

PHILIPPINE SEA-PLM 2019

SUPPLEMENTARY REPORT:

AN ANALYSIS OF CONTEXTUAL VARIABLES

KAGAWARAN NG EDUKASYON
REPUBLIKA NG PILIPINAS

SEAMEO

SEA-PLM 2019
Southeast Asia Primary Learning Metrics

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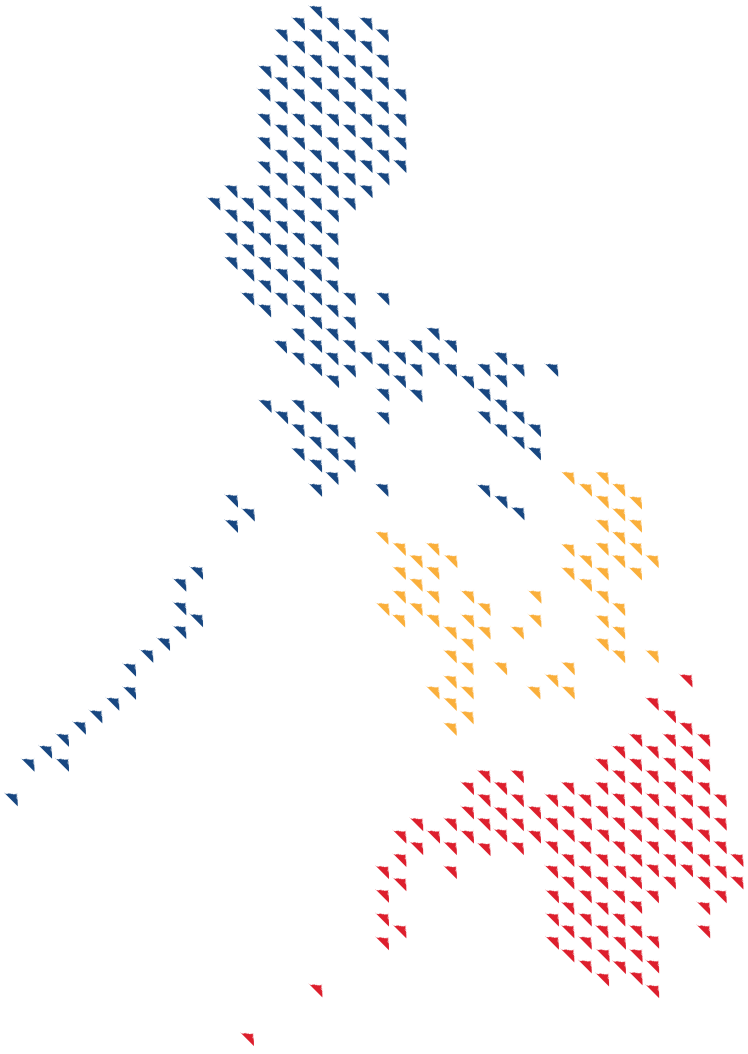

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SEA-PLM 2019
Southeast Asia Primary Learning Metrics

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Filipino
Filipino
1. Pipilitin
gawin
kang
ko ang
aking tinanggap.
Hihingi ako ng tulong
aking tinanggap.
5. Tatanggapin ko ang
mahiya ang nakikiusap.
Hihingi ako ng paumanhin
ang tinanggap na gawain
Tiwasan ko ang nagbigay
ndi ko natatapos ito.

EXECUTIVE SUMMARY

The learning outcomes of children in primary school are undeniably essential to their development. Various investments and efforts have been made by the government and private sectors to enhance learning in the Asian region. Adequate monitoring and assessment mechanisms should be implemented to determine the effectiveness of education system programs, policies, and interventions. These mechanisms can provide inputs for policy making, governance, and system accountability to improve each child's learning (UNESCO & SEAMEO, 2020).

