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CJHSS

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MESSAGE FROM EDITOR-IN-CHIEF

I have great pleasure to praise the work and publication of Volume 1 of *Cambodian Journal of Humanities and Social Sciences (CJIHSS)*, which is available in two versions of the languages, both in Khmer and English. I firmly believe that this journal plays a pivotal role in promoting the research culture in Cambodia and makes a genuine contribution to sharing scientific knowledge produced by various researchers. On behalf of the journal committee, I would like to welcome all students, teachers, researchers, and all readers supporting the Cambodian Journal of Humanities and Social Sciences. Also, I would like to express my deep gratitude to the editorial team, researchers, advisory board, reviewers, and all experts who have contributed to making this work possible. The editorial team and I look forward to any constructive feedback from readers, students, teachers, and researchers for the sake of the improvement of this scientific work with its significance and better quality.

Dr. Phon Kaseka

Editor-in-Chief

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Demystifying Perceptual Learning Style Preferences in English Academic Achievement: A Case Study of Finance and Banking Undergraduates in Cambodia

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ABSTRACT

In the past few decades, extensive research on learning styles has been paid attention to since effective students' learning is empirically attributable to them. However, the studies on learners' learning styles have been scarce and marginalized in Cambodia. Ergo, this quantitative study investigated the learning style preferences of 108 undergraduate students at a private business school in Cambodia and whether the preferences somehow influence English achievement, which was operationalized as the results of English course scores. Using a questionnaire of Perceptual Learning Style Preference (PLSPQ) first designed by Reid (1987), the results revealed that the students preferred group style the most, followed by kinaesthetic, auditory, visual, tactile, and individual style, respectively. Even though the language learning styles preferences of the respondents were major ones, the Spearman correlation results showed that the language learning styles did not affect their English performance. The researchers concur with Peacock (2001) that instruction with balanced style-oriented should be pedagogically considered to accommodate various language learning styles.

KEYWORDS: PLSPQ; Perceptual Learning Styles; English Achievement

សង្ខិត្តន័យ

ក្នុងរយៈពេលប៉ុន្មានទសវត្សរ៍ចុងក្រោយនេះ ការសិក្សាស្រាវជ្រាវយ៉ាងទូលំទូលាយលើរបៀបរៀនសូត្រ (Learning Styles) ត្រូវ បានគេយកចិត្តទុកដាក់ដោយសារវាគឺជាមូលហេតុបណ្ដាលឱ្យការរៀនសូត្ររបស់សិស្សមានភាពជោគជ័យ។ យ៉ាងណាមិញការ សិក្សាអំពីរបៀបរៀនសូត្រផ្សេងៗរបស់សិស្សនៅប្រទេសកម្ពុជានៅខ្វះខាត នឹងមិនត្រូវបានយកចិត្តទុកដាក់នៅឡើយ។ ដូច្នេះ ការសិក្សាបែបបរិមាណវិស័យនេះសង្កេតស្ទង់រកចំណង់ចំណូលចិត្តរបៀបសិក្សារបស់សិស្សក្រមួរបញ្ញាបត្រចំនួន១៨៧នាក់ នៅសាលាពាណិជ្ជកម្មងងកជនមួយនៅកម្ពុជា នឹងថាតើចំណង់ចំណូលចិត្តនេះមានឥទ្ធិពលយ៉ាងណាលើលទ្ធផលសិក្សាភាសា អង់គ្លេសរបស់ពួកគេដោយផ្អែកលើលទ្ធផលពិន្ទុនៃមុខវិជ្ជាសិក្សាភាសាអង់គ្លេស។ ការស្រាវជ្រាវនេះបានផ្អែកលើក្របងសំណួរ នៃចំណង់ចំណូលចិត្តពីរបៀបរៀនសូត្របែបការយល់ឃើញ (PLSPQ) ដែលបង្កើតដំបូងដោយលោក Reid (១៩៨៧)នឹង បានបង្ហាញលទ្ធផលថាប្រភេទចំណង់ចំណូលចិត្តនៃរបៀបរៀនមានកម្រិតខ្ពស់ជាងគេគឺរបៀបរៀនជាក្រុម (Group Style) និងជាបន្ដបន្ទាប់គ្នាដោយរបៀបរៀនបែបសរីរាង្គ (Kinaesthetic Style) ស្ដាប់ (Auditory Style) មើលឃើញ (Visual Style) ប៉ះពាល់ (Tactile Style) និងបុគ្គល (Individual Style)។ ទោះបីជាចំណង់ចំណូលចិត្តរបៀបរៀនភាសារបស់ សំណាកក្រុមត្រូវបានរកឃើញនៅកម្រិតខ្ពស់ក៏លទ្ធផលនៃការសិក្សាស្ទែងរកទំនាក់ទំនងរបស់ Spearman បានបង្ហាញថា របៀបរៀនភាសាមិនបានជះឥទ្ធិពលលើលទ្ធផលភាសាអង់គ្លេសរបស់ពួកគេទេ។ អ្នកស្រាវជ្រាវយល់ស្របជាមួយលោក Peacock (២០០១) ដែលធ្លាប់បានណែនាំពីការបង្រៀនផ្អែកលើគុណភាពនៃរបៀបរៀនសូត្ររបស់សិស្សគួរតែត្រូវបានយក មកពិចារណាដើម្បីជួយសម្រួលរបៀបរៀនភាសាផ្សេងៗ។

ពាក្យគន្លឹះ: (១) ក្របងសំណួរនៃចំណង់ចំណូលចិត្តពីរបៀបរៀនសូត្របែបការយល់ឃើញ (២) របៀបរៀនសូត្របែបការយល់ ឃើញ (៣) លទ្ធផលសិក្សាភាសាអង់គ្លេស

1. INTRODUCTION

1.1. Background of the Study

It is a truism that language learning is a problematic activity faced by learners; moreover, it embraces its association with professional and educational guidance, individual system, consciousness, and attention in the second language. Individual reflection is critical for foreign language proficiency (Tabatabaei & Mashayekhi, 2013). Thus, educators should discern individual differences of learners (Matthews, 1995).

It is undeniable that learning style, which is a cognitive factor throughout the learning process, has been shown by a plethora of studies until now (Reid, 1995). Celce-Marcia (2001) asserted that learning style is a primacy that supports students in mastering a second or foreign language. Learners learn a foreign language differently at their own pace, and they tend to employ any favoured learning style to complete their learning tasks. That is, variation can be due to biological and psychological factors (Reiff, 1992). For example, some learners preferentially learn new vocabulary through flashcards. Because of

varied acts of preference for acquiring and processing information, Reid (1995) indicated that learning preference affects how learners conclude and their appropriate learning tasks. In this respect, learning style should be a focal sphere in learning (VanPatten & Benati, 2010).

Since learning styles have been accentuated, different features have been empirically explored, such as classifications, definitions, and relationships with diverse variables, including gender, age, learning achievement, and culture. Chen (1999) pointed out that there has been extensive discussion on the correlation between learning styles and academic performance. Similarly, in the past few decades, a surge in research has been carried out on the possible link between learning styles and academic achievement. For instance, previous studies reported positive relationships between them (Barzegar & Tajalli, 2013; Cimermanová, 2018; Gohar & Sadeghi, 2015; Peacock, 2001; Renou, 2008; Tabatabaei & Mashayekhi, 2013; Tuan, 2011). Besides, research findings revealed that mean scores of learners with learning styles differed remarkably (Abidin et al., 2011; Barzegar & Tajalli, 2013;

Cutolo & Rochford, 2007; Hou, 2009; Melese, 2018; Moeinikia & Zahed-Babelan, 2010; Reid, 1987; Tuan, 2011).

1.2. Research Problem

Given that learning styles act as a catalyst for learners' learning process and are associated with learning achievement, they are perceived to be successful with learning style use (Ellis, 1997; Oxford, 1990; Rubin, 1975, as cited in Hou, 2009). With rigorous and reliable literature, there has been a scarcity of research studies on the learning styles of Cambodian students, even though English has been a dominant foreign language in Cambodia from the early 1990 to the present (Moore & Bounchan, 2020). Cambodian learners may not consciously think of their preferred learning styles for the sake of English achievement, so they are hardly able to apply their learning styles in doing English learning activities.

Additionally, vis-a-vis the researchers' wealth of English teaching experience, most Cambodian university lecturers neglect their students' English language learning styles. Two convincing reasons are rationally and hypothetically presumed. First, most of them persistently ignore students' learning style exploration concerning incompetence in classroom research. Second, in practice, they cannot discover their students' learning styles without proper instruments, especially a multidimensional learning style inventory (Dunn, 1993).

1.3. Significance of the Study

The researchers alluded to a pressing need for this study's findings, which is on the horizon, and implicatively inform English teachers, educators, and curriculum developers, particularly those working in the research setting.

Empirical evidence to suggest the research implication was shown. Firstly, understanding learners' learning styles will hopefully guide English teachers on the right track to effectively and appropriately use any teaching approach, diluting learning anxiety and increasing more positive motivation (Hou, 2009).

Secondly, teachers and educators should realize that environmental and psychological contexts are created because of students' learning, wherefore learners can accommodate learning that aligns with any learning style (Barzegar & Tajalli, 2013).

Thirdly, Kubat (2018) contended that teachers regard the learning style as an effective and productive learning-teaching process that can be planned by focusing on it. From Griggs (1991), the teaching implication is that instructors can increase student learning achievement and positive learning attitudes using learning styles. "They claim that not only can students identify their preferred learning styles, but that students also score higher on tests, have better attitudes, and are more efficient if they are taught in ways to which they can more easily relate. Therefore, it is to the educator's advantage to teach and test students in their preferred styles." (Dunn & Dunn, 1978, as cited in Gilakjani, 2012, p. 108).

1.4. Definitions of Learning Styles

According to Keefe (1979, p. 4), learning styles are referred to as "cognitive, affective, and physiological traits that are relatively stable indicators of how learners perceive, interact with, and respond to the learning environment." Learning styles refer to "individual natural, habitual, and preferred way(s) of absorbing, processing, and retaining new information and skills" (Reid, 1995, p. viii). Learning styles can be "ways in which individuals perceive, organize, and recall information in their environment" (Scarpaci & Fradd, 1985, p. 184). *Learning* is defined explicitly as "your preferred way of learning." (Thornbury, 2006, p. 116). Owing to Celce-Marcia (2001, p. 359), "Learning styles are the general approaches – for example, global or analytic, auditory or visual – that the students use in acquiring a new language or in learning any other subject." Dag and Geçer (2009, p. 863) concisely concluded the meaning of learning styles: "common expression in all of them is that learning speed, learning form and comprehension form for the information are different among the individuals." However, the definitions of learning styles vary regarding scope and depth (Tuan, 2011).

1.5. Perceptual Learning Styles

Based on Reid's learning style classification (Reid, 1995), learning styles are categorized into three main types: cognitive learning style, sensory learning style, and personality style. Reid's (1995) classification of learning styles should be appraised accordingly (Khmakhien, 2012). First, it deals with distinct categories of learning behaviour and environment in diverse settings (Chen 1999, as cited in Khmakhien, 2012). Second, it can be employed with the context of students across cultures and languages (Khmakhien, 2012).

Among the three kinds of Reid's learning style classification as mentioned above, sensory learning styles are specifically divided into three categories: perceptual learning style, environmental learning style, and personality learning style (Reid, 1995). Perceptual learning style, the subject of this study, refers to much information that learners learn depending on their five senses (Davis, 2007). Perceptual learning styles have auditory, visual, tactile, kinaesthetic, and haptic learners. These sub-categories are deployed to ensure effective learning using ear (hearing), eyes (seeing), touch (hands-on), body experience (whole-body movement), and touch and whole-body involvement, respectively (Reid, 1995). All the above-mentioned perceptual learning styles, except for the haptic style, were underscored in this paper.

1.6. Previous Studies of Perceptual Learning Style and Learning Achievement Based on Reid's Perceptual Learning Style Preferences Questionnaire (PLSPQ)

In recent years, many researchers have paid considerable attention to the studies on identifying learning styles and the likely existence of various learners' characteristics on their learning success. VanPatten and Benati (2010) stated that the research studies about learning styles had been undertaken for various purposes, such as exploring their classifications and meanings, the methods of determining learning styles, and the association between learning styles with academic achievement. Nolting (2002, as cited in Moayyeri, 2015) emphasised students' awareness of learning styles because these correlate with their learning achievement.

Peacock (2001) researched to verify Reid's hypothesis that a mismatch between teaching and learning styles results in failure, dissatisfaction, and demotivation throughout the learning process. Reid's perceptual learning style preference questionnaire, interviews, and tests were administered to 206 EFL students and 46 EFL teachers. The results revealed that the most popular students' learning styles were kinaesthetic and auditory, while the least desired ones were individual and group. The association between learning style and EFL proficiency was computed, and it was found that the learners whose style was working in groups were significantly less proficient.

Tuan (2011) conducted a study in Vietnam to investigate EFL students' preferred learning styles and the relationship between those preferences and English proficiency level. One hundred seventy-two students completed a questionnaire survey. The findings indicated that most learners preferred kinaesthetic and tactile learning styles. There were statistically significant associations between English proficiency level and preferred learning style.

Abidin et al. (2011) investigated students' learning styles and their effect on overall academic attainment in Malaysia. A questionnaire survey was used based on Reid's Perceptual Learning Style Preference (1987). Academic success and learning styles were shown to have a significant positive association. High, moderate, and low achievers all demonstrated a comparable preference for learning styles.

Barzegar and Tajalli (2013), in a similar vein, undertook a study investigating the language learning styles of Iranian EFL students and academic accomplishment. A language learning styles questionnaire by Reid (1987) was administered to gather data. The findings showed that the students applied various learning styles. In addition, it exhibited kinaesthetic and group learning styles that were mainly favoured among the participants. Their learning styles positively influenced their learning achievement.

Al-Zayed (2017) examined the effect of learners' preferred learning styles on their English learning success. The data collection instrument was a questionnaire on learning style preferences. The two significant findings were disclosed in this

manner. The auditory style was the most favoured, followed by the group, kinaesthetic, and visual styles. Second, there was no effect of learning style on English performance.

Melese (2018) examined the relationship between students' perceptual learning styles and academic achievement at an Ethiopian institution. This quantitative study used a correlational methodology to analyse data collected through a questionnaire. The finding indicated a positive correlation between students' preferences for perceptual learning styles and their academic achievement. Additionally, visual learning was favoured over auditory and kinaesthetic learning.

Nge and Eamoraphan (2020) released a report examining the perceptual learning styles favoured by Burmese EFL students and the relationship between their preferred learning styles and academic performance. One hundred fifty-five individuals completed the PLSPQ. According to the data, students favoured mixed learning styles, followed by group, kinaesthetic, auditory, visual, tactile, and individual learning styles. Besides, there was no significant association between academic achievement and learning styles.

Vu and Tran (2020) investigated Vietnamese freshmen's preferences for perceptual language learning styles. The researchers collected data using a modified version of Reid's (1984) learning style questionnaire. The findings indicated that the learners were engaged because their primary learning modes were the tactile, auditory, group, and kinaesthetic. The visual and individual ways of learning were both minor. English achievement was shown to be strongly related to learning styles.

1.7. Conceptual Framework

Reid's perceptual learning style model (Reid, 1984, as cited in Hou, 2009) was adopted as the backbone of the present study because it is the well-known learning style theory in educational study. As depicted in Figure 1, perceptual learning style preference theory is broken down into visual, auditory, kinaesthetic, and tactile and two sub-divisions of sociological style, including group and individual. In the context of this study, the use of the terms perceptual learning style, learning style, and language learning style are interchangeable.

Figure 1
The Conceptual Framework of the Study
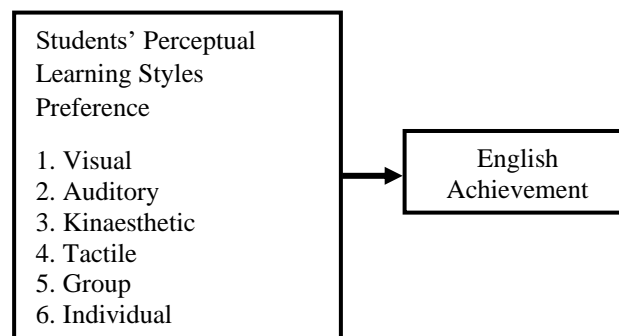
1.8. Research Objectives

Based on what was said above, the main objectives of this paper are:

(1) to determine the language learning styles of Cambodian EFL learners.

(2) to explore the relationships between their language learning styles and English achievement of course content.

1.9. Research Questions

As stated by the objectives of the study, the following research questions are generated.

(1) What kinds of language learning styles do Cambodian EFL students frequently employ when learning English?

(2) Is there any relationship between individual language learning style preferences and English achievement?

2. METHODOLOGY

2.1. Setting and Participations

The setting of the study was a private business school providing tertiary education in Phnom Penh, Cambodia. The sample consisted of 108 students who voluntarily took part in this study. They were from the six classes recruited from all year-one classes via convenient sampling. They were composed of 92 female (85%) and 16 male (15%) first-year students majoring in finance and banking enrolled in the first year of the 2021-2022 academic year. They are all Khmer native speakers, and their ages ranged from 17 to 27 years old, with an average of 19 in age.

2.2. Instrumentation

The sole instrument employed in this study was a well-tested questionnaire called Perceptual Learning Style Preference (PLSPQ), initially developed by Reid (1987). Peacock (2001) recommended that it has generated substantial attention and has been a focal point of investigation in many studies. Given that the Covid-19 pandemic has been far from over during the data collection timeline, the authors contextually decided to create an online questionnaire entirely based on the PLSPQ.

The primary purpose of this self-reporting questionnaire is to investigate students' preferred learning styles when learning English as a foreign language and the possible relationship between their language learning styles and English achievement. The online questionnaire was classified into six sub-kinds of language learning style preference, including visual, tactile, auditory, group, kinaesthetic, and individual learning styles. Each questionnaire item explores a particular learning style.

The questionnaire was firstly written in English and then translated into Khmer to minimize second language misunderstanding. It is structured in two parts: 1) part A: background information; and 2) part B: a survey of perceptual learning styles.

- Part A was devoted to collecting demographic information. It comprises a few close-ended questions about each participant's age, gender, and class.

- Part B contains the 30 questionnaire items. The respondents rated each item in person on a five-point Likert scale, with scores ranging from 1 to 5 (1= strongly disagree; 2= disagree; 3= undecided; 4= agree, and 5= strongly agree). The authors restructured all questionnaire items by sequentially placing each category's item to simplify the data analysis. The PLSPQ has measured the internal consistency reliability. The alpha coefficient for the overall language learning style items was 0.903, which is described as reliable (Taber, 2018).

In addition, the researchers used English test scores as English achievement from the samples that learned English as a compulsory foreign language course in the research setting during semester one of the aforementioned academic year. The scores allowed the researchers to determine an association between students' language learning styles and English achievement.

2.3. Data Collection

After the researchers had been granted consent, the online questionnaire was separately introduced in the six chosen classes. The respondents have online guided the study's primary purpose and the survey procedures. In particular, they were made aware that they would respond to the questionnaire about learning English. The authors allowed the participants to complete the questionnaire online at any convenient time and voluntarily.

2.4. Data Analysis

After the screened data were encoded, it was analyzed using the IBM SPSS Statistics 23. This study involved the analysis of descriptive and inferential statistics. For the case of correlation, the independent variable (IV), in this case, is students' language learning style score, and the dependent variable DV is students' English score. Descriptive statistics, such as item mean scores ($Mean$), standard deviations (SD), were employed to explore the information of learners' language learning styles.

Table 1

Tests of Normality

Variables	Shapiro-Wilk		
	Statistic	df	$Sig.$
Scores	.959	108	.002<0.05
Learning styles	.956	108	.001<0.05

a. Lilliefors Significance Correction

According to the results from the Shapiro-Wilk test in Table 1, the distribution of English scores and learning styles suggested a deviation from normality, $W(108) = .959, p = .002$ and $W(108) = .956, p = .001$ respectively. Thus, Spearman correlation was utilized to seek the possible relationships between the students' language learning styles and their English performance. Significance was set at $p < .05$.

3. RESEARCH FINDINGS

3.1. Research Objective One

The first objective of this study is to determine the language learning styles of Cambodian EFL learners. As clearly seen from Table 2, the mean score interpretation of learning styles preference was made (Peacock, 2001).

