difficulty accordingly in order to optimize students' learning motivation and engagement in the educationally purposeful activities both on- and off- campus. The result pointing to the important influence of teachers' teaching experience

also suggests that school needs to refocus workshop on how to improve classroom teaching practices in a more practical way. This finding also highlights a need for a school's policy to enrich teachers' hands-on classroom teaching skills at the outset in order to help inexperienced teachers increase the quality of their teaching.

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Corresponding Author: hkr_ifl@yahoo.com

Appendix: Description of variables

Students' engagement behaviors

Class preparation

- Make outline from your readings.
- Read assigned materials as a preparation for the next class.
- Did additional readings on topics that were introduced and discussed in class.

Homework and tasks

- Turn in the assignment(s) late.
- Turn in the assignment(s) or homework with poor quality.
- Come to class without completing readings or assignments.
- Do all the homework problems.

Active learning

- Contribute ideas to whole class discussions.
- Ask questions in class when you don't understand.
- Make a class presentation from your group work.

Discussion with peers about learning tasks

- Work actively with other students on the assigned task(s) in small group activities in class.
- Try to help other students who have learning problems during class discussion.
- Discuss ideas from your readings or classes with other students outside class.
- Work with classmates outside class to prepare class assignment.

Discussion with peers about academic performance

- Have reviews of test performance with other students.
- Have discussions with other students about learning difficulties.
- Ask other students to proofread your work or assignment.

Student-teacher interaction

- Discuss with your teacher(s) how to improve your study skills.
- Ask your teacher(s) for comment about your academic performance (e.g. homework, tests or assignments).
- Discuss ideas from your readings or classes with your teacher(s) outside the class.
- Work with your teacher(s) on other activities like organizing study clubs or other school events.

Measures of effective teaching behaviors

Workload/difficulty

- Give you (an) assignment(s) or (a) test (s) which match (es) your ability.
- Give you an appropriate amount of workload.
- Move from one point to another at an appropriate speed in teaching.

Group interaction

- Be open to other viewpoints.
- Raise challenging questions or problems for group discussion.
- Use students' work as the basis of discussion.

Individual support

- Get involved in your discussion.
- Enable students with different abilities to answer the questions.
- Offer helps to you when you have (a) problem(s).
- Praise you when you did well.

Organization and clarity

- Summarize the important points/ideas in teaching.
- Use relevant examples to explain the topic of teaching clearly.
- Check your understanding by asking questions related to the topic of teaching.
- Review previous learning content in a reasonable amount of time.