To achieve this goal, Southeast Asia Primary Learning Metrics (SEA-PLM) aims to provide reliable evidence for monitoring learning outcomes in the entire Southeast Asian region and understand what factors facilitate or hinder effective learning in primary school. While the SEA-PLM 2019 National Report of the Philippines analyzed the contextual variables of the Grade 5 students to better understand their performance in three domains - reading, writing and mathematics, the analysis performed did not consider the simultaneous impact of contextual variables. That is, each contextual variable was analyzed with respect to the students' performance without consideration of the other variables. Hence, it is imperative to explore the simultaneous relationship of these contextual variables with the student's performance in the three domains.

This document is a supplementary report to the Southeast Asia Primary Learning Metrics (SEA-PLM) national report published in March 2021. Whereas the national country report provides the analysis of both the cognitive instrument and the background questionnaire, this supplementary report offers more in-depth analyses of the contextual variables affecting student achievements. More technical statistical methodologies were utilized in this report. It is also imperative to note that the language of assessment of SEA-PLM in the Philippines is English, as it is the medium of instruction in Grade 5.

Specifically, this supplementary report attempts to provide answers to the following questions: (a) To what extent do reading, writing, and mathematics literacy scores vary across schools; (b) To what extent are the student- and school-level factors (contextual variables) associated with reading, writing, and mathematics achievement scores; (c) How are the school-level contextual variables associated with average achievement scores in reading, writing, and mathematics literacy; (d) How are the behavioral issues exhibited by students in the school associated with their achievement scores in reading, writing, and mathematics literacy; (e) What are the different profiles of the teachers of the Grade 5 children sampled in the SEA- PLM 2019 study; and (f) What are the student- and school-level factors that are associated with the students' responses to global citizenship (GC) issues and topics at school?

To what extent do reading, writing, and mathematics literacy scores vary across schools?

The variability of the achievement scores in SEA-PLM 2019 of the Filipino Grade 5 students can be attributed to their individual and school differences. It was found that 48.2%, 37.2%, and 43.6% of the overall variation in the reading, writing, and mathematics achievement scores of the students are accounted for by between-school differences, which is considered large for education research (Xia, Izumi, & Gao, 2015, p.188). Hence, the achievement scores of the students differed from one another not just because of the differences in their proficiency levels but also because of the characteristics of their schools (e.g., school management, school location, school size).

To what extent are the student- and school-level factors (contextual variables) associated with reading, writing, and mathematics achievement scores?

Student-related Factors

When other factors are controlled, the Filipino girls in Grade 5 significantly outperformed the boys in reading ($p<0.001$) and writing literacy ($p<0.001$) by 4.61 and 9.24 points, respectively. However, girls and boys did not significantly differ in their performance in mathematics achievement.

Meanwhile, a positive attitude towards school has been shown to have a significant positive correlation with reading ($p<0.001$), writing ($p<0.001$), and mathematics ($p<0.001$) achievement scores of Filipino Grade 5 students. On the other hand, the community attitudes of the students did not have a significant contribution in explaining the achievement scores in reading, writing, and mathematics.

The frequency of issues occurring among students (e.g., late for class, truancy, cheating, bullying, violence) was not significantly associated with reading, writing, and mathematics scores, fixing other factors. In addition to that, the Filipino Grade 5 children who could complete ten or more of the tasks before primary school (e.g., recognizing and writing most letters of the alphabet, reading and writing some words, counting by himself/herself up to 10, recognizing different shapes, doing simple addition) were expected to obtain higher scores than those who could complete fewer than ten tasks. Hence, school readiness plays an important role in the long-term learning of the students.

It was found that grade repetition has a significant inverse relationship with achievement scores in reading ($p<0.001$), writing ($p<0.001$), and mathematics ($p<0.001$). On the other hand, Grade 5 children who attended preschool significantly performed better in reading ($p<0.001$), writing ($p<0.001$), and mathematics ($p<0.001$) than those who did not. Additionally, Filipino Grade 5 children who had a more positive attitude towards mathematics were likely to obtain significantly higher scores in mathematics literacy ($p<0.10$).

Teacher-related Factor

When regressed to the achievement scores in reading, writing, and mathematics, the community attitude of the teachers was found not to be statistically significant. The community attitude of the teachers refer to their attitude towards the school, feeling of belongingness to the school community, having high morale in the school, working with enthusiasm, and taking pride in the school.