Table 2
The Mean Score Interpretation

Level of the Mean Score	Interpretation
13.5 and above	major learning styles
11.5-13.49	minor learning styles preference
11.49 or less	negative learning style preference

Table 3 shows the means, standard deviations, ranking, and type of the six perceptual learning style preferences. Based on the general tendency of the distribution, the results showed that the most preferred language learning style was group learning ($Mean = 20.12, SD = 3.71$) followed by kinaesthetic learning ($Mean = 19.74, SD = 3.51$), auditory learning ($Mean = 19.05, SD = 2.83$) and tactile learning ($Mean = 17.6, SD = 3.28$) while individual learning style was the least popular one ($Mean = 16.87, SD = 3.28$). Interestingly, students' learning style preferences to kinaesthetic ($Mean = 19.74$) and auditory learning style ($Mean = 19.05$) appeared more similar. The results also displayed nearly similar learning style preferences toward visual ($Mean = 17.64$) and tactile ($Mean = 17.6$) learning style. Taking Table 2 in its entirety, we can see a feature standing out is that all six distinct types of perceptual learning styles were comparably

constituted major language learning styles. However, their mean scores were closely different.

Table 3
Means, Standard Deviations, and Perceptual Learning Style Preferences (N=108)

Learning styles	Mean	SD	Rank	Type
Group	20.12	3.71	1	Major
Kinaesthetic	19.74	3.51	2	Major
Auditory	19.05	2.83	3	Major
Visual	17.64	2.87	4	Major
Tactile	17.60	3.28	5	Major
Individual	16.97	3.57	6	Major

3.2. Research Objective Two

The second purpose of the present study is to explore the possible relationships between their language learning styles and English achievement.

A Spearman correlation was run to seek the relationship between students' learning styles and English achievement scores. A two-tailed test of significance showed a similar non-significant correlation between the English scores and each channel of perceptual learning styles, as glimpsed from Table 4. In other words, English competency did not relate to perceptual learning styles, or the more kinds of styles a student prefers to learn English have nothing to do with how well she or he did on it. The result provided support for the previous findings (Al-Zayed, 2017; Isemonger & Sheppard, 2003; Moo & Eamoraphan, 2018; Naserieh & Sarab, 2013; Nge & Eamoraphan, 2020; Palabiyik, 2014; Reid, 1987), which encapsulated the association between perceptual learning styles and learning outcomes.

Table 4
Spearman Correlation Matrix

	1	2	3	4	5	6	7
1. Student's English Scores	1.0	-.091	-.064	.116	.004	-.037	.122
2. Visual Learning Style		1.0	.347**	.313**	.338**	.282**	.318**
3. Auditory Learning Style			1.0	.488**	.499**	.592**	.305**
4. Kinaesthetic Learning Style				1.0	.565**	.556**	.354**
5. Tactile Learning Style					1.0	.367**	.390**
6. Group Learning Style						1.0	.202*
7. Individual Learning Style							1.0

4. DISCUSSION

4.1. Perceptual Learning Style Preferences

The study's findings indicated that all perceptual learning modes were highly favoured. In general, the findings indicated that students have diverse language learning style preferences, which two underlying factors may explain. To begin, students are active learners, and they often express a variety of preferred forms of learning to aid and facilitate their foreign language acquisition. Second, they may be impacted by a variety of learner-centered instructional strategies or activities. Indeed, there has been a change from teacher-centered education toward a learner-centered approach in Cambodian foreign language classrooms.

Also, the group learning style was the most popular among other learning styles. Such the result was consistent with the findings of the previous studies on perceptual learning styles, namely Hou (2009); Nge and Eamoraphan (2020). An avenue of explanation is that the students habitually and commonly try their best to learn English through communicating with other people, especially teachers and classmates. Furthermore, the learners might be assumed to be familiar with the communicative approach, including pair or group work. However, the result contradicted other former studies (Alsafi, 2010; Peacock, 2001; Naserieh & Sarab, 2013; Palabiyik, 2014; Reid, 1987; Riazi & Mansoorian, 2008), which revealed that group learning style was the least favoured learning style. In practice, teachers are advised to develop cooperative assignments and learning activities (Bhattacharyya & Sarip, 2014; Hallin, 2014; Khaki et al., 2015; Tee et al., 2015; Wong, 2015, as cited in Vu & Tran, 2020).

As presented thereof, the kinaesthetic learning style was the second dominant preferred style. In line with reviewed learning styles, as consistently revealed in past studies, the kinaesthetic modality was most favoured by learners. The finding of the present study was parallel with the previous research (Alnujaidi, 2019; Isemonger & Sheppard, 2003; Khalil, 2019; Li & He, 2016; Moradkhan & Mirtaheri, 2013; Naserieh & Sarab, 2013; Palabiyik, 2014; Peacock, 2001; Sun & Teng, 2017; Vu & Tran, 2020). For this respective, it implies that the Cambodian learners seem active and participatory in

relevant English learning activities; therefore, to the extent that they can boost their understanding and knowledge (Vu & Tran, 2020). The hands-on activities, namely grouping, pairing, role-playing, problem-solving, game playing, or note-taking, are physically practised in their English classrooms. In teaching methodology, an active learning environment should be examined in response to the students' needs (Vu & Tran, 2020).

4.2. The Association between Perceptual Learning Styles and Learning Achievement

Notwithstanding the negative correlation between language learning styles and English achievement reported, the trends in learning style preferences with high levels should be a mismatch, as displayed in Table 3. Hence, it seems a dichotomy. Castro and Peck (2005) authored a longitudinal exploration investigating university students' learning styles and learning difficulties. They pointed out that the students' favourite learning styles might be a double-edged sword that maximizes or minimizes their foreign language achievement. To some extent, the authors echoed Naserieh and Sarab (2013, p. 131), who suggested that "more research employing multiple measures of proficiency is, thus, needed to resolve the inconsistencies in this area." The subsequent possible explanation is that English teachers seemingly neglect various students' learning styles, resulting in improper or ineffective teaching materials or activities that mismatch students' learning styles. Last but not least, learning achievement can be disparate concerning whether learning styles are correctly practised or not in classrooms while the student who can optimize their academic performances attain varied learning style applications (Moo & Eamoraphan, 2018). Apropos the initial premise, the learners in this survey research might be inferred that they are not familiar with applying any appropriate learning style to learn best.

5. CONCLUSION

5.1. Implications and Conclusion

This present study aimed to examine the influence of learning styles on English academic performance. The key results denoted that each

perceptual learning style belongs to major preference, and no significances between language learning styles and academic achievement were observed. The authors took the liberty of expressing, with caution, the likely assorted students' preferred learning English styles, especially communicative-approach and active experienced orientation.

Unquestionably teachers should determine students' language learning styles through classroom survey conduction; therefore, they can cautiously and contextually develop, adopt, or modify teaching materials, lesson plans, and classroom activities that finely accommodate students' learning styles (Alnujaidi, 2018; Moo & Eamoraphan, 2018; Khalil, 2019; Vu & Tran, 2020). In a similar vein, teachers should employ interviews or classroom observations to dig deeper into students' learning styles. Furthermore, students themselves should adjust their learning styles regarding familiarity with teaching activities (Khmakhien, 2012; Khali, 2019; Vu & Tran, 2020). The authors reckoned much to Peacock (2001), who implicatively suggested that teachers find out their students' learning styles and accommodate multi-learning styles by presenting new information and materials in different modes and applying various activities. As stated in the preceding result section, the multiple learning style preferences should be pedagogically taken into account by Peacock (2001)'s recommendation on balanced styles as follows:

o For the visual style learners: using handouts, videos, encouraging note-taking and reading, and writing key information on the board
o For the auditory style learners: using class or group discussions, individual conferences, lectures, tapes, peer tutoring, and giving oral explanations and instructions
o For the kinaesthetic style learners: using problem-solving activities, role-play and drama, and encouraging active participation
o For the tactile style learners, encouraging hands-on work, e.g., giving students hard copies and allowing them to handle class material
o For the group style learners, using small group activities and encouraging them to meet other students outside class
o For the individual learners, giving individual attention, using individual conferences, and

encouraging independent and self-directed study

5.2. Limitation and Directions for Further Study

Within this study, the results should be interpreted under consideration of the following limitations. This study was undertaken using the PLSPQ. Since it is a self-reporting and reflects learners' perception and preference, the findings are limited to the willingness and ability of the participants to complete and return the survey to the researchers accurately. In addition, since the research results cannot be generalized to the other populations, they do not represent all Cambodian university learners.

Further researchers should acknowledge the mixed methods approach and other methods, such as interview and think-aloud protocol, to obtain more dependable results on learners' language learning preferences. Age, cultural background, and learning context possibly impact language learning styles (Dörnyei 2005; Wenden 1999, as cited in Khamkhien, 2012). Future studies examining other variables, namely gender, age, major, language learning strategy, and learning experience, strongly suggest filling such a research gap.

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- Grammar teaching

APPENDIX

Learning Style Questionnaire

Introduction:

Hello students: First, I appreciate your participation and cooperation. The purpose of this survey is to explore the language learning styles of year-one students in Cambodia. The survey responses are strictly confidential. Also, there is no absolutely right or wrong answer within this survey. Please respond to all the questions depend on your situation. Thanks for your collaboration in assisting me with this study.

This questionnaire has been designed to help you identify the way(s) you learn English best; the way(s) you prefer to learn English.

សួស្ដីនិស្សិតទាំងអស់គ្នា ជាដំបូងខ្ញុំសូមកោតសរសើរចំពោះការចូលរួមនិងកិច្ចសហការរបស់អ្នកទាំងអស់គ្នា។ គោល បំណងនៃការស្ទង់មតិនេះគឺដើម្បីស្វែងរករបៀបនៃការសិក្សាភាសារបស់និស្សិតឆ្នាំទីមួយក្នុងប្រទេសកម្ពុជា។ ការឆ្លើយតបរបស់ ប្អូនៗក្នុងការស្ទង់មតិនេះនឹងត្រូវបានរក្សាការសម្ងាត់យ៉ាងតឹងរឹងបំផុត។ ដូចគ្នានេះផងដែរមិនមានចម្លើយណាមួយដែលត្រឹមត្រូវ ឬខុសទេនៅក្នុងការស្ទង់មតិនេះ។ សូមមេត្តាឆ្លើយតបរាល់សំណួរទាំងអស់ដោយអាស្រ័យលើស្ថានភាពផ្ទាល់ខ្លួនរបស់ប្អូននិស្សិ តៗទាំងអស់គ្នា។ សូមអរគុណចំពោះការសហការរបស់ប្អូនៗទាំងអស់គ្នាក្នុងការជួយខ្ញុំទៅលើការសិក្សាស្រាវជ្រាវនេះ។

កម្រងសំណួរនេះត្រូវបានរៀបចំឡើងដើម្បីជួយប្អូនៗនិស្សិតក្នុងការកំណត់របៀបនានាដែលប្អូនៗរៀនភាសាអង់គ្លេស បានល្អបំផុត ក៏ដូចជាមធ្យោបាយផ្សេងៗដែលប្អូនៗចូលចិត្តក្នុងការរៀនភាសាអង់គ្លេស។

Part 1: Background Information

Gender: ☐ Female ☐ Male

Age: _____

Name (please provide your name or ID here): _____

Choose your classroom

☐ Prasat Kork Romeat (បន្ទប់ប្រាសាទគោករមៀត) ☐ Prasat Kro Lanh (បន្ទប់ប្រាសាទក្រឡាញ់)

☐ Prasat Pre Rup (បន្ទប់ប្រាសាទប្រែរូប) ☐ Prasat Kompong Preah (បន្ទប់ប្រាសាទកំពង់ព្រះ)

☐ Prasat Kravan (បន្ទប់ប្រាសាទក្រវ៉ាន់) ☐ Prasat Kpob (បន្ទប់ប្រាសាទខ្លប់)

Part 2: Learning Style Preferences

Please respond to each statement carefully، 5= Strongly Agree; 4= Agree; 3= Undecided; 2= Disagree; 1= Strongly Disagree.

សូមមេត្តាឆ្លើយតបនឹងសំនួរនីមួយៗដោយយកចិត្តទុកដាក់ដោយៈ លេខ5=យល់ស្របយ៉ាងខ្លាំង; លេខ4=យល់ស្រប; លេខ 3=មិនទាន់សម្រេចចិត្ត; លេខ2=មិនយល់ស្រប; លេខ1=មិនយល់ស្របខ្លាំង

Visual (មើលឃើញ)					
Learning Style Statement	**1**	**2**	**3**	**4**	**5**
1. I learn better by reading what the teacher writes on the board. ៩. ខ្ញុំរៀនកាន់តែប្រសើរដោយការអានអ្វីដែលគ្រូសរសេរនៅលើក្តារខៀន។	☐	☐	☐	☐	☐
2. When I read instructions, I remember them better. ២. នៅពេលខ្ញុំអានសេចក្តីណែនាំ ខ្ញុំចងចាំកាន់តែល្អ។	☐	☐	☐	☐	☐
3. I understand better when I read instructions.	☐	☐	☐	☐	☐

៣. ខ្ញុំយល់កាន់តែច្បាស់នៅពេលខ្ញុំអានសេចក្ដីណែនាំ។					
4. I learn better by reading than listening to someone. ៤. ខ្ញុំរៀនកាន់តែប្រសើរដោយការអានជាជាងការស្ដាប់នរណាម្នាក់។	☐	☐	☐	☐	☐
5. I learn more by reading textbooks than listening to lectures. ៥. ខ្ញុំរៀនកាន់តែបានច្រើនតាមរយៈការអានសៀវភៅច្រើនជាងការស្ដាប់ការបង្រៀន។	☐	☐	☐	☐	☐

Auditory (ស្ដាប់)					
Learning Style Statement	**1**	**2**	**3**	**4**	**5**
6. When the teacher tells me the instructions, I understand better. ៦. នៅពេលគ្រូប្រាប់ខ្ញុំពីសេចក្ដីណែនាំ ខ្ញុំយល់កាន់តែច្បាស់។	☐	☐	☐	☐	☐
7. When someone tells me how to do something in class, I learn it better. ៧. នៅពេលអ្នកណាម្នាក់ប្រាប់ខ្ញុំពីរបៀបធ្វើអ្វីមួយក្នុងថ្នាក់រៀន ខ្ញុំយល់កាន់តែច្បាស់។	☐	☐	☐	☐	☐
8. I remember things I have heard in class better than things I have read. ៨. ខ្ញុំចងចាំរឿងដែលខ្ញុំឮាប់បានលឺនៅក្នុងថ្នាក់ជាងអ្វីៗដែលខ្ញុំឮាប់បានអាន។	☐	☐	☐	☐	☐
9. I learn better in class when the teacher gives a lecture. ៩. ខ្ញុំរៀនកាន់តែប្រសើរនៅក្នុងថ្នាក់នៅពេលគ្រូបង្រៀន។	☐	☐	☐	☐	☐
10. I learn better in class when I listen to someone. ១០. ខ្ញុំរៀនកាន់តែប្រសើរនៅក្នុងថ្នាក់នៅពេលខ្ញុំស្ដាប់អ្នកណាម្នាក់។	☐	☐	☐	☐	☐

Kinaesthetic (សរីរាង្គកាយ)					
Learning Style Statement	**1**	**2**	**3**	**4**	**5**
11. I prefer to learn by doing something in class. ១១. ខ្ញុំចូលចិត្តរៀនដោយការធ្វើអ្វីមួយនៅក្នុងថ្នាក់។	☐	☐	☐	☐	☐
12. When I do things in class, I learn better. ១២. នៅពេលខ្ញុំធ្វើអ្វីៗនៅក្នុងថ្នាក់ ខ្ញុំរៀនកាន់តែប្រសើរ។	☐	☐	☐	☐	☐
13. I enjoy learning in class by doing experiments. ១៣. ខ្ញុំចូលចិត្តរៀននៅក្នុងថ្នាក់ដោយធ្វើពិសោធន៍។	☐	☐	☐	☐	☐
14. I understand things better in class when I participate in role playing. ១៤.ខ្ញុំយល់ពីអ្វីៗប្រសើរជាងមុននៅក្នុងថ្នាក់នៅពេលដែលខ្ញុំចូលរួមក្នុងសកម្មភាពសម្ដែងក្នុងថ្នាក់។	☐	☐	☐	☐	☐
15. I learn best in class when I can participate in related activities. ១៥. ខ្ញុំរៀនបានល្អប្រសើរបំផុតនៅក្នុងថ្នាក់នៅពេលខ្ញុំអាចចូលរួមក្នុងសកម្មភាពដែលទាក់ទង។	☐	☐	☐	☐	☐

Tactile (ប៉ះពាល់)					
Learning Style Statement	**1**	**2**	**3**	**4**	**5**
16. I learn more when I can make a model of something. ១៦. ខ្ញុំរៀនកាន់តែច្រើននៅពេលដែលខ្ញុំអាចបង្កើតគម្រូនៃអ្វីមួយ។	☐	☐	☐	☐	☐
17. I learn more when I make something for a class project. ១៧. ខ្ញុំរៀនកាន់តែច្រើននៅពេលដែលខ្ញុំអាចបង្កើតអ្វីមួយសម្រាប់គម្រោងរបស់ថ្នាក់។	☐	☐	☐	☐	☐

	1	2	3	4	5
18. I learn better when I make drawings as I study. ១៨. ខ្ញុំរៀនកាន់តែប្រសើរនៅពេលខ្ញុំគូររូបនៅពេលសិក្សា។	☐	☐	☐	☐	☐
19. When I build something, I remember what I have learned better. ១៩. នៅពេលខ្ញុំសាងសង់អ្វីមួយខ្ញុំចងចាំអ្វីដែលខ្ញុំធ្លាប់បានរៀនកាន់តែប្រសើរ។	☐	☐	☐	☐	☐
20. I enjoy making something for a class project. ២០. ខ្ញុំចូលចិត្តបង្កើតអ្វីមួយសម្រាប់គម្រោងក្នុងថ្នាក់។	☐	☐	☐	☐	☐

Group (ក្រុម)

Learning Style Statement	1	2	3	4	5
21. I get more work done when I work with others. ២១. ខ្ញុំអាចបំពេញការងារបានកាន់តែច្រើននៅពេលដែលខ្ញុំធ្វើការជាមួយអ្នកដទៃ។	☐	☐	☐	☐	☐
22. I learn more when I study with a group. ២២. ខ្ញុំរៀនកាន់តែច្រើននៅពេលខ្ញុំសិក្សាជាក្រុម។	☐	☐	☐	☐	☐
23. In class, I learn best when I work with others. ២៣. នៅក្នុងថ្នាក់ ខ្ញុំរៀនបានល្អបំផុតនៅពេលខ្ញុំធ្វើការជាមួយអ្នកដទៃ។	☐	☐	☐	☐	☐
24. I enjoy working on an assignment with two or three classmates. ២៤. ខ្ញុំចូលចិត្តធ្វើកិច្ចការសាលាណាមួយជាមួយមិត្តរួមថ្នាក់ចំនួនពីរឬបីនាក់។	☐	☐	☐	☐	☐
25. I prefer to study with others. ២៥. ខ្ញុំចូលចិត្តសិក្សាជាមួយអ្នកដទៃ។	☐	☐	☐	☐	☐

Individual (បុគ្គល)

Learning Style Statement	1	2	3	4	5
26. When I study alone, I remember things better. ២៦. នៅពេលខ្ញុំសិក្សាតែម្នាក់ឯង ខ្ញុំចងចាំអ្វីៗបានប្រសើរ។	☐	☐	☐	☐	☐
27. When I work alone, I learn better. ២៧. ពេលខ្ញុំធ្វើការតែម្នាក់ឯង ខ្ញុំរៀនកាន់តែល្អប្រសើរ។	☐	☐	☐	☐	☐
28. In class, I work better when I work alone. ២៨. នៅក្នុងថ្នាក់ ខ្ញុំធ្វើការកាន់តែប្រសើរនៅពេលខ្ញុំធ្វើការតែម្នាក់ឯង។	☐	☐	☐	☐	☐
29. I prefer working on projects by myself. ២៨. ខ្ញុំចូលចិត្តធ្វើការលើគម្រោងផ្សេងៗដោយខ្លួនឯង។	☐	☐	☐	☐	☐
30. I prefer to work by myself. ខ្ញុំចូលចិត្តធ្វើការដោយខ្លួនឯង។	☐	☐	☐	☐	☐

Student's Score: _____

Students' Engagement and English Performance: A Case of Undergraduate Students in the University of Cambodia[1]

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ABSTRACT

The relationship between students' learning engagement with their academic performance has attracted vast interest among scholars and educators in English as Foreign Language setting. Empirically, learning engagement is considered to be among the better predictors of learning and personal development. This research bared three objectives: (i) to assess students' learning engagement (ii) to assess the English performance, and (iii) to determine the relationship between students' engagement and their performance in English. Quantitative research method was employed with an online test in English tense and a survey questionnaire were used to collect the data from respondents. 96 students participated in the study, and male students comprised of 65.26% of the sample. It was found that, during high school education, most of the students (62.5%) moderately engaged in their English learning activities, 32.3% were poorly engaged while those who actively engaged in their English learning were only 5.2%. For the current academic year, almost 96% of the students engaged poorly in their learning activities. Additionally, the students' English performance was not significantly related to the students' high school learning engagement but was significantly related to their learning engagement at the university for the current academic year, despite the relationship is weak.

KEYWORDS: Students' engagement, academic writing, learning performance, Cambodia, relationship

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[1] It should be noted that this research was conducted during the second-wave of Covid-19 pandemics in Cambodia.

សង្ខិត្តន័យ

ទំនាក់ទំនងរវាងការចូលរួមរៀនសូត្ររបស់សិស្សជាមួយនឹងលទ្ធផលនៃការសិក្សារបស់ពួកគេ បានទាក់ទាញចំណាប់អារម្មណ៍អ្នកសិក្សាស្រាវជ្រាវនិងអ្នកអប់រំក្នុងបរិបទភាសាអង់គ្លេសជាភាសាបរទេស។ ជាក់ស្តែងការចូលរៀនសូត្រត្រូវបានចាត់ទុកថាជាឧបករណ៍ព្យាករណ៍ល្អមួយក្នុងចំណោមឧបករណ៍ព្យាករណ៍ល្អផ្សេងៗទៀតក្នុងការរៀនសូត្រនិងការអភិវឌ្ឍផ្ទាល់ខ្លួន។ ការស្រាវជ្រាវនេះមានគោលបំណងចំនួនបីៈ (១) ដើម្បីវាយតម្លៃការចូលរួមក្នុងការសិក្សារបស់និស្សិត (២) ដើម្បីវាយតម្លៃសមត្ថភាពរៀនរបស់និស្សិត និង(៣) ដើម្បីកំណត់ពីទំនាក់ទំនងរវាងការចូលរួមរបស់និស្សិតនឹងលទ្ធផលការសិក្សាភាសាអង់គ្លេសរបស់ពួកគេ។ វិធីសាស្ត្រស្រាវជ្រាវបែបបរិមាណត្រូវបានយកមកប្រើប្រាស់រួមជាមួយនឹងការធ្វើតេស្តអនុវត្តញជាភាសាអង់គ្លេសទាក់ទងនឹងកាលភាសាអង់គ្លេស និងបានប្រើកម្រងសំណួរស្រាវជ្រាវដើម្បីប្រមូលទិន្នន័យពីអ្នកឆ្លើយតប។ មាននិស្សិតចំនួន៩៦រូបបានចូលរួមនៅក្នុងការសិក្សានេះ និងមាននិស្សិតប្រុសចំនួន ៦៥,២៦% ក្នុងចំណោមសំណាកទាំងអស់។ មានការរកឃើញថាអំឡុងការអប់រំនៅវិទ្យាល័យ និស្សិតភាគច្រើន (៦២,៥%) មានការចូលរួមធ្យមក្នុងសកម្មភាពរៀនភាសាអង់គ្លេស ៣២,៣% មានការចូលរួមខ្ពស់ ខណៈអ្នកដែលចូលរួមយ៉ាងសកម្មក្នុងការរៀនភាសាអង់គ្លេសមានតែ ៥,២%ប៉ុណ្ណោះ។ សម្រាប់ឆ្នាំសិក្សាបច្ចុប្បន្ន មាននិស្សិតស្ត្រីតែ៩៦% មិនសូវចូលរួមបានល្អទេនៅក្នុងសកម្មភាពសិក្សារបស់ពួកគេ។ ក្រៅពីនេះលទ្ធផលសិក្សាភាសាអង់គ្លេសរបស់និស្សិតមិនមានទំនាក់ទំនងខ្លាំងជាមួយនឹងការចូលរួមក្នុងការសិក្សានៅវិទ្យាល័យរបស់និស្សិតទេ ប៉ុន្តែមានទំនាក់ទំនងខ្លាំងជាមួយនឹងការចូលរួមរៀនសូត្ររបស់ពួកគេនៅសកលវិទ្យាល័យសម្រាប់ឆ្នាំសិក្សាបច្ចុប្បន្នទោះបីជាទំនាក់ទំនងនោះខ្សោយក៏ដោយ។

ពាក្យគន្លឹះៈ (១) ការចូលរួមក្នុងការសិក្សា (២) សំណេរបែបសិក្សាស្រាវជ្រាវ (៣) សមត្ថភាពរៀន (៤) កម្ពុជា (៥) ទំនាក់ទំនង

1. INTRODUCTION

The concept of school and learning engagement has attracted a number of researchers to conduct research regarding the issues, especially in general education. At school level, evidence from several research studies pointed out that the level of students' engagement has strong relation to their academic achievement, student boredom and disaffection, and high dropout rates, especially in urban areas. There are numerous studies about student's engagement (Abbing, 2013; Akbari et al., 2016; Barghaus et al., 2017; Carini et al., 2006; Chan, 2018; Conner, 2009; Johnson et al., 2001; Pike et al., 2011; Salamonson et al., 2009; Shernoff et al., 2003). Empirically, one of the good predictors for the learning and personal development is engagement as it is simply seen that students will absorb the concepts more they are being disclosed when they study or practice more about the subject (Carini et al., 2006). According to Carini et al. (2006) engagement in learning is an active participation with purposeful activities. Not only are students seen to take charge of building their knowledge, but their learning also relies on the institutions and staff's provision or

conditions to push the students' involvement (Raine & Gretton, 2013). By this we mean, amongst other things, the time spent actively and cognitively engaged with the subject matter also plays a major role in the student's learning progression (Trowler & Trowler, 2010; Trowler, 2010).

To promote learning, student engagement is closely relevant to students' involvement, which many researchers have focused on studying educational constructs via students' active participation in classroom activities. Actually, based on scholars' conceptualization and dimensions, they have defined engagement differently (Norazmi et al., 2017).

Engagement is defined as students' involvement in such activities as active learning, participation in educational activities, getting guidance from staff or cooperating with other students (Coates, 2005, as cited in Vinson et al., 2010). Kuh (2009) stated that student engagement involves a high level of participation and a high quality of effort in the learning process. As a result, student engagement has been the focal point for numerous research studies as it is an area of the

college experience that presents student behaviors and performance to be addressed by universities and colleges through suitable assessment (Lee, 2018).

Regarding to English performance, students need to master a variety of such major skills as listening, speaking, reading and writing along with minor skills including vocabulary and grammar. For second language learners, grammar is regarded as a key part of a language and plays a significant role in fostering learners' language knowledge and social skills in the context. In addition, English grammar has also been considered to be a vital guidance for effectively acquiring English. (Cam & Tran, 2017, as cited in Lin et al., 2020). Also, to facilitate student engagement in learning grammar, Smagorinsky et al. (2007) found that instruction should be given in engaging, meaningful, enjoyable and relevant ways.

In addition, English grammar contains a lot of significant points, one of which is English tenses. In the study of the performance of English tenses by Chang (2012), among the 12 English tenses, the most difficult one was present perfect progressive, followed by future perfect progressive and past perfect progressive for freshmen and seniors, while for the graduate students was future perfect progressive, followed by present perfect progressive and past perfect progressive. The least difficult ones were simple past, simple present and simple future for freshmen and seniors as well as for graduates.

1.1. Contextual Understanding

Upon the arrival of United Nations Transitional Authority in Cambodia (UNTAC) in 1991 to ensure a democratic election in accordance with the Paris Peace Accord signed by four main political parties led to the formation of the Royal Government in 1993 as well as came the popularity of an international language – English as a medium of communication and work, following French a once popular language in the country (Sun, 2019). In addition, when Cambodia became a full member of the Association of South-East Asian Nations (ASEAN) in 1999, Cambodia announced its official participation in the international arena. Therefore, Cambodia's return to democracy and its return to international society were also a transition to a market economy which encouraged the study and use of English in the country. English is likely to remain the preferred language of international communication in Asia and

ASEAN for three reasons: investment in English may be regarded too much to dismiss; the privileged who have benefited from knowing English may not wish to give up their privileged position; and English is the common shared language (Igawa, 2008). This was also mentioned by H.E Hang Choun Naron, Minister of Education, Youth, and Sports, provided that Cambodians had good English language skills and professional skills, they could work with other members of ASEAN. He also said that in order to improve the quality of education, starting from grade 5, English as well as French were introduced as foreign languages (Hang, 2014).

Based on research findings of Hashim et al. (2014), Cambodia shows cultural capital such as in multiple concurrent degree program, the increase of English teaching careers in the capital, English's role as a primary communication function in higher education and work, and differences in the perceptions of Cambodian teachers compared to English native speakers at different institutional settings. Moreover, the cultural capital is enabled by the system of exchange to be linked to such capital forms as economic capital, social capital, symbolic capital and linguistic capital (Bourdieu, 1986, as cited in Hashim et al., 2014).

Currently, in Cambodia 125 Cambodian higher education institutions (HEIs) are being operated under the jurisdiction of 16 ministries/government institutions in 20 provinces. Among those HEIs, there are 76 institutions: 13 for public and 63 for private are under the supervision of the Ministry of Education, Youth, and Sports (MoEYS, 2019). It should be noted once again that during the 1990s Cambodia saw the rebirth of foreign languages, and English was introduced in the formal school curriculum after grade 4 onward (Sun, 2019). However, some private schools, especially those located in the capital city start to introduce English education at very earlier age. In some cases, like in the case of international schools, English is taken as the main medium of instruction. Even that prior to entering the university learning, all students have been through at least six years of English learning, but their learning style lacks academic activities. Reading academic texts or preparing academic reports at their general education is not seen as common practices for high school students. Basically, academic writing is very limited.

1.2. Research Problem

No difference from other nations, in Cambodia, the issues concerning students' engagement has also attracted several researchers' interest. With existing literature, engagement in learning, especially in the field of EFL in Cambodian context, gains the most interest among Cambodian scholars. Evidences concerning this could be found in Heng (2017); Heng (2012), and Heng (2014). However, reviewing these, there are empirical gaps that no prior study focuses on students' engagement with relation to specific domain of disciplines. Based on Kong et al. (2003), discipline-specific models of academic engagement shall be conducted for students' engagement in different subject areas. For example, students' engagement in mathematics should be differently measured than their engagement in other subject areas. With this regard, the current research aims at providing scientific evidence related to students' engagement and their English language performance.

Upon entering higher education, students need to expose to new learning styles of which preparing English performance is one of the common practices and several researches pointed out major difficulties students face during their higher education learning due to lack of experience in academic writing. Itua et al. (2012) found that shortage of time and confidence, extended writing, reading and understanding of academic texts or journals, referencing, and academic jargons were obstacles to academic writing. As shortage of the practice, college students may not work hard until they face deadline (Shaw, 2002, as cited in Lumpkin, 2015). Moreover, based on many research studies in Europe, Africa, Gulf Straits, Australia, and Asia in different settings, situations, levels, and methods, EFL students were found to have almost similar type of linguistic difficulties at tertiary level of education in both general English writing and research writing (Sajid & Siddiqui, 2015). For example, Mohamed (2020) conducted a study on a number of Libyan students, who were studying at Tennessee State University in the United States, and concluded that the difficulty of university study arises when it comes to academic writing, group discussion, and critical thinking. Also, there were some concerns that lack of familiarity in learning styles at higher education affect their performance greatly (Dunn & Griggs, 2000).

1.3. Research Objectives

The present study had the following objectives:

- To assess the level of learning engagement of undergraduate students at the University of Cambodia (UC)
- To assess the English performance of undergraduate students at the University of Cambodia (UC)
- To determine the relationship between the students' learning engagement and their English performance

With the above objectives, this study was guided by the following research questions:

- What is the level of the learning engagement among undergraduate students at UC?
- Do the students' learning engagement differ in terms of some independent variables such as gender, their attendance in English extra-paid class at high school or their working status?
- What is the level of students' English performance and how it differs in terms of the aforementioned independent variables?
- Are there any significant relations between students' English performance and their learning engagement?

1.4. Conceptual Framework

Students' engagement in school and their school performance or achievements are essential focal points of educational research. Regarding student engagement, three dimensions are raised such as behavioral engagement which refers to students' participation in academic and extracurricular activities; emotional engagement which refers to students' positive and negative reactions to peers, teachers and schools; and cognitive engagement which refers to student's thoughtfulness and willingness to master difficult skills (Fredericks, et al., 2004). Moreover, as raised by Skinner and Pitzer (2012) on the motivational conceptualization of engagement contains both behavioral dimension including effort, intensity, persistence, determination, and perseverance to confront barriers and hardship; and emotional or affective engagement such as enthusiasm, enjoyment, fun, and satisfaction; as well as cognitive engagement that includes attention, concentration, focus, absorption, direct participation, and a willingness to do more than the requirements.

In this study, two areas of students' learning engagement: high school engagement and university engagement were covered. For the university learning engagement, only two types of learning engagement were measured: behavioral and emotional engagements based on Fredericks et al. (2014).

The overall framework of this study was presented in the following figure.

Figure 1
Conceptual Framework for the Study
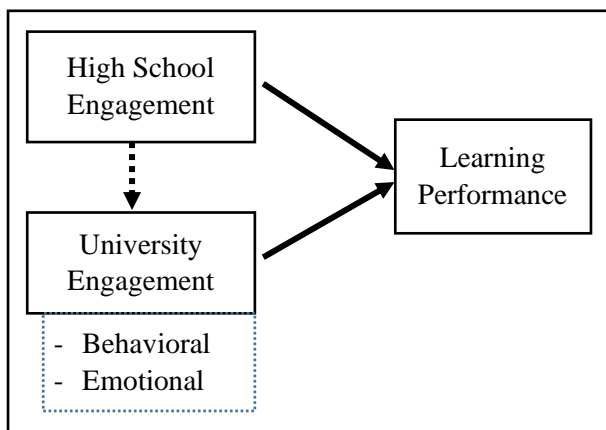
2. METHODOLOGY

The objectives of this study were to assess the students' engagement in learning and the English performance as well as determine their relationship of undergraduate students at the University of Cambodia (UC). Quantitative research methodology (Creswell & Creswell, 2018) was used in this study.

2.1. Research Sample

This research was conducted with 96 junior undergraduate students studying in UC. The selection of the research sample followed convenient sampling technique where all of them were students who have registered into an international-track English program at the university. The majority of the participants were male (65.26%) while female comprised of only 34.74% of the sample.

2.2. Research Instrument

This study utilized a survey questionnaire and an English grammar test to collect data from respondents.

A. *Survey Questionnaire*

The questionnaire was about the students' engagement in learning and was classified into three sections below:

- **Section 1: General Questions**

  This section consists of six items (Q1-Q6) which ask the respondents about their gender, age, working status and learning schedule etc.

- **Section 2: Students' High School Learning Engagement**

  This section consists of nine questions (Q7-Q15) which ask the respondents about their involvement or experience in English learning at high school.

- **Section 3: University Learning Engagement**

  In this section there are 19 items which ask the participants about two types of learning engagement: (i) Behavioural Engagement and (ii) Emotional Engagement. There are 14 items (Q16-Q29) for behavioural engagement, and they have been adapted from AUSSE Student Engagement Questionnaire (ACER, 2012). These 14 items were selected and contextualized so that they fit the current situation of online learning during the Covid-19 pandemic. There are 5 items (Q30-Q34) which were developed by the researchers, and used to assess the respondents' emotional engagement in learning English.

Before administering the questionnaire, the researchers conducted a pilot survey among 15 students to see how well it was developed and check the language used in the questionnaire. The final version of the questionnaire had considerably high reliability scale of 0.851 based on Cronbach's alpha value.

B. *English Grammar Test*

The researchers specifically developed the English test so that it fits well to the real situation of English courses offered in the selected university. The test covered English grammar concepts which were taught during the last semester. The following four grammatical skills were covered and tested in this research:

- Skill 1: English Tenses
- Skill 2: Verb Pattern Recognition

- Skill 3: Passive Voice
- Skill 4: Grammar in Context

To deal with validity concern, the researchers consulted the first draft of the test with the lecturers and professors teaching at the selected university. The researchers tried to make sure that the final version of this test fits well the real situation of the students and the English programs at this university.

2.3. Data Collection and Analysis

Due to the Covid-19 where social distancing and online learning were mandatory, the data collection was carried out in an online format. The researchers first requested the students to take the English test for 90 minutes before admitting the engagement questionnaire. The collected data were coded and entered into SPSS program for analysis. Descriptive summaries and statistical tabulations as well inferential statistical tools were used to analyse the data. The dependent variables in this study are students' test score and the three categories of learning engagement: (i) high school learning engagement, (ii) behavioural learning engagement and (iii) emotional learning engagement.

The Shapiro-Wilk tests revealed that the students' test scores and the three types of learning engagements were normally distributed; therefore, the students' t-tests were used to compare the differences in these dependent variables with respect to some independent variables such as gender, working status and their attendance in English extra-paid classes, while Pearson's Correlational Analyses were used to seek the relationship among these dependent variables.

3. RESEARCH FINDINGS

3.1. Participants' Information

There were 96 students participated in the study with the majority of them aged between 18-24 years old (86.5%) where the students aged between 24-30 covered 13.5% of the remaining sample. Among those students, full scholarship category covered the biggest proportion (64.6%), partial scholarship (26%), and 9.4% of them were fully paid students. Moreover, it was found that 62.1% of the students (numbered at 59) had attended English extra-paid classes during their high school learning. Among

these, female students (69.49%) had more chance to attend this English supplementary education.

Table 1
Students' attending in English extra-paid classes during their high school education

	English Extra-Paid Class		Total
	Attended	Not Attended	
Male	18	15	33
Female	41	21	62
Total	59	36	95

Table 2 below revealed that 61.5% of the respondents had either part-time or full-time job that requires certain English knowledge to perform daily task more effectively. This would also indicate that they had a good chance to practice their English outside of classroom.

Table 2
Participants' job that requires English to perform more effectively

	Frequency	Percent
Need English	59	61.5
No Need English	37	38.5
Total	96	100.0

3.2. Students' Learning Engagement

In this section, the students' learning engagements were presented in three themes: (i) students' high school learning engagement, (ii) students' behavioural learning engagement and (iii) students' emotional learning engagement. For simplicity, these three concepts are called as '*High School Engagement*', '*Behavioural Engagement*' and '*Emotional Engagement*'.

The analysis and interpretation of the findings for '*High School Engagement*' were based on the following table.

Table 3
Interpretation criteria for students' High School Engagement based on the total score

Value Range	Interpretation
9 – 25	Low Engagement
26 – 35	Moderate Engagement
36 – 45	Active Engagement

In similar sense, the analysis and interpretation of the finding for '*Behavioural Engagement*' were based on the following table.

Table 4
Interpretation criteria for the Students' Behavioural Engagement based on the total score

Value Range	Interpretation
14 – 40	Low Engagement
41 – 55	Moderate Engagement
56 – 70	Active Engagement

The analysis and interpretation of the findings for '*Emotional Engagement*' were based on the following table.

Table 5
Interpretation criteria for Students' Emotional Engagement based on the total score range

Value Range	Interpretation
5 – 15	Low Engagement
16 – 20	Moderate Engagement
21 – 25	Active Engagement

The result in Table 6 revealed that, during high school education, most of the students (62.5%) moderately engaged in their English learning activities, 32.3% were poorly engaged while those who actively engaged in their English learning were only 5.2% of the participants. In addition, it was found that all the students who were actively engaged in learning responded that they did attend the English extra-paid classes during their high school education. It was evidenced from the t-tests that the student's high school learning engagement had no significant differences in relation to their gender and working status that require English to complete the daily tasks. However, the difference was found with their high school attendance in English extra-paid classes. The students who had attended the English extra-paid classes at high school were found to have higher engagement in their learning at high school ($Mean = 29.17$) in their learning than those who did not attend these classes ($Mean = 26$).

Table 6
Students' engagement in English learning activities during their high school education

	Frequency	Percent
Low Engagement	31	32.3
Moderate Engagement	60	62.5
Active Engagement	5	5.2
Total	96	100.0

Table 7 below presented the findings of students' behavioural engagement in learning English at the university for the current academic year. It was revealed that 25% of the students stated that they engaged very low in their learning activities. 68.8% of them reported that they moderately engaged in their learning processes, while only 6.3% of them engaged actively in their learning for the current academic year.

Table 7
Students' behavioural engagement in their learning processes during the current academic year.

	Frequency	Percent
Low Engagement	24	25.0
Moderate Engagement	66	68.8
Active Engagement	6	6.3
Total	96	100.0

Moreover, it was evidenced from t-tests that the differences in the respondents' behavioural engagement in learning English with regard to gender and their working status were not statistically significant.

The result in Table 8 below showed that majority of the respondents (60.4%) have moderately engaged emotionally in learning English during the online learning while 7.3% of them engaged lowly in their learning. Those who actively engaged emotionally in their learning accounted for 32.3% of the sample.

Table 8
Students' emotional engagement in their learning during the current academic year.

	Frequency	Percent
Low Engagement	7	7.3
Moderate Engagement	58	60.4
Active Engagement	31	32.3
Total	96	100.0

The results from t-tests revealed that there were no significant differences in their emotional engagement in learning English with regard to gender or the respondents' working status that requires English. In addition, the study also revealed that there is a significant relation between the students' '*Behavioural Engagement*' and their '*Emotional Engagement*' in learning English despite this relation is weak ($r(96) = 0.272, p = 0.007$). It was evidenced that the students who positively involved emotionally in English learning tend to participated actively in their learning processes at the university level.

3.3. Students' English Performance

It should be noted that the English performance was measured with grammatical concepts and covered four important grammatical skills below:

Table 9
English test expected scores

No.	Tested Skills	Expected Score range
1	English Tenses	0-10
2	Verb Pattern Recognition	0-10
3	Passive Voice	0-10
4	Grammar in Context	0-10
	Total Score	0-40

It was found that the students' overall performance in grammar was slightly above the average score ($Mean = 22.0, SD = 5.723$). Their performance in English Tenses was the highest where their competency in using English grammar in contexts was found to be the lowest among the four skills (see Table 10).

Table 10
Student's performance in each of the tested grammatical skills

	N	Mean	SD
English Tenses	96	6.073	1.848
Verb Pattern Recognition	96	5.36	2.068
Passive Voice	96	5.64	2.331
Grammar in Context	94	5.03	1.840

In addition, the students' English grammatical performance was found to be of no significant difference with regard to gender, their high school attendance in English extra-paid classes or whether they have or no job that requires English to complete the daily tasks.

3.4. Learning Engagement and Performance

The following table presented the findings about relationships among the dependent variables in this study. It was found that the students' English performance was not significantly related to their students' high school learning engagement or their 'Emotional Engagement', but was positively related to their 'Behavioural Engagement' at the university for the current academic year ($r(96) = 0.175, p = 0.044$), although the relationship is weak. In this case, we may infer that those who actively engage in all learning activities tend to do better in their learning.

Table 11
Correlation matrix of students' performance and their learning engagement

	1	2	3	4
1. Total Scores	1	.111	.175*	.126
2. High School Engagement		1	.435**	.137
3. Behavioural Engagement			1	.272**
4. Emotional Engagement				1

*. Correlation is significant at the 0.05 level (1-tailed).
**. Correlation is significant at the 0.01 level (1-tailed).

The findings further explained that there was a significant relationship between the students' 'High School Engagement' and their 'Behavioural Engagement' ($r(96) = 0.435, p = 0.001$). We could deduce from this finding that those who learnt actively during high school education tend to participate actively in their university learning.

4. DISCUSSION

Research Objective One

The finding from this study revealed that more than 60% of the students moderately engaged either emotionally or behaviourally in their English learning during the current academic year. We could also see that there was a significant difference with the proportions of students who were lowly and actively involved in their English learning in term of behavioural and emotional engagements (see Table 7 and 8 for more details). This might be caused by two main reasons. First, all learning activities were conducted online because of Covid-19 pandemic, while some students were not familiar with such technological tools as Zoom Meetings, Google Classroom, Google Meet and so on. For Cambodia, a country with 9.7 million internet users (about 58% of its 16.7 million population), transitioning to online learning and teaching is a real challenge and a difficult adjustment for many students, teachers, administrators, and parents (Heng, 2020). Second, some of the students also stayed in the provinces which could get slow internet signal to be able to catch up with every lesson properly. According to Basilaia and Kvavadze (2020), they raised that for developed countries and some developing countries,

online teaching and learning are not a new way of delivery, but the transition from physical class to online learning is challenging for teachers, students, families, and the countries government in terms of shortage of finance, skill, ICT infrastructure, internet access, and educational resources. Moreover, based on the study of seventy-three STEM undergraduates by Wester et al. (2021), it was found to have a dramatic decline in emotional engagement during Covid-19 pandemic. Similarly, in the survey of Canadian undergraduate students by Daniels et al. (2021), the findings showed that all students' achievement goals, engagement and perception of success significantly declined while the cheating perception increased, also it was found that emotional engagement was the most significant decline during Covid-19 pandemic. Furthermore, Amir et al. (2020) who did research about the student perspective of classroom and distance learning found out that distance learning led to more difficult communication and less learning satisfaction, along with such challenges of external factors as unstable internet connection, additional financial burden for internet quota; as well as such internal factors as time management and focus difficulty in online learning for a long time.

Research Objective Two and Three

It was found that the students' overall performance in grammar was slightly above the average score ($Mean = 22.0, SD = 5.723$). Moreover, it was found that the students' English performance was positively related to their 'Behavioural Engagement' but not related to their 'Emotional Engagement'. This kind of a bit poor performance in English grammar could be caused by impacts of Covid-19 which shifted the physical classroom to online learning that faced such aforementioned challenges in the objective one as lack of digital literacy, poor internet connection, as well as extra financial burden. In a study of tertiary education in Bangladesh by Dutta and Smita (2020) found out that students faced a lot of challenges during Covid-19 pandemic such as lacking of skills in using electronic devices, having limited or no access to internet, paying high cost of internet package, and facing frequent power cut in the areas. The interruption of internet connection could lead to obstruction of students' concentration. All of these

could be regarded as a new stress along with physical problems for the students. In another study on Covid-19 and E-learning in Ghana by Aboagye et al. (2020), the findings showed that accessibility issues such as internet connectivity and compatible devices were the most significant challenge for students to conduct online study. Based on the same study, the findings revealed two factors: students were not ready for online study, and another one is that they were attached to the conventional approach. Thus, when students were not prepared for online study, they also had no motivation and willingness to learn intrinsically (Steinmayr & Spinath, 2009, as cited in Aboagye et al., 2020). In addition, it might be caused by such time factor as for an evening session that is mostly attended by students who also work for the whole day before pursuing their study in the evening, which could make them lose some learning engagement because of some fatigue after work and lack of concentration on study as well, particularly while studying online for such a long time.

5. CONCLUSION

5.1. Implication and Conclusion

In conclusion, it could be seen that the Covid-19 outbreak significantly affect the students' learning as not only has their engagement in the learning processes has dropped, but their performance has also been jeopardised. The majority of the participants reported that they poorly engaged in their learning processes due to the online learning approaches. Their English performance decreased significantly, particularly related to English grammar. Regarding English performance, grammar in context seemed to be somewhat difficult for most students to do it well while individual skills were a bit easy for them to complete. The reasons which might cause their performance to go down could be in terms of the fast adoption of online study and internet connection which might lead to their lack of concentration and effort for their study. Regarding the online study, as raised by Corrado (2021), Massive Online Open Courses (MOOCs) by themselves can only provide little support to a student's learning experience if the implementation is not guided by clear guidelines and needs to consider such key factors as seeking funding, promoting the course, legal issues, scaffolding, connection between learners, and alignment with learning outcomes. Moreover, to improve students'

English language performance particularly in applying grammar in the context, blended learning approach should be applied to engage students in learning and guiding them to extend their learning outside the classroom by using various technological resources both offline and online (Qindah, 2018) so that students' engagement, motivation, and active learning will be enhanced to promote their academic performance.

5.2. Limitation and Direction for Further Study

It should be noted that the context, interpretation and the findings of this research were bonded to the following limitations:

o It was conducted with a small sample size from limited courses within a particular university; therefore, making a generalization to the whole university or other population is not scientifically practical.

o The research questionnaire used was strictly situational-based which bonded to the actual situation of online learning during the Covid-19; therefore, the items chosen were strongly related to the aforementioned situation. The results may not reflect the theoretical framework of students' engagement and learning performance.

o The English test items used in this study covered only a few grammatical points such as tenses, passive voices, verb patterns and grammar in context based on UC's English courses; therefore, the performance level found in this study may not reflect the students' real knowledge in English.

Therefore, the researchers suggest a further study that should go deeper in all macro skills to analyse the students' English performance. The engagement assessment should cover more items beyond the context-based of online learning. Moreover, to provide a strong scientific foundation of theoretical framework, future research should be conducted in a larger sample size across different higher institutions.

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To Know More

Workplace:
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B.Ed in TEFL
 Institute of Foreign Language (IFL), RUPP

MA in TEFL

 Norton University, Cambodia

Research Interest:
- Learning engagement
- Language performance
- Motivation
- Teaching and learning grammar

Bunly KEP

To Know More

Workplace:
Institute of Police Science Research, Police Academy of Cambodia

PhD's Degree in Leadership

Pannasastra University of Cambodia

Research Interest:
- Organizational behavior
- Organizational learning
- Motivation

APPENDIX

<div align="center">

SURVEY QUESTIONNAIRE

Students' Engagement and English Language Performance: A Case of Undergraduate Students in University of Cambodia

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Research Purpose:

This study aims at assessing the relationship between students' learning engagement with their English language performance. The analysis from this study is exclusively for research and educational purposes where privacy of your information will be kept confidential.

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(Your Cooperation is highly appreciated.)

</div>

Part 1: General Questions

Q1: Gender: ☐ Female ☐ Male

Q2: Age: ☐ Below 18 ☐ 18-24 ☐ 24-30 ☐ Over 30

Q3: Did you attend English classes at extra hours during your general education years?

☐ Yes ☐ No

Q4: Degree Status: ☐ Scholarship ☐ Partial Scholarship ☐ Fully Paid

Q5: Learning Schedule

☐ Weekday (Morning) ☐ Weekday (Afternoon) ☐ Weekday (Evening)

☐ Weekend ☐ Other…………………………………………

Q6: Do you have part-time or full-time job that requires certain knowledge of English to perform daily tasks more effectively?

☐ Yes ☐ No

Part 2: English Learning Experiences

With regard to your previous learning experience at high school (either in formal classes or extra-paid classes), how often did you do the following tasks in English?

	Activities/Statements	Never	Rarely	Sometimes	Often	Always
Q7	I attended English extra-paid classes to improve my English during high school education.	☐	☐	☐	☐	☐
Q8	Read English texts/ stories then write a summary of 200-500 words.	☐	☐	☐	☐	☐
Q9	Were asked to write a paragraph about any general topic.	☐	☐	☐	☐	☐
Q10	Write a short essay about any general topic.	☐	☐	☐	☐	☐
Q11	Write a paragraph about specialized/ technical topic (more academic).	☐	☐	☐	☐	☐
Q12	Write a short essay/school report about specialized/ technical topic (more academic).	☐	☐	☐	☐	☐
Q13	Have peer/classroom conversation during learning hours.	☐	☐	☐	☐	☐
Q14	Conduct roleplay during learning hours.	☐	☐	☐	☐	☐
Q15	Make a presentation in front of the class that last from 10-15 minutes.	☐	☐	☐	☐	☐

Part 3: Learning Engagement

In your experience at your university during the current academic year, about how often have you done each of the following?

	Activities	Never	Rarely	Sometimes	Often	Always
Q16	Sought advice from academic staff including lecturers and/or consulting adviser.	☐	☐	☐	☐	☐
Q17	Made a class or online presentation on your assigned work.	☐	☐	☐	☐	☐
Q18	Worked hard to master difficult contents or lessons in your classes.	☐	☐	☐	☐	☐
Q19	Prepared two or more drafts of an assignment before handing it in.	☐	☐	☐	☐	☐
Q20	Used library resources on campus or online to do your work or expand your horizons.	☐	☐	☐	☐	☐
Q21	Worked on an essay or assignment that required integrating ideas or information from various sources.	☐	☐	☐	☐	☐
Q22	Blended academic learning with workplace experience.	☐	☐	☐	☐	☐
Q23	Came to class having completed writings or assignments.	☐	☐	☐	☐	☐
Q24	Worked with other students outside class to prepare assignments.	☐	☐	☐	☐	☐
Q25	Tutored or taught other university students (paid or voluntary).	☐	☐	☐	☐	☐
Q26	Used an online learning system to discuss or complete an assignment.	☐	☐	☐	☐	☐
Q27	Discussed ideas from your readings or classes with teaching staff outside class.	☐	☐	☐	☐	☐
Q28	Received prompt written or oral feedback from lecturers on your academic performance.	☐	☐	☐	☐	☐
Q29	Worked harder than you thought you could to meet your lecturers' standards or expectations.	☐	☐	☐	☐	☐

How do you agree to the following statements?

	Statements	Strongly Disagree	Disagree	Normal	Agree	Strongly Agree
Q30	I always prepare myself well for my English classes, tests and quizzes.	☐	☐	☐	☐	☐
Q31	I always feel nervous in quizzes or exams of English.	☐	☐	☐	☐	☐
Q32	I often motivate myself to get a good score in English.	☐	☐	☐	☐	☐
Q33	I always pay full attention during my English classes.	☐	☐	☐	☐	☐
Q34	I always find time outside of my usual classes to listen or watch songs, movies etc. in English.	☐	☐	☐	☐	☐

(Thank you for your cooperation)

ENGLISH GRAMMAR TESTING

This test is just a normal survey to identify the grammar points you have learnt from various subjects at the University of Cambodia such as ENG 108, ENG 208, and particularly ENG 107. The main purpose is to find out what problems you may face in learning these grammar points, particularly on tenses, verb patterns, and passive voices. Thank for your cooperation in completing this survey.

SECTION 1: TENSES

Read the following sentences and identify whether the following sentences are correct or incorrect.

1. Since I have been a college student, I made many new friends.
   A. Correct   B. Incorrect

2. I was interested in physics since high school.
   A. Correct   B. Incorrect

3. Having good social skills is essential for my job, and I decide to take a class in personal communication.
   A. Correct   B. Incorrect

4. Since she was a child, she likes sports, especially water sports, such as swimming and waterskiing.
   A. Correct   B. Incorrect

5. Mario graduate as a veterinarian in January of last year.
   A. Correct   B. Incorrect

6. Riza speaks English and comes from USA.
   A. Correct   B. Incorrect

7. First, we went to Kirium Resort. Then we travel to Preah Sihanouk and Koh Kong. Finally, we visit Kampot.
   A. Correct   B. Incorrect

8. There are rumors that college tuition is higher next year.
   A. Correct   B. Incorrect

9. By the time of the presidential election, the candidates will have campaigned in most, if not all, of the 50 states.
   A. Correct   B. Incorrect

10. In my opinion, voting in elections was very important.
   A. Correct   B. Incorrect

SECTION 2: VERB PATTERNS

Choose the correct verb form to complete each sentence.

11. Are you looking forward to _____ with your childhood friend?
A. meet up   B. meeting up   C. to meet up

12. I really don't mind ____ my little sister.
A. look after   B. looking after   C. to look after

13. If you want me to tell you, you have to promise ____ it a secret.

A. keep   B. keeping   C. to keep

14. I regret _____ her because it's not her fault.
A. blame   B. blaming   C. to blame

15. My son denied _____ my smart phone.
A. break   B. breaking   C. to break

16. I usually stop _____ breakfast before going to school, so I won't feel hungry in the class.
A. eat   B. eating   C. to eat

17. I am not sure who _____ for help with this problem.
A. ask   B. asking   C. to ask

18. Aren't you afraid of _____ your father in the party?
A. meet   B. meeting   C. to meet

19. I believe in _____ hard, not in destiny.
A. work   B. working   C. to work

20. He went on _____ till 11 o'clock to review the lessons.
A. study   B. studying   C. to study

SECTION 3: PASSIVE VOICES

Read carefully and choose the best sentences that are changed correctly from active to passive voices.

21. My parents usually teach me for 1 hour before going to bed.
A. I am usually being taught for 1 hour before going to bed by my parents.
B. I am usually taught by my parents for 1 hour before going to bed.
C. Before going to bed, I am usually being taught for 1 hour by my parents.
D. Before going to bed, my parents are usually taught by me for 1 hour.

22. Her children are offering each monk some food and money in front of their house at the moment.
A. Each monk is offered some food and money by her children in front of their house at the moment.
B. Some food and money are offered by her children to each monk in front of their house at the moment.
C. Each monk is being offered some food and money by her children in front of their house at the moment.
D. Each monk, some food and money are being offered by her children in front of their house at the moment.

23. Someone has stolen some fruit from my garden.
A. Some fruit has been stolen from my garden by someone.
B. Some fruit have been stolen from my garden by someone.
C. Some fruit has been being stolen from my garden.
D. Some fruit has been stolen from my garden.

24. The police accused 3 people of breaching the curfew last night.
A. Breaching the curfew was being accused by police of 3 people last night.
B. 3 people were accused of breaching the curfew last night by the police.

C. 3 people were being accused by the police of breaching the curfew last night.

D. The police were accused of breaching the curfew last night by 3 people.

25. Some students were doing the special midterm assignments to submit to their lecturer while he was teaching the lesson.

A. The special midterm assignments were being done by some students to submit to their lecturer while he was teaching the lesson.

B. The special midterm assignments were done by some students to submit to their lecturer while he was teaching the lesson.

C. Their lecturer was being done the special midterm assignment to submit by some students while he was teaching the lesson.

D. While he was teaching the lesson, their lecturer was being done the special midterm assignment to submit by some students.

26. We had already finished the homework for our lecturer.

A. Our lecturer had already been finished the homework by us.

B. The homework had already been finished for our lecturer by us.

C. The homework had been finished to our lecturer by us.

D. The homework had already finished by us to our lecturer.

27. My friends will hold a farewell party at the end of the semester.

   A. At the end of the semester will be held a farewell party by my friends.

   B. My friends will be held a farewell party at the end of the semester.

   C. A farewell party will be held by at the end of the semester.

   D. A farewell party will be held by my friends at the end of the semester.

28. Riza is going to buy her mother a new phone on Mother's Day.

   A. Her mother a new phone is going to be bought on Mother's Day by Riza.

   B. Her mother is being bought a new phone by Riza on Mother's Day.

   C. A new phone is going to be bought for her mother on Mother's Day by Riza.

   D. Her mother is going to be being bought a new phone on Mother's Day by Riza.

29. You must bring me your new homework tonight.

   A. I must be brought your new homework tonight.

   B. Your new homework must be brought me tonight.

   C. Your new homework must been brought to me tonight.

   D. I must to be brought your new homework tonight.

30. Someone may have forgotten the wallet here.

   A. The wallet may be forgotten here.

   B. The wallet here may be forgotten.

   C. The wallet may have been forgotten here by someone.

   D. The wallet may have been forgotten here.

SECTION 4: GENERAL REVISION

Read the passage below about the "Introduction: The Olympics" below and choose the correct answer. You can also just go straight to do the exercises.

Introduction: The Olympics

The word "Olympics" comes from the name of the town Olympia in Greece, where the ancient Olympic Games were always held. The first recorded Olympic Games were held in 776 B.C.; the Games took place every fourth year after that date until they were abolished by a Roman emperor in A.D. 394.

It was not until 1875, when archeologists discovered the ruins of the Olympic Stadium in Greece, that interest in the Games was renewed. Baron Pierre de Coubertin, a French scholar and educator, proposed that the Games should be revived as an international competition to encourage both sport and world peace.

The first modern Olympic Games were held in Athens in 1896. Like their classical predecessors, the athletes were men only; women were admitted to the Games in 1900. Since that time, the Games have been held at four-year intervals as in ancient Greece. However, since de Coubertin's dream of world peace has not been realized, the two World Wars prevented those of 1916, 1940, and 1944 from being held.

The Olympic Games have been confined to amateur athletes despite a few recent exceptions. There are pressures on the Olympic authorities to admit other professionals to the Games. Such a step would damage the entire concept of the Olympics. The following words appear on the scoreboard at every Olympic opening: "The most important thing is not to win but to take part." In contrast, the aim of every professional is to win. (*Adopted from TOEFL® Grammar Flash, 2002*)

31. When archeologists discovered the ruins of the Olympic Stadium, interest in the Games _____.
    A. was renewed
    B. were renewed
    C. they were renewed
    D. renewed

32. The ancient Olympic Games _____ as amateur contests, but in time became professional.
    A. begun
    B. began
    C. beginning
    D. they began

33. The Olympic Games are held every four years in a selected country, and _____ to athletes of all nations.
    A. they are opened
    B. are opened
    C. they are open
    D. it is open

34. Winning first place in an event was the only glory in the ancient Games because second and third places _____.
    A. did not recognize
    B. are not recognized
    C. was not recognized
    D. were not recognized

35. After more than 1,500 years, Athens _____ for the site of the first modern Olympics.
    A. were chosen
    B. was chosen
    C. is chosen
    D. chosen

36. The authorities permitted women _____ in track and field events in the 1928 Winter Games.
    A. to take part
    B. taking part
    C. take part
    D. to taking part

37. In ancient Greece it was agreed _____ wars for the Olympic Games.
    A. to stop
    B. stopping
    C. stop
    D. stopped

38. The two World Wars prevented the Olympics from _____ place.
    A. taking
    B. to take
    C. to taking
    D. took

39. The Roman Emperor Theodosius ordered the Games _____ in A.D. 394.
    A. stopping
    B. to stop
    C. stopped
    D. stop

40. The Olympic torch _____ throughout the Games and is then extinguished at the closing ceremony.
    A. burning
    B. is burned
    C. burned
    D. burns

This is end of the test.
Thanks for your cooperation!

កាលិកបត្រស្រាវជ្រាវមនុស្សសាស្ត្រនិងវិទ្យាសាស្ត្រសង្គម

(Cambodian Journal of Humanities and Social Science)

Website: https://ihss.rac.gov.kh/ihss-journal/

Relationship between Students' Attitudes toward Mathematics and Their Achievement in Probabilities and Statistics: A Case of Engineering Students at ITC[1]

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ABSTRACT

The objectives of this study were (i) to understand the students' achievement in probabilities and statistics, (ii) to understand the students' attitudes toward mathematics, and (iii) to identify the relationship between the students' attitudes and their achievement. A total of 319 engineering students who had just finished their 2nd year program at the Institute of Technology of Cambodia (ITC) participated in the data collection with an online survey. The result indicated that the students' performance in probability and statistics was fairly good, and the students' background knowledge in mathematics played a certain role in shaping their achievement. Overall, the students had positive attitudes toward mathematics, especially in terms of their interest and confidence in mathematics; however, they also expressed certain fear toward mathematics. The students' gender played no significant role in shaping their attitudes toward mathematics, but their background knowledge in mathematics indicated specific associations. Spearman's correlations proved that, despite being weak in the relationship, the relations existed among all the three factors of the students' attitudes toward mathematics. These relations showed that the more positive the students felt about mathematics, the better they would perform in learning this subject.

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[1] ITC is an abbreviation for Institute of Technology of Cambodia, a higher education institution providing degree programs in engineering and other science related majors.

សង្ខិត្តន័យ

វត្ថុបំណងនៃការស្រាវជ្រាវនេះគឺ (១) ស្វែងយល់ពីលទ្ធផលសិក្សាលើមុខវិជ្ជាប្រូបាប៊ីលីតេនិងស្ថិតិរបស់និស្សិតស្វែករនៅវិទ្យាស្ថានបច្ចេកវិទ្យាកម្ពុជា (២) ស្វែងយល់អំពីឥរិយាបថរបស់និស្សិតទៅលើមុខវិជ្ជាគណិតវិទ្យា និង (៣) កំណត់ពីទំនាក់ទំនងនៃលទ្ធផលសិក្សារបស់និស្សិតជាមួយនឹងឥរិយាបថរបស់គេទៅលើមុខវិជ្ជាគណិតវិទ្យា។ ដើរសាស្ត្រស្រាវជ្រាវបរិមាណវិស័យ អមជាមួយនឹងក្រមងសំណួរតាមអនុឡាញ ត្រូវបានប្រើប្រាស់ដើម្បីប្រមូលទិន្នន័យពីក្រុមគោលដៅដែលបានកំណត់។ និស្សិតស្វែករចំនួន៣១៩នាក់ ដែលទើបនឹងបញ្ចប់ការសិក្សាឆ្នាំទី២នៅវិទ្យាស្ថានបច្ចេកវិទ្យាកម្ពុជា បានចូលរួមក្នុងការសិក្សានេះ។ ការសិក្សាបានបង្ហាញថា លទ្ធផលសិក្សារបស់និស្សិតទាំងនេះ លើមុខវិជ្ជាប្រូបាប៊ីលីតេនិងស្ថិតិ ស្ថិតក្នុងកម្រិតល្អប្រសើរ ដោយលទ្ធផលក៏បានបង្ហាញបន្ថែមថា សមត្ថភាពសិក្សាគណិតវិទ្យារបស់ពួកគេនៅថ្នាក់ចំណេះទូទៅ បានចូលរួមចំណែកក្នុងការសិក្សាមុខវិជ្ជាប្រូបាប៊ីលីតេនិងស្ថិតិ នៅថ្នាក់ឧត្តមសិក្សាផងដែរ។ បន្ថែមពីលើនេះ លទ្ធផលក៏បង្ហាញថា ឥរិយាបថទូទៅរបស់និស្សិតលើមុខវិជ្ជាគណិតវិទ្យា មានទំនោរវិជ្ជមាន ជាពិសេសពាក់ព័ន្ធនឹងកត្តា "ចំណូលចិត្ត" និងកត្តា "កាពេ្ញៀជាក់" លើមុខវិជ្ជាគណិតវិទ្យា បើទោះបីជាពួកគេក៏បានបង្ហាញផងដែរនូវអារម្មណ៍ក៏យខ្លាចខ្លះៗទៅលើមុខវិជ្ជាគណិតវិទ្យាក្ដី។ ឥរិយាបថរបស់និស្សិតទាំងនេះលើមុខវិជ្ជាគណិតវិទ្យាពុំមានភាពខុសប្លែកគ្នានោះទេបើផ្អែកលើកត្តា "ភេទ" ក៏ប៉ុន្តែសមត្ថភាពគណិតវិទ្យាពីថ្នាក់ចំណេះទូទៅរបស់ពួកគេ បានចូលរួមចំណែកក្នុងការកំណត់ឥរិយាបថរបស់ពួកគេលើមុខវិជ្ជានេះ។ លទ្ធផលតេស្ទទំនាក់ទំនងស្ពៀម៉ែន (Spearman's Ccorrelation) ក៏បានបង្ហាញផងដែរថា "កត្តាទាំងប៉ីនៃឥរិយាបថរបស់និស្សិតទៅលើគណិតវិទ្យា" មានទំនាក់ទំនងខ្សោយជាមួយនឹង "សមត្ថភាពគណិតវិទ្យា" របស់ពួកគេ បើទោះបីជាទំនាក់ទំនងនេះមិនខ្លាំងក៏ដោយ ចុះ។ ទំនាក់ទំនងនេះក៏បានបង្ហាញផងដែរថា និស្សិតទាំងនេះមានទំនោរនឹងអាចរៀនមុខវិជ្ជានេះបានកាន់តែប្រសើរ ប្រសិនបើគេមានអារម្មណ៍ផ្ដែមានជាមួយនឹងគណិតវិទ្យា។

1. INTRODUCTION

Mathematics is one of the most critical subjects in school education, and according to Enu et al. (2015), mathematics plays a significant role as the foundation of scientific-technological knowledge that contributes to a nation's social-economic development. In the wake of modern technology and advancement in research and development, STEM-related subjects have become the core focus in school subjects and university levels. With the nature of the subject, mathematics is the core subject for STEM-related disciplines. In Cambodia, the Ministry of Education, Youth and Sport (MoEYS) has also focused on teaching and learning STEM-related subjects (Nov, 2020). Despite its importance in school subjects, many researchers found that students are struggling in this subject (Gafoor & Kurukkan, 2015). In their study, Ignacio et al., (2006) found that students perceived mathematics as tedious, challenging, and impractical despite its importance in contemporary education and economic development.

The issues in students' learning and their performance in mathematics have been the centre of focus among mathematics educators, researchers, and specialists in the field of education (Anghelache, 2013). There have been several studies that found out the factors determining the learning process and highlighted possible relations among elements related to the quality of education, the teaching strategies used in the classroom, and the quality of pupils' and students' performance (Ignacio et al., 2006; Konarzewski, 2019; Ma & Kishor, 1997; Marchis, 2011; Mata et al., 2012; Mazana et al., 2018; Subia et al., 2018). Mathematics has been one of the most challenging subjects for high school and college students alike. Learning mathematics is a complicated task, and being successful in this subject is related to several factors and requires students to engage and practice regularly. In general, the learning of this subject is a gender bias, where male students tend to outperform their female peers (Leedy et al., 2003; Mehraein & Gatabi, 2014). Besides gender, there are other numerous factors

associated with the success or failure in this subject where the attitude toward mathematics is among these factors.

According to Mazana et al. (2018), several other factors affected the students' learning and performance in mathematics, including their attitudes towards the subject, teachers' instructional practices, and school environment. Moreover, Pilotti et al. (2017) highlighted three crucial aspects of students' engagement in order for them to succeed in mathematics learning. These engagement dimensions include behavioral, cognitive and emotional engagement. Many research studies in mathematics education suggested that achievement in this subject is attributable not only to cognitive factors but also to affective variables, such as attitudes, beliefs, and motivation (Alibraheim, 2021; Ayob & Yasin, 2017; Capuno et al., 2019; Hannula, 2002; Ignacio et al., 2006; Konarzewski, 2019; Ma & Kishor, 1997; Mata et al., 2012; Mazana et al., 2018; Motanya, 2018; Panerio, 2020; Subia et al., 2018). Concerning this, Mensah et al. (2013) mentioned that the role of attitudes in mathematics learning has attracted the attention of educational researchers and mathematics educators for a very long time. Many researchers have investigated the relationship between the affective and the cognitive domains. Maker. (1982) as cited in Maker. (1982) as cited in (Ma & Kishor, 1997) emphasized the importance of this relationship:

> "*It is impossible to separate the cognitive from the affective domains in any activity. The most important is that there is a cognitive component to every affective objective and an affective component to every cognitive objective. (pp. 30-31).*"

Some students may pay great attention to their learning in mathematics education, putting much effort into practicing and engaging in their mathematics classrooms. Long-decade literature indicated that learners' attitudes towards mathematics have become an aspect that has been studied persistently to find out if there is a relationship between the learner achievement and their attitudes (Aiken, 1970, 1974; Debellis & Goldin, 2006; Ignacio et al., 2006; Konarzewski, 2019; Langat, 2015; Lipnevich et al., 2011; Ma & Kishor, 1997; Mehraein & Gatabi, 2014; Minato & Yanase, 1984; Motanya, 2018; Panerio, 2020; Peteros et al., 2019). With this, Enu et al. (2015)

added that the students' attitudes towards mathematics plays an important role in their efforts to learn, understand and practice the concepts and skills required to master the subject. Most of these studies have highlighted the significant role of attitudes in the teaching and learning mathematics.

1.1. Attitudes toward Mathematics

Attitudes are part of our life that centres on a particular feeling such as liking or dislike, love, fear, or appreciation towards a particular object (Hannula, 2002). In addition to this, Ma and Kishor. (1997) asserted that attitudes towards mathematics might be defined as "an aggregated measure of a liking or disliking of mathematics, a tendency to engage in or avoid mathematical activities." According to Guimaraest. (2005), as cited in Moenikia & Zahed-Babelan. (2010)), attitude is classified into three components: (i) a cognitive component that refers to opinions or beliefs in something (ii) affective component that is related to emotion or feeling (like or dislike) on a particular thing, and (iii) action that can be expressed by the behavioural activities or readiness to respond something. By relating these views, attitude toward mathematics refers to a person's mental set or disposition that includes all three dimensions to engage and practice in mathematics lessons regularly. Additionally, Moenikia and Zahed-Babelan (2010) stated that attitude is not just a passive result of past experiences; it also drives behaviour and guides its forms and manner.

1.2. Contextual Understanding

The subjects of this study were engineering students studying at the Institute of Technology of Cambodia (ITC). Being one of the leading higher institutions in Cambodia, ITC focuses on building qualified human resources in STEM and engineering-related disciplines. The first two years at ITC are a foundation year providing a strong background in science subjects, specifically mathematics and physics. In these two years, mathematics courses are among the essential subjects the students need to study for four semesters with six courses. Probability and statistics courses are compulsory for two semesters at ITC.

The students admitted into ITC need to pass grade 12 (BacII examination) and ITC's entrance

examination, and they have a solid academic background in mathematics and science subjects. Those who keep doing well in mathematics during their first two years tend to have good progress in their learning throughout their academic years at ITC.

1.3. Research Problem

It has been argued that attitudes are part of human identity (Mohamed & Waheed, 2011), and as pointed out in above section, human's attitude encompasses the feeling of hate, love, enjoyment. Theoretically, mathematics is an object that could also be loved, feared, hated, or disliked, just like any other object. It then follows that the learning of a particular subject could be linked to the attitudes that one has on that subject, as suggested in Zan & Di Martino. (2007) that there is "a strong interaction between cognitive and emotional aspect." Therefore, it follows that the emotional aspect (part of attitude) could come into play in the learning of mathematics (cognitive). We may deduce that poor performance in mathematics could therefore be partly attributed to learners' attitudes towards mathematics.

With some years of experience teaching high school students in mathematics, regardless of geographical areas, gender, or other factors, we (the authors) have observed that most of the students we have taught had negative feelings about mathematics, while some even expressed a certain level of fear toward mathematics. In Cambodia, the students' learning performance has been a hot topic among scholars, educators, and teachers alike. There were studies conducted to assess factors affecting the students' performance (Heng, 2012, 2013, 2014); however, none was focussed on students' performance in mathematics, especially the issue concerning the relation with the students' attitudes toward the subject.

With the lack of literature about the proposed study and the lack of interest in research about mathematics education in Cambodia, it is vital to study the students' attitudes toward mathematics, especially the relationship with the students' performance in this subject.

1.4. Research Objectives

This study aimed at seeking the relationship between the attitudes exhibited by the engineering students towards mathematics and their mathematics achievement. Specifically, this study focused on the following objectives:

- To understand the differences in the students' achievement in probabilities and statistics with regard to gender and their BacII Math Grades.

- To explore the students' attitudes toward mathematics and their association with gender and the students' BacII Math Grades.

- To identify the relationship between the students' attitudes towards mathematics and their achievement in probabilities and statistics.

1.5. Conceptual Framework

This study centres on the definition of attitudes from (Hannula, 2002; Ma & Kishor, 1997) which stated that attitudes are related to the feeling or perception toward mathematics. This study relies on the theoretical foundation laid by (Debellis & Goldin, 2006), whose study focuses on the affective and cognitive aspects of students' mathematics learning. A number of long-decade researches have indicated that, regardless of levels and contexts, there was a positive relationship between the students' attitudes toward mathematics and their mathematics performance (Debellis & Goldin, 2006; Langat, 2015; Lipnevich et al., 2011; Ma & Kishor, 1997; Minato & Yanase, 1984; Moenikia & Zahed-Babelan, 2010; Ndifor et al., 2017; Randhawa et al., 1993; Stage & Kloosterman, 1991; Walsh, 1991; Yasar, 2016).

However, recent research studies demonstrated that the relationship between students' attitudes toward mathematics and their mathematics performance is negative or somehow poorly related and could not be considered practical significance. For instance, the international data from TIMSS 2015 shows that the mean attitude toward mathematics of the fourth graders among participating countries negatively affected their mathematics performance (Konarzewski, 2019). In addition, despite positive relation, the study was conducted by Ma and Kishor. (1997) found that the

students' attitudes toward mathematics were poorly related.

In this study, we proposed the investigation on engineering students' attitudes toward mathematics and its relation to their mathematics performance. The investigations were primarily on how the students feel about mathematics and whether there is a positive or negative relationship between their attitudes toward mathematics and their performance in probabilities and statistics.

2. METHODOLOGY

This research centered on students' attitudes toward mathematics and its relation to their mathematics performance in probabilities and statistics. Quantitative methodology (Creswell & Creswell, 2018) with an online survey method was employed.

2.1. Sample and Data

The participants of this study were 319 engineering students who had just finished their second-year engineering program at the Institute of Technology of Cambodia (ITC). The data collection was from August 15, 2021, to August 20, 2021. The recruitment of the participants followed a voluntary sampling technique, where the link of the survey questionnaire (Google Form) was sent to the students via ITC Telegram and Messenger groups. The students who responded to the questionnaire were regarded as research samples. Nine hundred engineering students received the survey link, and 319 of them filled out the questionnaire. The response rate was approximately 35.44%.

2.2. Research Instrument

The instrument in this study was an online survey questionnaire that measured the students' attitudes toward mathematics. The attitudes statements were adapted and developed from conceptualizing of several related studies. The structure of the questionnaire had two parts as follows:

- Part 1: Student's Background

This part covers the participants' personal information such as gender, their overall BacII Grades and their BacII Math Grades.

- Part 2: Students' Attitudes toward Mathematics

Part 2 contains 21 statements describing different attitudes toward mathematics. The 21 statements were measured a with a 5-point Likert scale (1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree).

The researchers did the Exploratory Factor Analysis (EFA) on the 21 items using the absolute value of coefficients above .40, and found that eight items were loaded in more than one component; therefore, the researchers decided to drop these items one by one and re-run the EFA each time an item was eliminated. The final result remained with 13 items describing three attitude factors below:

Table 1

The Exploratory Factor Analysis (EFA) of the attitude statements and the loading factors (based on Rotated Component Matrix) and their respective reliability Cronbach's Alpha

Item	Component			Factor (Reliability)
	1	2	3	
Q1	.702			**FACTOR 1**
Q2	.681			Interest in
Q3	.692			Mathematics
Q7	.678			(α = .717)
Q6		.565		**FACTOR 2**
Q8		.501		Confidence in
Q11		.561		Mathematics
Q12		.771		(α = .726)
Q14		.737		
Q15			.698	**FACTOR 3**
Q16			.688	Fear of
Q19			.628	Mathematics
Q21			.726	(α = .633)

Factor 1 represents the students' interest in mathematics (*Math-Interest*), with a reliability scale of .717. Factor 2 denotes the students' confidence in mathematics (*Math-Confidence*) with a reliability scale of .726. Factor 3 signifies the students' fear of mathematics (*Math-Fear*), which is reliable .633. According to Whitley & Kite, the reliability of Factor 1 and Factor 2 were considered high, according to Whitley & Kite. (2013) stated that an instrument's acceptable reliability using the Likert

Scale should be at least .70. However, Factor 3 had low instrument reliability according to the same author above.

The mathematics performance in this study was measured using the probabilities and statistics course scores for the second semester (2020-2021 Academic Year) at ITC. The students also provided these scores while filling out the online survey questionnaire.

2.3. Data Analysis

The collected data were entered and analysed using a statistical package SPSS V.25. The dependent variables in this study were the students' probabilities and statistics scores and the students' attitudes toward mathematics. Shapiro-Wilk tests indicated that the students' score was not normally distributed ($W(319) = 0.973, p = .001$), while the students' overall attitudes toward mathematics were found to be normally distributed ($W(319) = 0.993, p = .122$). In this case, the students' overall attitudes toward mathematics were obtained from the combination of the 13 attitude items presented in Table 1 above. The four items in Factor 3 were reversed with measurement scales, which meant Q15➔RQ15, Q16➔RQ16, Q19➔RQ19 and Q21➔RQ21 with the reverse values from 1➔5, 2➔4, 3➔3, 4➔2 and 5➔1. The three factors of the students' attitudes toward mathematics were found to be not normally distributed: Factor 1, ($W(319) = 0.968, p = .001$), Factor 2, ($W(319) = 0.980, p = .001$) and Factor 3, ($W(319) = 0.980, p = .001$); therefore, the analyses of the data with regard to these constructs were presented in the below table.

Table 2
The data analysis techniques used for each research objective

Research Objective	Statistical Techniques
1	▪ Descriptive Statistics *To descriptively check the students' performance using mean score and standard deviation.* ▪ Mann-Whitney *To associate the students' performance with regard to their gender.*
2	▪ Kruskal Wallis *To compare the students' performance with regard to their BacII Math Grades* ▪ Descriptive Statistics *To check the students' attitudes toward mathematics descriptively.* ▪ Student's t-Test *To associate the students' overall attitudes toward mathematics with regard to gender.* ▪ One-Way ANOVA To compare the students' overall attitudes toward mathematics with regard to BacII Math Grades. ▪ Mann-Whitney *To compare the students' attitudes toward mathematics (the three factors) with regard to gender.* ▪ Kruskal Wallis *To compare the students' attitudes toward mathematics (the three factors) with regard to BacII Math Grades.*
3	▪ Spearman Correlation *To assess the relationship between each factor of the students' attitudes toward mathematics and their performance in probabilities and statistics.*

The choice of these non-parametric tests was in accordance with Bee Wah & Mohd Razali (2011), who stressed that employing parametric tests with data that violate the normality assumption may lead to unreliable or invalid interpretation and inferences.

Within the score range of 0-100, the judgment and interpretation of the students' performance in the probabilities and statistics course followed the following criteria:

Table 3
The judgment and interpretation criteria of the students' performance in probability and statistics

course

Score Range	Interpretation
90 - 100	Excellent
80 - 89	Very Good
70 - 79	Good
60 – 69	Fairly Good
50 - 59	Poor
0 - 49	Very Poor

The interpretation of the overall students' attitudes (Math-Attitudes) and each factor of their attitudes toward mathematics were based on the criteria defined in the following table:

Table 4

Criteria for interpretation of the students' overall attitudes and the three factors of their attitudes toward mathematics

Factor	Scale Range	Interpretation
Overall Attitudes	39 or less	Negative Attitudes
	More than 39	Positive Attitudes
Math-Interest	12 or less	No interest in mathematics
	More than 12	Have interest in mathematics
Math-Confidence	15 or less	No confidence in mathematics
	More than 15	Have confidence in mathematics
Math-Fear	12 or less	No fear of mathematics
	More than 12	Fear of mathematics

The decision for criterion points (cut points) for overall attitudes toward mathematics and each factor was based on the neutral point (value 3) times the total number of variables for the overall attitudes or the total number of variables for each factor. The overall attitudes contained 13 variables; therefore, the criterion point was $3 \times 13 = 39$. With the same principle for calculation, the criterion point for Factor 1 and Factor 3 was $3 \times 4 = 12$, and for Factor 2 was $3 \times 5 = 15$. The interpretation of mean scores for the students' attitudes toward mathematics with value below or above these criterion points was translated as in **Table 4** above.

3. RESEARCH FINDINGS

3.1. Participants' Information

The participants in this research were second-year engineering students studying at the Institute of Technology of Cambodia (ITC). The recruitment of these research participants was presented in **Section 2.1** above. It was revealed that 220 male students participated in the study, which accounted for 69% of the total sample. Moreover, the majority of the participants had overall BacII certificates of Grade B and Grade C with the proportions of 35.1% and 37.3%, respectively. Only 8.78% of the participants possessed a Grade A certificate, while Grade E (3.76%) filled the smallest proportion.

Table 5

Distribution of research participants with regard to gender and their BacII overall grade

	BacII Overall Grade					Total
	A	B	C	D	E	
Female	10	29	37	18	5	99
Male	18	83	82	30	7	220
Total	28	112	119	48	12	319

To the respondents' BacII Math Grades, the finding revealed that 22.57% of the participants got Grade A, while Grade B comprised 25.07% of the sample. The majority (26.33%) of the students possessed Grade C (26.33%), Grade D (16%), and Grade E filled only 10.03% of the distribution (Table 6).

Table 6

Distribution of research participants with regard to gender and their BacII Math Grades

	Math BacII Grades					Total
	A	B	C	D	E	
Female	19	21	25	18	16	99
Male	53	59	59	33	16	220
Total	72	80	84	51	32	319

3.2. Students' Achievement in Probability and Statistics Course

It was found that, overall, the 2ⁿᵈ Year ITC engineering students' performance in probabilities and statistics was ranked as "*Fairly Good*" ($Mean = 68.82$, $SD = 16.476$), according to the criteria in **Table 3**. Moreover, it was seen that 10% of them failed this course while only 8.2% of the participants fell into excellent performance. It was also shown

that 14.4% of the students performed poorly in probabilities and statistics.

Table 7
The distribution of 2nd year engineering students' performance in probability and statistics course

	Frequency	Percent
Very Poor (Failed)	32	10.0
Poor	46	14.4
Fairly Good	82	25.7
Good	73	22.9
Very Good	60	18.8
Excellent	26	8.2
Total	319	100.0

In terms of association with gender, the result of the Mann-Whitney test showed that there were no significant differences in the students' performance in probabilities and statistics with concerning their gender ($U(99, 220) = 10207.50, Z = -.896, p = .370$). However, Kruskal Wallis test signified that their performance was significantly different in term of their BacII Math Grades ($H(4) = 27.566, p = .001$). Post hoc tests for pairwise comparisons of BacII Math Grades proved that the participants' performance was statistically different among three pairs of their BacII Math Grades (Table 8).

Table 8
Comparisons of differences in students' performance based on paired BacII Math Grades

Group Tests	Paired Median	*Sig.*	*Adj.Sig.*
D & E	(64.98, 66.10)	.880	1.000
D & C	(64.98, 68.91)	.185	1.000
D & B	(64.98, 70.98)	.012	.115
D & A	(64.98, 78.67)	.001	.001
E & C	(66.10, 68.91)	.332	1.000
E & B	(66.10, 70.98)	.045	.453
E & A	(66.10, 78.67)	.001	.002
C & B	(68.91, 70.98)	.165	1.000
C & A	(68.91, 78.67)	.001	.002
B & A	(70.98, 78.67)	.022	.219

Evidently, the students' performance was varied among the students who possessed grades 'A&D', 'A&E' and those who obtained 'A&C'. These results proved that the students who possessed higher mathematics grades in their BacII examination tend to perform better in probabilities and statistics courses at the university level.

3.3. Students' Attitude toward Mathematics

Table 9 below presents the findings of the participants' attitudes toward mathematics, including the students' overall attitudes and the three factors of the students' attitudes toward mathematics. It was revealed that the engineering students' overall attitudes toward mathematics were positive ($Mean = 44.03, SD = 5.40$). The findings for each attitude factor revealed that, with regard to Factor 1 (Math-Interest), the participants were interested in mathematics, though the level of their interest was not high, according the magnitude of the mean score ($Mean = 15.18, SD = 2.22$). Similarly, for Factor 2 (Math-Confidence), the result indicated that the students' level of confidence in mathematics was found to be positive ($Mean = 17.33, SD = 2.87$). In addition to these positive trends in the participants' attitudes, the finding for Factor 3 (Math-Fear); however, showed that the students expressed a certain level of fear toward mathematics ($Mean = 12.48, SD = 2.41$).

Table 9
The students' overall attitudes toward mathematics and the analysis of the three factors of attitudes toward mathematics

Factor	*Mean*	*SD*	Interpretation
Overall Attitudes	44.03	5.40	Positive Attitudes
Math-Interest	15.18	2.22	Have interest in mathematics
Math-Confidence	17.33	2.87	Have confidence in mathematics
Math-Fear	12.48	2.41	Have a fear of mathematics

Supplementing to the descriptive findings above, the results from inferential statistics revealed that the students' overall attitudes were found to be of no significant differences among male and female students ($t(317) = -1.455, p = .147$). However, the One-Way ANOVA test signified that there were significant differences in the students' overall attitudes toward mathematics in term of their BacII Math Grades, ($F(4,314) = 3.487, p = 0.08$).

We did a post hoc test for pairwise comparison of the students' overall attitudes with regard to their BacII Math Grades, and the result revealed that the differences in their overall attitudes

were seen only with a pair of BacII Math Grades: A&E (Table 10). This finding seemed that the students' mathematics background might play some role in shaping their attitudes toward mathematics in general.

Table 10

Comparisons of differences in students' overall attitude based on paired BacII Math Grades

Group Tests	SE	Sig.
A & B	.864	.770
A & C	.854	.174
A & D	.973	.387
A & E	1.130	.004
B & C	.831	.821
B & D	.953	.942
B & E	1.112	.059
C & D	.944	1.000
C & E	1.105	.323
D & E	1.199	.329

Statistically, we did not have enough evidence to conclude the differences in the students' overall attitudes toward mathematics among other pairs of BacII Math Grades.

In relation to the three attitude factors, the results from Mann-Whitney U tests revealed that the students' attitudes toward mathematics did not differ with regard to their gender. With these findings, we can conclude that male and female students felt the same way toward mathematics, whether in terms of their interest, confidence, or fear of mathematics.

Table 11

Comparisons of the students' attitudes toward mathematics, in term of the three factors, with regard to the participants' gender

	Math-Interest	Math-Confidence	Math-Fear
Mann-Whitney U	9959.5	9760.5	10171.0
Wilcoxon W	14909.5	14710.5	34481.0
Z	-1.245	-1.492	-.951
Sig. (2-tailed)	.217	.136	.341

a. Grouping Variable: Gender

We compared the students' attitudes (the three factors) about the participants' BacII Math Grades. The Kruskal-Wallis tests revealed that the differences in the students' attitudes were seen only in their confidence in mathematics.

Table 12

Comparisons of differences in students' attitude based on paired BacII Math Grades

	Math-Interest	Math-Confidence	Math-Fear
Kruskal-Wallis H	6.382	13.945	8.021
df	4	4	4
Asymp. Sig.	.172	.007	.091

a. Kruskal Wallis Test

b. Grouping Variable: BacII Math Grades

A post hoc test for pairwise comparison of the students' confidence in mathematics with each pair of the students' BacII Math Grades provided the following results.

Table 13

Post hoc test for comparison of the students' confidence in mathematics with regard to their pairwise BacII Math Grades

Group Tests	Paired Median	Sig.	Adj.Sig.
A & B	(18.0, 18.0)	.763	1.000
A & C	(18.0, 16.0)	.019	.186
A & D	(18.0, 17.0)	.103	1.000
A & E	(18.0, 16.0)	.002	.025
B & C	(18.0, 16.0)	.035	.352
B & D	(18.0, 17.0)	.164	1.000
B & E	(18.0, 16.0)	.005	.045
C & D	(16.0, 17.0)	.653	1.000
C & E	(16.0, 16.0)	.203	1.000
D & E	(17.0, 16.0)	.127	1.000

With the adjusted significant level, it was evidenced that the differences in the students' confidence in mathematics were found among the students who got BacII Math Grades of "A&E" and "B&E". There was not enough evidence to prove the significant differences in other pairs, according to Table 13 above. We also found that the students with Grade A and Grade B of mathematics background were more confident in mathematics, ($Mdn_A = 18.0, Mdn_B = 18.0$) than those who got Grade E ($Mdn_E = 16.0$) at the BacII level.

3.4. Attitude and Performance Relations

This section presents the relationships between the students' performance in probabilities and statistics with their attitudes toward mathematics (the three factors). The results from Spearman's correlation analyses revealed the positive relations

between the students' performance with their interest in mathematics ($rs(319) = .293, p = .001$) and their confidence in mathematics ($rs(319) = .210, p = .001$). These relationships were found to be significant within 99.99% confidence interval. However, the finding indicated a negative relation between the students' performance and their fear of mathematics ($rs(319) = -.119, p = .034$).

Table 14

Spearman correlation tests of the students' attitudes toward mathematics and their performance in probabilities and statistics course

	1	2	3	4
1. Students' Scores	1.00	.293**	.210**	-.119*
2. Math-Interest		1.00	.539**	-.110*
3. Math-Confidence			1.00	-.189**
4. Math-Fear				1.00

**. Significant at the 0.01 level (2-tailed).
*. Significant at the 0.05 level (2-tailed).

Despite being weak in the relationship, we can conclude that the more positive the students felt toward mathematics, the better they might be doing in their probabilities and statistics classes. From the strengths of these relationships, we could deduce that the attitudes toward mathematics did not contribute much to their learning performance. This may indicate that other factors play a significant role in the students' mathematics learning.

4. DISCUSSION

The following section presents the overall discussion about the proposed objectives: (i) to understand the association of the students' performance in probabilities and statistics with gender and their BacII Math Grades, (ii) to explore the students' attitudes toward mathematics and the association with the two independent variables mentioned earlier, and (iii) to determine the

relationship between the students' attitudes toward mathematics and their performance.

Students' Mathematics Performance

It was revealed that the students' performance in probabilities and statistics was fairly good, with a score range of 68-69, and their performance was proven to have no significant difference among male and female students. The result was in contrast to several studies that found that male students performed better than female students in terms of mathematics. Past research studies have indicated gender bias in learning mathematics (Leedy et al., 2003; Mehraein & Gatabi, 2014), which in general, male students tend to outperform female students in learning mathematics. The reason for contradicting the mentioned studies may be related to the research context. As mentioned in **Section 1.2** above, ITC is a unique higher education institution due to its new-student admission policy. With its strict entrance examination, the students who passed the exam and were admitted into ITC programs need to have a strong education background in mathematics and science in general. In this case, regardless of their gender, the students may possess similar mathematics learning capacities.

In addition, the research found that the students' performance at the university level differed in terms of their mathematics background during their general education. The findings provided concrete evidence that the students with a more robust mathematics background in their BacII examination tended to perform better at the university level. Enu et al. (2015) supported this finding, whose research also found that students' entry math grades played a significant role in their mathematics performance at the university level.

Students' Attitudes toward Mathematics

It was widely known that the students' attitudes towards mathematics have been a critical factor contributing to the success or failure in learning this subject. Students who have positive attitudes toward mathematics tend to perform better than those who hold negative perceptions. Concerning Objective 2 of this research, the results showed that engineering students generally had positive attitudes toward mathematics. The findings were consistent with numerous pieces of literature

(A.K. et al., 2006; Anokye-Poku & Ampadu, 2020; Mohamed & Waheed, 2011; Thapa & Paudel, 2020), whose works also found that the students' attitudes towards were seen be positive.

The study also revealed that the differences in students' attitudes about gender were not meaningful. This finding contradicted some past research work conducted by Drzewiecki & Westberg. (1997), A.K. et al., (2006), and Hargreaves et al. (2008), whose studies indicated that male students had more positive general attitudes toward mathematics compared to their female counterparts. However, these studies' trends contradicted the research conducted by Adamu & Garba. (2018) found in their study that female students held a more positive view of mathematics than boys. Despite being contradicted to previously mentioned literature, however, the finding of this study provided similar evidence to the work of Anokye-Poku & Ampadu. (2020); Karjanto. (2017); Mohamed & Waheed. (2011); Opolot-Okurut. (2005); Siregar et al. (2019); Thapa & Paudel. (2020) & Yavuz Mumcu & Aktas. (2015). These latter studies found that despite holding positive attitudes toward mathematics, their attitudes were found to be of no significant difference in terms of the students' gender.

In terms of the students' BacII Math Grades, the present study found that the students' overall attitudes toward mathematics were significantly different in terms of their BacII. However, the differences were seen only with those who got BacII Math Grade A&E. With the extended analysis for Factor 2, which is related to the students' confidence in mathematics, the result also showed the variations existed among two pairs of BacII Math Grades, A&E and B&E. In relation to these findings, Opolot-Okurut. (2005) found that schools with high performance tend to have students with high attitudes toward mathematics. Although this study did not specifically mention mathematics background, their level of knowledge before entering university life or higher grades does play a particular role in their attitudes in higher education.

Past studies (Davadas & Lay, 2018; Marchis, 2011; Orozco-Guzmán et al., 2020) have been focused on factors influencing the students' attitudes toward mathematics, but those works focused on factors, such as parental factors, teachers' factors, school factors and students' mental or emotional factors, such as self-esteem, self-efficacy and self-confidence etc. This study found that the students' background knowledge in mathematics has contributed to their attitudes toward mathematics, though it was only with their confidence in mathematics. The relationship between the students' background knowledge in mathematics and their attitudes toward mathematics presented in this study was only a surface catch. A comprehensive analysis of this may be a valuable topic for future research.

Students' Attitude and Their Achievement

It was found that two factors of the students' attitudes toward mathematics were seen to have positive relations with their mathematics performance in probabilities and statistics, despite the fact that the relations were found to be weak, $rs = .293$, for their interest in mathematics and $rs = .210$, for the students' confidence in mathematics. However, negative relationship was expressed in terms of the students' fear of mathematics, $rs = -.119$. Without specifically referring to any attitude factors, it was evidenced that the more the students feel positive about mathematics; there was tendency they will perform better in mathematics. The finding was in consistent with several literatures whose findings also indicated the positive relationships between the students' attitudes toward mathematics and their achievement in this subject (Adamu & Garba, 2018; Capuno et al., 2019; Mensah et al., 2013; Moenikia & Zahed-Babelan, 2010; Subia et al., 2018) although there was inconsistent with the strength of the relation.

Comparing the strength of the relationship between the mentioned variables, the research conducted by Capuno et al. (2019) also found similar strengths in the relationship. However, this study used a different instrument compared to the present study. Capuno et al. (2019) used a tool measuring the students study habits, which they referred to as students' attitudes, and the result revealed that the relationship was weak ($r = .227$). About this, the studies conducted by Mensah et al. (2013) and Moenikia & Zahed-Babelan. (2010) found that the relationship between the students' attitudes toward mathematics and their performance was between .419 to .455. In addition to positive relation, Subia et al. (2018) found that the link

between the students' attitudes toward mathematics was strong, $r = .792$.

It should be noted that the relationship between Factor 3 (Math-Fear) and the students' achievement in probabilities and statistics was negative. From this relationship, we could deduce that negative feelings toward mathematics will affect their learning in mathematics in general, not to mention only the probabilities and statistics courses.

5. CONCLUSION

The study concluded that the students' background knowledge in mathematics in general education played a significant role in shaping the students' performance in probabilities and statistics in higher education. It shaped their achievement, but the students' mathematics background knowledge also played a significant role in their attitudes toward mathematics in general. High achievement students in BacII mathematics performed better in the probabilities and statistics course and had more positive attitudes toward mathematics. However, the results were not conclusive because a few pairs of their BacII Math Grades contributed to the findings. Gender has no significant contribution to the two variables or constructs of study, which may be due to the study context, ITC, where male and female students had similar learning capacity or attitudes toward mathematics.

Although the magnitudes were not high, the students expressed a certain level of interest and confidence in mathematics. Together with this, the participants also had some sense of fear toward mathematics. Moreover, the results proved that all three attitude factors had weak relationships with their achievement in probabilities and statistics. The results also indicated that the more positive the students felt about mathematics, the better they tended to perform in this subject.

Concerning the strength of the relationship, we may deduce that other factors could play specific roles in shaping the students' performance in this course or probably in mathematics in general. The students' participation in their learning processes, such as classroom engagement and their involvement in assignments or classwork should also be monitored when studying factors influencing their performance. Although other factors may play

their roles in shaping the students' performance in mathematics, based on literature, the students' attitudes toward this subject have been regarded as the critical determinant of the students' success.

Limitation and Further Study

It should be noted that considering the conceptual framework of this study, the relationship between the students' attitudes toward mathematics needs to be carefully monitored as this relationship did not indicate the causal relationship between the two variables. Further research should focus on the causal relationship between these two variables with careful consideration of the direction of their relation, as highlighted in Lipnevich et al. (2011). In a practical sense, we could deduce that success (or failure) in mathematics may cause mathematics attitudes or that mathematics attitudes are causing mathematics achievement Lipnevich et al. (2011). Further research should also focus on the effects of other factors on the students' mathematics achievement.

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Sokkhey PHAUK received his B.Sc. in Mathematics from Royal University of Phnom Penh, Cambodia, in 2010, and later received his M.Sc. in Applied Mathematics from Suranaree University of Technology, Thailand, in 2013. In 2021, he obtained his PhD in interdisciplinary intelligent system (majoring in data science) from University of the Ryukyus, Japan. He is currently a lecturer at Department of Applied Mathematics and Statistics at the Institute of Technology of Cambodia (ITC). His currently research include data analysis, machine learning, educational data mining, and data science.

Research Interest:
- Mathematics Education, Educational Data Mining
- Machine Learning & Data Science

APPENDIX

Students' Questionnaire

Questionnaire Code: ....

Purpose:

This study aims at assessing the mathematics performance in probability and statistics of engineering students at ITC with regard to different factors such as gender, their performance at high school, and their attitude toward mathematics. This survey questionnaire is part of the data gathering. It is divided into two parts: (i) *General Questions* and (ii) *Attitude toward Mathematics.*

Please note that this study is subjective in nature and there is no "right" or "wrong" answer to your choice. The analysis from this study is exclusively for research and educational purposes where privacy of your information will be kept confidential.

(Your Cooperation is Highly Appreciated.)

Part 1: General Questions

Student's ID: _____

Gender: ☐ Female   ☐ Male

Your Bac II Grades:

Overall Grade	☐ A	☐ B	☐ C	☐ D	☐ E
Mathematics Grade	☐ A	☐ B	☐ C	☐ D	☐ E

Part 2: Attitude toward Mathematics

How do you agree to the following statements?

Item	Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Q1	I always prepare myself well for my math classes, tests and quizzes.	☐	☐	☐	☐	☐
Q2	I often motivate myself to get a good score in math.	☐	☐	☐	☐	☐
Q3	I always pay full attention during my math classes.	☐	☐	☐	☐	☐
Q4	Mathematics is important for my study and future career.	☐	☐	☐	☐	☐
Q5	I feel confident in my abilities to solve mathematics problems.	☐	☐	☐	☐	☐
Q6	I can understand my math teacher's explanation easily.	☐	☐	☐	☐	☐
Q7	I spend lots of time to practice mathematics or work on assignments.	☐	☐	☐	☐	☐
Q8	I would prefer to write a math assignment than write an essay.	☐	☐	☐	☐	☐
Q9	I believe studying of math helps me with problem solving in other subjects.	☐	☐	☐	☐	☐
Q10	I like to solve new problems in	☐	☐	☐	☐	☐

	mathematics.					
Q11	I am happier in a math class than in any other classes.	☐	☐	☐	☐	☐
Q12	It would not bother me at all to take more math courses.	☐	☐	☐	☐	☐
Q13	I have usually been at ease during math test.	☐	☐	☐	☐	☐
Q14	I have usually been at ease during math course.	☐	☐	☐	☐	☐
Q15	I often feel tense and bored in my mathematics class.	☐	☐	☐	☐	☐
Q16	I always feel nervous in quizzes or exams of math.	☐	☐	☐	☐	☐
Q17	I don't like working on the homework given by my mathematics teacher.	☐	☐	☐	☐	☐
Q18	I am not eager to participate in discussions that involve mathematics.	☐	☐	☐	☐	☐
Q19	I get a sinking feeling when I think of trying hard math problems.	☐	☐	☐	☐	☐
Q20	My mind goes blank and I am unable to think clearly when working mathematics.	☐	☐	☐	☐	☐
Q21	Mathematics makes me feel uneasy and confused.	☐	☐	☐	☐	☐

Math Score:

Probability and Statistics

The Influence of Major Power Countries in Global and Regional Contexts: A Comparative Views of Cambodian Educated Group

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ABSTRACT

This research aimed at exploring the views of Cambodian educated people on the influence of major powers (China, the US, Japan and EU) in global and regional contexts. 212 Cambodian educated participants were requested using snowballing method to fill out the online survey questionnaire. It was found that China and the US were viewed as the most threatening powers to the global peace while Japan was considered the most positive player. In terms of responsibility, Japan was perceived as the key actor and sequentially followed by EU, the US and China. However, China was viewed as the most significant and influential actor in the Southeast Asia region compared to its competitor powers, the US standing the second place and Japan in the third place. EU was seen to be the least influential actor in this region. In addition, the explored views showed that it is important for Cambodia to keep good relation with these major powers. Interestingly, the respondents viewed Japan as the most important actor followed by the EU while China and the US were seen to be the least important players. Gender, education level profession and the respondents' overseas experiences were found to play some roles in segregating their opinions towards China, the US, Japan and the EU.

KEYWORDS: Cambodia, influence, educated group, views, major powers

សង្ខិត្តន័យ

ការស្រាវជ្រាវនេះមានគោលបំណងដើម្បីស្វែងយល់អំពីទស្សនៈរបស់បញ្ញវន្តកម្ពុជា ទៅលើឥទ្ធិពលនៃមហាអំណាចមួយចំនួន ដូចជាប្រទេសចិន អាមេរិក ជប៉ុន និងសហភាពអឺរ៉ុប ក្នុងបរិបទពិភពលោក និងក្នុងតំបន់។ បញ្ញវន្តខ្មែរចំនួន២១២រូប ត្រូវបានជ្រើសរើសតាមវិធីសាស្ត្រ Snowballing ដើម្បីចូលរួមបំពេញកម្រងសំណួរស្ទង់មតិតាមអនឡាញ។ ជាលទ្ធផល បញ្ញវន្តខ្មែរ យល់ឃើញថា ប្រទេសចិននិងសហរដ្ឋអាមេរិកជាប្រទេសដែលមានការតំរ៉ាមក់ហែងជាងគេទៅលើសន្តិសុខពិភពលោក បើ ធៀបជាមួយនឹងប្រទេសមហាអំណាចផ្សេងទៀត ដោយឡែកប្រទេសជប៉ុនត្រូវបានគេយល់ថាជាប្រទេសដែលមានការតំរ៉ាម កំហែងតិចជាងគេ។ ផ្ទៀងឥតបំពោះទំនួលខុសត្រូវក្នុងការដោះស្រាយបញ្ហាពិភពលោក បញ្ញវន្តកម្ពុជាបានយល់ឃើញថា ប្រទេសជប៉ុនជាប្រទេសដែលមានទំនួលខុសត្រូវខ្ពស់ជាងគេ ហើយមហាអំណាចដែលមានទំនួលខុសត្រូវខ្ពស់ជាបន្តបន្ទាប់គឺ ប្រទេសសហភាពអឺរ៉ុប សហរដ្ឋអាមេរិក និងសាធារណរដ្ឋប្រជាមានិតចិន។ សាធារណរដ្ឋប្រជាមានិតចិនត្រូវបានគេយល់ ឃើញថាជាប្រទេសសំខាន់ និងមានឥទ្ធិពលខ្លាំងជាងគេក្នុងតំបន់អាស៊ីអាគ្នេយ៍ បើប្រៀបធៀបជាមួយសហរដ្ឋអាមេរិក និងជប៉ុន ស្របពេលដែលសហភាពអឺរ៉ុបត្រូវបានគេមើលឃើញថាមានឥទ្ធិពលតិចជាងគេក្នុងតំបន់។ បន្ថែមពីលើនេះ លទ្ធផលស្រាវជ្រាវ ក៏បានបង្ហាញថា វាមានសារៈសំខាន់បំផុតដែលថាប្រទេសកម្ពុជាត្រូវរក្សាតុល្យភាពទំនាក់ទំនងល្អជាមួយប្រទេសធំៗទាំងនេះក្នុង នយោបាយការបរទេស។ ប៉ុន្តែអ្វីដែលគួរឱ្យចាប់អារម្មណ៍នោះគឺ បញ្ញវន្តកម្ពុជាយល់ឃើញថា ប្រទេសជប៉ុនជាគូអង្គស់ខាន់ជាង គេបំផុតដែលកម្ពុជាត្រូវផ្តោតការយកចិត្តទុកដាក់ក្នុងនយោបាយការបរទេសខ្លួន និងតាមបន្ទាប់ដោយសហភាពអឺរ៉ុប។ ផ្ទុយ ទៅវិញ ពួកគេបែរដោយយល់ឃើញថាប្រទេសចិន និងសហរដ្ឋអាមេរិកគឺជាគូអង្គមិនសូវស់ខាន់ខ្លាំងទៅវិញក្នុងចំណោមមហា អំណាចទាំង៤នេះ។ ទោះជាយ៉ាងនេះក្តី ទស្សនៈរបស់បញ្ញវន្តកម្ពុជាចំពោះមហាអំណាចទាំងនេះ ក៏មានភាពខុសគ្នាខ្លះៗដែរ បើយើងធ្វើការប្រៀបធៀបទស្សនៈរបស់ពួកគេដោយផ្អែកលើកត្តា ភេទ កម្រិតការសិក្សា មុខរបរ/ការងារ និងបទពិសោធន៍ក្រៅ ប្រទេសរបស់គេជាដើម។

ពាក្យគន្លឹះ: *(១) ប្រទេសកម្ពុជា (២) ឥទ្ធិពល (៣) បញ្ញវន្ត (៤) ទស្សនៈ (៥) មហាអំណាច*

1. INTRODUCTION

Thank to globalization, the countries in the globe have been connected in the political, economic and cultural dimensions, and have influenced one another through ideas or even personal views. The interconnectedness among states and nations have been fuelling and widening by the modern world of "globalization" (AS, 2018). In the international relation agenda, the relationship among nations plays significant role in shaping one country's development. It is understandable that each country's foreign policy plays significant role in strategizing and shaping their future cooperation and development with partnering countries (Hudson & Day, 2019). Therefore, policy making is decided and formulated to safeguard and promote its national interests in the conduct of international relations with other countries in the forms of bilateral and multilateral modes (Ahmed, 2020).

It has been widely talked that shaping the country's foreign policy is the responsibility of politicians or those holding higher power in the government (Layne, 2017). The ideas might not be true because each country is led and operated in various settings. Taking example of democracy countries, citizens at all levels have actively participated in voicing their concern regarding the future of their countries while in some least democracy or socialist ones, commoners seem to have less freedom to participate in any political issues. Since the mid-1960s, political sociologists observe a ''participatory revolution'' not only in western liberal democracies where demands for 'more,' 'better' and 'enhanced' citizen participation are frequently raised (ABELS, 2007).

The world situation has drastically change because of the globalization and technological advancement where the Internet provides people with more access to information (Storm, Stone & Benjamin, 2017). Social media, for instance, offers rooms for people to have more talk on economic, political and social issues. This eventually makes

their voices heard and well-informed. Therefore, making a country's foreign policy is no longer the absolute work of policy makers or elite groups alone. The citizens and other groups of people are also key players in shaping their countries' policy (Headly & Wyk, 2012; Holmes, 2011; Janis, 2016; Kim, 2014; Lee & Senator, n.d.; OECD, 2001; Xiaodon, Xiaoping & Feng, 2019). Intellectuals or educated group might have more influential roles as they are the active agents in the society. This holds a very popular idea that more citizen participation is often equated better for effective policy decision (ABELS, 2007).

As the contemporary world order goes, states establish diplomatic and economic relations with ones to another that compel them to maintain the relations through trade, political and economic activities. Sometimes, they build connection within educational and cultural actions as well as in the international organisations (Ahmed, 2020). This has obviously made the people involvement and engagement more diverse in the box. Therefore, exploring and examining the public views prior to policy making and decision are crucial (Headly & Wyk, 2012; Holmes, 2011). Either in political or developmental settings, the government needs to make sure that policies made should address the issue effectively and efficiently.

In similar vein, public views on the major powers' influences over a country or region is also important in light of international relations and politics. The public views not only shape the policy reformulation and development, but also give more insights on the existing ones being implemented by the government institutions and agencies (Toch & Ly, 2020). To more or less, they provide inputs to the governments in regard with foreign policy implementation by compromising it with the changing situation of both domestic and international politics. This clearly proves the phrase of 'public opinions could sway the tide of politics.

As far as the public's views are concerned, well-educated groups of a society are influential in shaping policy in which they advocate either in the process of making or implementing through media

and other modes of communication (Häusermann, Kurer & Wüest, 2018). In Cambodia, these groups have voiced out their concerns frequently. For Cambodia's foreign relations with major powers, these groups are even more curious about why and how their country manoeuvres in the tide of global politics in harnessing national interests. For instance, the improved relations between Cambodia and China have become controversial to which if the former could benefit or stand to suffer more. However, as a small economy Cambodia has always confirmed their balanced relations with all countries (Heng., K., 2019; Heng, S., 2014). Therefore, exploring their views on the influences of major powers on Cambodia and regions is academically and politically significant.

This quantitative study employed a survey questionnaire to answer the question of what, why and how Cambodian educated group view the influences of major powers including China, the US, Japan and the EU in Cambodia, the southeast Asian region and global contexts. This research, although as a case study focusing on a small number of Cambodian educated group's views, will provide insights for more debates and discussions about the aspect of public view in Cambodian foreign policy making and implementation.

The inputs for policy making and decision has become more collective since the implementation should have been consistent with both domestic and international forces (Bayne & Woolcock, 2003). However, in Cambodia, the policies made in regard with its relations with major powers have always been questionable due to the lack of the public's involvement. The criticism goes on and further echoes policy makers to reconsider the collective policy inputs. Concerning the influence of major powers such as China, the US, Japan and the EU in the kingdom in specific and Southeast Asian region in general, the views of Cambodian educated groups are seemingly unknown in both academic and policy dimensions (Toch & Ly, 2020). This study, though a quick survey of the views of the Cambodian educated groups to the influence of major powers (China, the US, Japan and the EU[1]) over Cambodia and the region,

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[1] EU consists of many countries joint as membership. So we refer it as one regional block with many countries that play significant roles in regions.

hopes to fill gap in this topic, and will encourage more studies and research on the topic.

The objective of this research was to compare the views of Cambodian educated group on the image and influences of four major powers (China, the US, Japan and EU) in global and regional contexts. The study aims to explore the differences in respondents' opinions in relation to different factors such as gender, education level, profession and participants' overseas experiences. This research did not directly attempt to answer how or why the respondents express their views; however, the discussions in relation with literature and contextual understanding did provide some inputs to these questions.

2.   METHODOLOGY

The objective of this research was to compare the opinions of Cambodian educated people on the image and influences of four major power countries in global and regional contexts as mentioned above. The study employed quantitative approach using an online survey to collect data from the respondents.

2.1.   Sample and Data

212 respondents participated in this study. Snowballing technique was used for data collection. The individuals who participated in the survey were included in the research sample. To recruit the respondents, the researchers purposely selected colleague, friends or relatives who satisfy the condition as '*well-educated',* the condition that the respondents at least completed a bachelor's degree. They were requested to fill out the online survey questionnaire. Later, they were asked to pass on the questionnaire link (Google Form) to their peers, relatives or colleague who also met the condition as mentioned above. We ensured that the subsequent respondents were well aware of their free participation in the study. The data collection period was set for 100 days, and it took place before and during the early stage of Covid-19 pandemic in Cambodia.

2.2.   Research Instrument

The survey questionnaire consists of 21 items which were designed to capture the participants' views on the influence of China, the US, Japan and the EU in global and Southeast Asia regional contexts.

The first part of the questionnaire consists of five questions about personal background information including gender, age, education level, employment and respondents' overseas experience. All items in the second part of the instrument were designed with different 11-point rating scales of 0 to 10. The questions in this latter part aims to measure the respondents' opinions about the four major powers with regard to their global images such as (1) the threats these countries would have to the world peace, (2) the respondents' trust on these major powers to act responsibly on the related world affairs, (3) the influence of these countries in Southeast Asia region and (4) how important it is for Cambodia to keep good relation with them. The measurement for these items were illustrated as following:

- Q6 to Q9 measured how much threatening these major powers to the world peace with the value **0** represents '*No Threat'* and **10** means '*Big Threat'*.

- Q10 to Q13 measured the respondents' trust on these countries to act responsibly in the world. In this case, **0** represents '*No Trust'* and **10** means '*Wholly Trust'*.

- Q14 to Q17 measured the respondents' views regarding these countries' influences in Southeast Asian Region. In this case, **0** means '*No Influence'* and **10** represents '*Big Influence'*.

- Lastly, Q18 to Q21 measure the respondents' view with regard to how important Cambodia to keep good relation with these super powers. In this case, **0** represents '*Not Very Important'* and **10** means '*Very Important'*.

The survey questionnaire had an overall reliability scale Cronbach's Alpha of 0.674 which meant to be moderately reliable.

2.3.   Data Analysis

The collected data were numerically coded and entered for analysis using the IBM SPSS Version 25. Descriptive statistics were used to summarize and present the findings in numerical and tabulation formats. Since all the dependent variables were measured with 11-point rating scales, mean values of each variable were calculated and used to compare the respondents' views among these major powers. Moreover, inferential statistical tests were utilized to

seek the differences in the respondents' opinions with regard to the independent variables.

Table 1
Normality tests of all dependent variables

Dependent Variables	Shapiro-Wilk	
	Statistic	*Sig.*
How threatening you think China is to world peace?	.946	.001
How threatening you think USA is to world peace?	.952	.001
How threatening you think Japan is to world peace?	.934	.001
How threatening you think EU is to world peace?	.955	.001
How much do you trust China to act responsibly in the world?	.944	.001
How much do you trust USA to act responsibly in the world?	.971	.001
How much do you trust Japan to act responsibly in the world?	.942	.001
How much do you trust EU to act responsibly in the world?	.965	.001
How influential is China in Southeast Asia?	.909	.001
How influential is USA in Southeast Asia?	.944	.001
How influential is Japan in Southeast Asia?	.970	.001
How influential is EU in Southeast Asia?	.963	.001
How important do you think it is for Cambodia to have good relation with China?	.947	.001
How important do you think it is for Cambodia to have good relation with USA?	.950	.001
How important do you think it is for Cambodia to have good relation with Japan?	.887	.001
How important do you think it is for Cambodia to have good relation with EU?	.934	.001

The results from Shapiro-Wilk normality tests revealed that the distributions of all items (Q6-Q21) were not normally distributed; therefore, non-parametric tests such as Mann-Whitney and Kruskal Wallis tests were used to identify the differences in the respondents' perceptions with regard to gender, education level, profession and their overseas experience. The choice for these non-parametric tests was in accordance with Bee Wah & Mohd Razali (2011) who mentioned about the importance of non-parametric tests with data that violate the normality assumption.

3. RESEARCH FINDINGS

3.1. Participants' Background

The respondents participated in this study were among highly educated individuals with at least bachelor's degree in different disciplines. 47.2% of the participants possessed undergraduate degree while the remaining 52.8% finished postgraduate education (see Table 2). Out of the total participants, 75.47% were male while 24.53% of them were female.

Table 2
The distribution of the research participants by gender and education level

	Under-graduate	Post-graduate	Total
Male	74	86	160
Female	26	26	52
Total	100	112	212

The findings in the Table 3 below showed that the majority of the respondents (63.2%) were aged between 27-40 where only 8.5% of them were over 40 years of age. Out of the total sample, 28.3% of them were aged between 18 to 27 years old.

Table 3
The research respondents' age groups

Age	Frequency	Percent	Cumulative Percent
18-27	60	28.3%	28.3%
27-40	134	63.2%	91.5%
40-60	18	8.5%	100.0%
Total	212	100.0%	

Professionally, the result in Table 4 below revealed that the majority of the respondents were working in either private or NGOs sectors with 42.92% while 34% were employed in government sector. The self-employed individuals shared the smallest proportion, 23.08% of all the research sample.

Table 4
The distribution of research participants based on education level and their profession

	Under-graduate	Post-graduate	Total
Self Employed	37	12	49
Public Servant	15	57	72
Private/NGO Staff	48	43	91
Total	100	112	212

The finding from Table 5 indicated that more than 81% of the respondents have had overseas experience (either living, studying, touring or vocational travelling) while only 18.9% have never been abroad before.

Table 5
Respondents' overseas experience (either living, studying, touring or vocational travelling)

	Frequency	Percent
Had Overseas Experience	172	81.1
No Overseas Experience	40	18.9
Total	212	100.0

3.2. Respondents' Views on Major Powers

In this section, we present the findings of the respondents' opinion towards the four major powers in relation to four aspects: (1) the threats these countries would have to the world peace, (2) the respondents' trust on how responsible these major powers to the global affairs, (3) the influence of these countries in Southeast Asia and (4) how important it is for Cambodia to keep good relation with them.

The Threats of These Major Powers to the World

The findings in Table 6 below revealed that the participants perceived both China and the US to be somehow of threatening to the world peace with the mean scores indicating the level of threat, $Mean = 6.28$ and $Mean = 5.78$ respectively. However, the latter was viewed relatively better in term of threat to the world peace. The magnitudes of these mean scores indicated moderately threatening.

Table 6
Respondents' views on major powers with regard to their threats to the world peace (the higher the mean value, the more threatening they are.)

	N	$\bar{X}$	SD
China	212	6.28	2.48
USA	212	5.78	2.72
Japan	212	3.06	2.31
EU	212	4.16	2.62

The results from Mann-Whitney tests revealed that the respondents' opinions on China with this particular issue were the same regardless of their gender, education level and overseas experience.

Table 7
Comparisons of the respondents' views on 'how threatening China would be to world peace' with regard to gender, education level and the respondents' overseas experience.

	Gender	Education	Overseas Experience
Mann-Whitney U	4105.50	5575.00	2970.00
Wilcoxon W	16985.50	10625.00	2970.00
Z	-.143	-.057	-1.359
Asymp. Sig. (2-tailed)	.886	.955	.174

However, Kruskal Wallis test signified that the differences in the respondents' opinion about China in relation to their professions were statistically significant $(H(2) = 6.554, p = .038)$. However, post hoc test for pairwise comparisons using Bonferroni correction for multiple tests showed no significant differences in any pair of the respondents' profession. Judging from the median values, it may be convinced that self-employed individuals viewed China in more positive way $(Mdn = 5)$ compared to people working in private businesses or NGOs groups $(Mdn = 7)$ and the government officials $(Mdn = 6)$.

With the opinions about the US, the results from Mann-Whitney and Kruskal-Wallis tests revealed that the differences in the respondents' perspectives on how threatening the US would be to the world peace were significantly differences in term of gender $(U(160, 52) = 3058.0, -2.887, p = 0.04)$ and their profession $(H(2) = 10.619, p = .005)$. It was evidenced that male participants viewed the US to be more threatening to the world peace $(Mdn = 7)$ than their female counterparts $(Mdn = 5)$. Post hoc test for pairwise comparisons among different groups of profession using the Bonferroni correction for multiple tests revealed that the differences in the respondents' opinions about the US with the mentioned issue were seen among (1) people working in the government sector and self-employed individual and (2) private business/NGO staff and self-employed individuals.

Table 8
Post hoc test for pairwise comparisons of the respondents' views on 'how threatening the US to world peace with regard to their profession'

Groups	Median	Sig.	Adj.Sig.
Self-employed & Government Staff	(5.0, 6.0)	.007	.021
Self-employed & Private Business/NGO Official	(5.0, 7.0)	.002	.006
Government Official & Private Business/NGO Staff	(6.0, 7.0)	.746	1.00

Significance values have been adjusted by the Bonferroni correction for multiple tests

It was clearly shown that self-employed individuals viewed the US in a more positive way ($Mdn = 5$) compared to the people working in private businesses/NGOs institutions ($Mdn = 7$) and the ones working in the government sector ($Mdn = 6$). The finding did not show any significant differences in the respondents' opinions among those working in the government sector and private business/NGO staff.

Interestingly, despite its notorious image in WWII, Japan was considered to be the least threating country ($Mean = 3.06$) to the world peace, and the EU countries were also viewed comparatively low as the world peace destroyer ($Mean = 4.16$). The results from Mann-Whitney and Kruskal-Wallis tests revealed that the participants' perceptions concerning how threatening Japan and the EU would be to the world peace were not significantly different in relation to their gender, education level, profession and the respondents' overseas experiences.

How Responsible These Countries to Global Issues

In relation to how responsible these major powers would be to global issues, the results revealed that the respondents thought both China and the US would act less responsibly to the global issues with $Mean = 3.18$ and $Mean = 5.24$ respectively. However, the US had more favorable views compared to China, based on the magnitude of the mean scores. In addition, the respondent's views regarding this issue towards Japan and EU countries

are more positive compared to the two formers with respective mean scores 6.89 and 5.88 (see Table 9). Based on these values, Japan was viewed as the most responsible actor to the global issues.

Table 9
Respondents' views with regard to their trust on how responsible these power countries to the world affairs (the higher the mean value, the more responsible they are.)

	N	$\bar{X}$	SD
China	212	3.18	2.27
USA	212	5.24	2.12
Japan	212	6.89	2.13
EU	212	5.88	2.15

The respondents' views towards China concerning its responsibilities in global affairs were found to have no significant differences among gender, education level, and profession. However, the result from Mann-Whitney test indicated that the participants' views were statistically different with regard to their overseas experiences ($U(172, 40) = 2664.0, -2.243, p = .025$). It showed that those who have had overseas experience tended to view China to be more responsible to the global issues ($Mdn = 3$) while those who had no overseas experience viewed China to be slightly negative ($Mdn = 2$).

Concerning this particular issue, the results from Mann-Whitney and Kruskal-Wallis tests revealed that the respondents' trust on the US, Japan and the EU to act responsibly to the world was found to have no significantly different in relation to their gender, education level, profession or overseas experiences.

How Influential These Countries in the Region

In term of these countries' overall influence in the Southeast Asia region, China was viewed as the most influential actor ($Mean = 7.68$) while the US ranked second ($Mean = 6.71$). Among the democratic allies, it is evidenced that the EU were regarded as the least influential partner ($Mean = 5.81$) slightly lower than Japan ($Mean = 5.93$).

Table 10
Respondents' views on major powers with regard to their influence in Southeast Asia Region (the higher the mean value, the more influential they are.)

	N	$\bar{X}$	SD
China	212	7.68	1.67

USA	212	6.71	1.77
Japan	212	5.93	1.77
EU	212	5.81	1.79

The results from Mann-Whitney and Kruskal-Wallis tests revealed that the respondents' views on how influential these four major powers are in the ASEAN region were not significantly different in relation to the respondents' gender, education level, profession or overseas experiences.

How Important for Cambodia to Have Good Relation with These Countries

The statistics of Table 11 showed the respondents' views on how important for Cambodia to keep good relation with the aforementioned powers. It revealed that Japan ($Mean = 8.21$), although being a key player in WWII, was viewed as the main actor for Cambodia to keep good relation with, while her neighboring country, China ($Mean = 5.77$), was perceived to be the least important for Cambodia to have good relation with. The views towards EU and the US were also comparatively higher than that of for China with $Mean = 7.53$ and $Mean = 7.17$ respectively though the US scored the lowest among these democratic powers.

Table 11
Respondents' view on how important to keep good relation with these major powers (the higher the mean value, the more important for Cambodia to have good relation with these major powers.)

	N	$\bar{X}$	SD
China	212	5.77	2.44
USA	212	7.17	1.81
Japan	212	8.21	1.64
EU	212	7.53	1.85

The comparisons of the participants' views in relation to the four independent variables revealed that the respondents' opinions towards China, with the mentioned aspect, were found to be significantly different in term of the respondents' education level ($U(100,112) = 4658.0, -2.142, p = .032$). It was evidenced that the ones holding postgraduate degree held more positive views ($Mdn = 6$), compared to their undergraduate counterparts ($Mdn = 5$). In this case, we could not detect any differences in the participants' opinions with regard to their gender, profession and their overseas experiences.

For the case of the US, the results from Mann-Whitney and Kruskal Wallis tests revealed that the respondents' opinions concerning how important for Cambodia to have good relation with this super power were not found to be of significant different in term of the four independent variables. However, for the case of Japan, Mann-Whitney test revealed that the differences in the respondents' views on this matter were statistically significant in regard with their gender ($U(160, 52) = 3403.0, -2.015, p = .044$). Male participants were found to have viewed that it was more important for Cambodia to have good relation with Japan ($Mdn = 9$) compared to their female perspectives ($Mdn = 8$). However, the differences in their views in relation with the participants' education levels, professions and their overseas experiences were not significant.

Similarly, the Mann-Whitney U test also showed that it was statistically different in respondents' views on how important for Cambodia to have good relation with the EU ($U(160, 52) = 3385.0, -2.045, p = .041$). It proves that male participants prefer Cambodia to have stronger relation with the EU ($Mdn = 8$) compared to the female respondents ($Mdn = 7$). The differences in the respondents' perspectives were not found in relation to their education levels, professions and their overseas experiences.

4. DISCUSSION

The influences of major powers particularly China, the US, Japan and EU in the international arena are extent and variant in different countries in according to their actions and policies. In Cambodia, these major powers have been playing significant roles in Cambodia's social and economic development. After the peace settlement in 1991, Cambodia witnesses significant economic growth (Sotharith, 2010) thank to the assistance and investment from these countries.

In the meanwhile, people's views towards the influences of these powers are also shaped in various forms. Cambodian educated group, ones who are the active agent in the society, also have different perspectives towards their influences. More recently, the relationship between Cambodia and the US and the EU have seen ups and downs in light of political aspect. This is partly caused by human rights issues

repeatedly raised by the US and the EU's withdrawal of Everything But Arms (EBA) scheme from the Kingdom. In contrast, the relationship between Cambodia and China and Cambodia with Japan have been still better and stronger despite in any political situations.

This survey findings, as presented in the result section, show that more research respondents view both China and the US more threat to the world peace as their status quo of peer competitors and the most powerful economies. However, there are more unfriendly views towards China with $Mean = 6.28$, compared to the US with $Mean = 5.78$. Despite being involved in some unjust war in parts of the world (Fisher & Biggar, 2011), the US is somehow viewed more positive compared to China in terms of world threats among Cambodian educated groups participated in the research. This might demonstrate by the fact that the US's soft power is still so strong that can hold the positive public perception in other countries (Servaes, 2012). For instance, the US's Medias are influential in shaping global public opinions in favor of its interests.

For China, in spite of its overwhelming influences in the kingdom in terms of business, financing aids, culture and politics (Marks, 2000; Kosal, 2009; Sambath, 2018), it is still viewed more unfriendly, at least among Cambodian educated group. These perceptions might be assumed by the current China political system ruled by the communist regime and the negative image driven by the Western propaganda. The leadership of Chinese Communist Party (CCP) has always been criticized by the West through various media outlets. This would reach out so many audiences including Cambodian educated people. Several prime examples are striking, particularly the moment of trade war between the US and China. Nearly all of media/news outlets have focused on China and put all faults to China. In addition, the past history might be a factor shaping Cambodian educated people's opinions in viewing China more unfavorable. During the late 1970s, China backed the Khmer Rouge. The regime had killed many Cambodian people during that time (Hass, 1991; Ciorciari, 2014; Chandler, 2018). This unfavorable image has not moved from many Cambodian's mindset.

In terms of gender, education and overseas experiences, the analysis shows that there is no statistical significance of the respondent's views towards China on the global threat. In contrast, professions are found statistically different. Self-employed ones tend to view China more positive than groups of NGOs/business and government. This finding elaborates the fact that the current self-employed people (business owners) in Cambodia are the ones who imagine the benefits they would get from Chinese in terms of businesses. They perpetually assume that Chinese business and investment dramatic growth in the kingdom (Chheang, 2017) would also grow their businesses. On the other hand, ones who work in NGO/private companies and government still hold slightly negative perception towards Chinese because these groups are mid-career professionals who are mostly educated in Western education. Even though there is no any previous studies proving the assumption, the younger groups influenced by the Western culture tend to take more unfavorable views towards Chinese in the kingdom.

For the US, there is also no statistical significance of the respondent's views in relation with education and overseas experience. However, gender and profession provide interesting finding. More male respondents view the US more negative in regard with global threat compared to their female counterparts. This finding support the fact that male Cambodian people, particularly ones in the middle age and have access to online sources, tend to be curious about major power's politics, thereby providing them more understanding about negative images of America done in some countries. Self-employed see the US more positive than ones who work in NGOs/private companies and government institution. This corroborate the views discussed earlier that the respondents have the same views towards Chinese.

However, it is even absorbing when the finding presents that both Japan and EU countries are least threatening to the world peace compared to the two aforementioned major powers. In addition, there is no statistical significances of the respondent's views in regard with their gender, education, profession and overseas experiences towards Japan and EU countries. This finding is grounded in the fact that soft power expansion of Japan and EU is comparatively strong

and prominent (Michalski, 2005; Jones, 2010; Iwabuchi, 2015; Naoyuki, 2015) thereby creating good image among Cambodian educated groups. There is a saying 'things made in Japan is in good quality' in Cambodia. Japan's public diplomacy has a very positive impact on Cambodian people in general (Jing & Un, 2021). Moreover, investment and aids from Japan and EU to the kingdom have been playing a vital role for Cambodia's economic development since the 1990s (Sodhy, 2004). The other illustration is that Japan's Constitution did not allow her to have military after the Second World War. This has showed a good image for Japan to be a least threatening actor. It was just in late 2015 that Japan enacted a series of laws to have self-defense force as well as provided material support to allies in combat internationally. The EU countries, however have always been seen as leading aid providers to other developing countries (Carbone, 2011) despite somehow often standing with the US in the global security affairs. Their credentials in the aid provision, development cooperation and politicization might possibly and inevitably take some positive views of the Cambodian intellectuals.

Concerning the views on global responsibility, the statistics presented that both China and the US act less responsibly to the global issues with $Mean = 3.18$ and $Mean = 5.24$ respectively. However, the latter has more favorable views. In addition, the respondent's views towards Japan and the EU are more positive compared to the two powerful economies. The EU bloc has been seen more positive with $Mean = 5.88$, lagging the East Asian Tiger Japan with $Mean = 6.89$. This finding addresses the reality that China and the US as the most powerful economies would have contributed more in solving global challenges but to more or less extent they are not much responsive to the issues. In similar vein, Japan and EU would have adjusted to the same pattern. There are still many unsolved problems struggling on the world now.

In terms of gender, educational level and profession, the respondent's views towards China found no statistically significant in relation to the responsibility in global issues. But, the Mann-Whitney test indicated that overseas experiences play a role in shaping the respondent's views. Those who have been abroad tend to see that China plays more responsible role in some international issues whereas those who have not exposed to outside environment tend to view China less responsible. This finding demonstrates the fact that ones who have international exposure would have heard more information and gained new knowledge about the global issues the world is facing. Climate change, for instance, is a challenge the global countries need to address. Until now, China has significantly contributed to global climate governance (Chan, Lee & Chan, 2011; Ly, 2020) while the US then withdrew from the Paris Climate Deal. A lot of media outlets headlined the story. For the other three allies, on the other hand, the figure showed that there is no statistical significance of the respondent's views towards them in relation to their gender, educational level, profession and overseas experience.

Last but not least, the numbers show no surprise that China was viewed the most influential actor, followed by the US and its allies Japan and EU in the Southeast Asian regions. This might possibly demonstrate by the fact that China's regional economic clout has explicitly dominated the regions. China has become the most important trade partner with ASEAN member states (Astarita, 2008; Wang, 2018). Cambodia is no an exception. Therefore, the inclination in viewing China as the most influential actor in the region for Cambodian educated people is more probable. In addition, there is no statistical significance of the respondent's views on how influential these powers are in the region in relation to their gender, education level, profession and overseas experiences.

As presented in the finding section, the respondent's views on how important for Cambodia to keep good relation with the aforementioned powers revealed that it is crucial for the kingdom to have good relation with them. However, the number is slightly lower for China than its counterparts. Japan was viewed the highest followed by the EU and the US. The finding validates the fact that all these powers are important partner with Cambodia for the sake of the kingdom's socio-economic development as well as political development. This reflects strategic implementation of Cambodia's foreign policy in engaging diverse cooperation with other countries which matters to its ultimate interest (Chheang, 2021).

However, the difference in the respondent's views towards China was statistically striking in terms of educational levels. The postgraduates thought that it is more important for Cambodia to keep good relation with the Dragon, compared to their undergraduate counterparts. This might be grounded on the fact that as China has risen to be a regional hegemon dominating both political and economic landscapes as mentioned earlier, it is crucial for Cambodia as a small developing country to harness interests through good cooperation and relations with the giant economy. So, only those who have more critical views would see the significances of the good relation. This also supports the previous research finding that the higher education people hold, the more critical views they have towards a powerful economy in the framework of Cambodia's relations with other foreign countries (Toch & Ly, 2020).

For Japan and EU, the finding presents that the differences in respondent's views on how important for Cambodia to keep good relations with these were statistically associated with their gender. More participants support the good relations between Cambodia and Japan or EU, compared to female counterparts. As discussed earlier, male Cambodian educated people would have more understanding about the issue matter to Cambodia's foreign relations than the female ones. They appear to be more curious about it in their daily life. More importantly, Cambodia has built a very good relations with Japan and EU since its peace settlement, despite having a worse period with the latter before and after EBA's withdrawal. But the differences in their views in relation to their educational levels, professions and overseas experiences were not statistically significant.

5. CONCLUSION

In conclusion, the research found that in term of threat to world peace, China and the US were viewed as the most threat, while Japan was perceived as the least despite being the key player in the Second World War. In term of responsibility to the global issues, the US was considered to be key player followed by Japan and EU. China still took more negative views of the respondents compared to the other counterparts. From the opinion of Cambodian educated respondents, EU plays as an influencing actor in the Southeast Asia region despite there is

small difference in the degree of influences compared with other counterparts. However, more number of respondent's view revealed that it is crucial for Cambodia to keep good relation with China compared to other countries.

This survey study provides more insight for further discussion and studies on how Cambodian educated people's views towards the influences of major powers account for the aspect of Cambodia's foreign relations with others. Even though there is a lack of its rigour in the design with small-representation of the samples, this research would have set some relevant inputs for policy making and decision as well as encouraged more studies about the subject.

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- Public diplomacy and media
- Community development and natural resource management
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- Mathematics Education
- Machine Learning & Data Science

APPENDIX

Survey Questionnaire

The Influence of Major Power Countries in Global and Regional Contexts: A Comparative Views from Cambodian Intellectuals

INTRODUCTION

This survey intends to assess the perceptions of Cambodian educated group on the influence of major power countries, China, the US, EU and Japan, in global and regional contexts. With the structured questionnaire provided below, you are appreciated to take on your voluntary response to the survey. We would like to assure you that the information from this survey will be used for educational and research purposes only, and that your privacy will be kept confidential. We believe that the finding from this study will be significantly contributing to the whole spectrum of research sector, in particular the public's view on major power countries in the world. Your minutes to fill out this survey is invaluable.

We really appreciate your kindness if you could pass the *Questionnaire Link* to more friends, relatives, colleagues and those you know so that they could also take part in this study.

SECTION I: PERSONAL INFORMATION

Q1: Age
- ☐ Below 18　　☐ 18-27
- ☐ 27-40　　☐ 40-60
- ☐ Over 60

Q2: Education Level
- ☐ Undergraduate
- ☐ Postgraduate Degree

Q3: Gender
- ☐ Male
- ☐ Female

Q4: Occupations
- ☐ Self-Employed　　☐ Government Sector
- ☐ Private Business/NGO Staff　　☐ Other...............................

Q5: Have you ever experienced living or traveling abroad?
- ☐ Yes
- ☐ No

SECTION II: VIEWS ON INFLUENCE OF CHINA AND OTHER GREAT POWERS

Please provide the tick (√) in the box of number from 0 to 10 (Please see the meaning of these numbers in the above).

In this section (Q6 – Q9), are measured using 11 scales with meaning:

0: No Threat & 10: Big Threat

	Statements	0	1	2	3	4	5	6	7	8	9	10
Q6	How threatening do you think China is to world peace?											
Q7	How threatening do you think USA is to world peace?											

Q8	How threatening do you think Japan is to world peace?											
Q9	How threatening do you think EU is to world peace?											
Q10-Q13 with scales: *0: No Trust & 10: Wholly Trust*												
	Statements	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Q10	How much do you trust China to act responsibly in the world?											
Q11	How much do you trust USA to act responsibly in the world?											
Q12	How much do you trust Japan to act responsibly in the world?											
Q13	How much do you trust EU to act responsibly in the world?											
Q14-Q17 with scales *0: No Influence & 10: Big Influence*												
	Statements	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Q14	How influential is China in Southeast Asia?											
Q15	How influential is USA in Southeast Asia?											
Q16	How influential is Japan in Southeast Asia?											
Q17	How influential is EU in Southeast Asia?											
Q18-Q21 with scales *0: Not Very Important & 10: Very Important*												
	Statements	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Q18	How important do you think it is for Cambodia to have good relation with China?											
Q19	How important do you think it is for Cambodia to have good relation with USA?											
Q20	How important do you think it is for Cambodia to have good relation with Japan?											
Q21	How important do you think it is for Cambodia to have good relation with EU?											

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