School-related Factors

Controlling for the influence of other factors, it was found that schools with students mainly coming from families with high socioeconomic status (SES) are likely to obtain higher scores than those schools with students mainly coming from poor families.

Meanwhile, school management, whether public or private, was not significantly associated with achievement scores in reading, writing, and mathematics. When the effect of school management is moderated with the mean SES of the school, its relationship with reading ($p<0.10$) and mathematics ($p<0.05$) scores is statistically significant, while with writing scores is not.

While other independent variables are controlled, school location did not appear to have a significant contribution in explaining differences in reading, writing, and mathematics scores of the students. Another key finding is that higher student-teacher ratios tend to have lower reading scores than those with lower student-teacher ratios.

Additionally, school size was shown to be not significantly associated with student achievement in reading, writing, and mathematics. The approximate age of principals did not significantly contribute to explaining student achievement in reading, writing, and mathematics. Furthermore, having more resources in the local area where the school is located did not necessarily mean higher scores in

reading, writing, and mathematics.

It was also found that higher achievement scores in reading, writing, and mathematics were not significantly associated with fewer issues hindering school capacity when the influence of other factors was controlled. The years as principal in the school also did not have a significant association with achievement scores in reading, writing, and mathematics.

Family-related Factors

Grade 5 students from more well-off families relative to other students in their school were likely to have higher scores in reading and writing, but not necessarily in mathematics, and those with more resources at home (e.g., home possessions, the number of meals a child had per day, the quality of household walls, the presence of utilities) were more likely to perform better in the assessments in the three domains. Another important finding is that Grade 5 students whose parents were more engaged in schooling were more likely to achieve higher reading, writing, and mathematics scores even when other factors were controlled.

Surprisingly, when other factors are controlled, Grade 5 students who did not speak English at home scored significantly higher than those who did in writing and mathematics. Further exploration needs to be done to explain this finding. However, students who spoke English at home from more well-off families were likely to obtain higher achievement scores in reading, writing, and mathematics than others.

How are the school-level contextual variables associated with average achievement scores in reading, writing, and mathematics literacy?

Using cluster analysis for each domain, the participating schools were grouped into three, namely, low-performing schools, middle-performing schools, and high-performing schools.

Reading

Results revealed that high-performing schools in reading are primarily composed of students with a better positive attitude towards schooling and students with parents that were more involved in their children's schooling.

Moreover, the schools encountering issues among students more frequently had, on the average, lower performance in the examination. The low-performing schools in reading had the lowest mean proportion of students who could do at least ten skills before going to primary school.

Meanwhile, both low and middle-performing schools in reading had the highest mean proportion of students who repeated grade level. The high-performing schools had the highest mean proportion of students who attended preschool accounting for nine out of ten students. It was also found that the lowest mean student-to-teacher ratio was obtained by high-performing schools in reading.

Additionally, the mean age of principals was lowest for the low-performing schools in reading, and it was highest for the high-performing schools. Furthermore, all principals who participated in the study administering the low-performing schools in reading assessment had five years or less experience as principals.

Writing

It was found that high-performing schools in writing mainly were composed of students with better positive attitudes towards schooling and of students with parents that have better engagement with their children.

Furthermore, schools encountering issues among students more frequently had, on the average, lower performance in the writing examination. The low-performing schools in writing had the lowest mean proportion of students who could perform at least ten skills before going to primary school. In contrast, the high-performing schools had the highest mean proportion of students who attended preschool, accounting for nine out of ten students from the three clusters. Also, around 70% of the low-performing schools in the writing assessment had five years or less experience as principals.

Mathematics

The high-performing schools in mathematics mainly were composed of students with parents that had better engagement in their studies with their children. Schools encountering issues among students more frequently had, on the average, lower student achievement in mathematics.

Results revealed that the low-performing schools in mathematics obtained the lowest mean proportion of students who could do at least ten skills before going to primary school. The cluster with the lowest mean proportion of students who attended preschool was the middle- performing schools in mathematics with 82%.

The high and low-performing schools in mathematics had the highest mean student attitude according to the teachers index. Around nine out of ten schools from the low-performing schools in the mathematics assessment have five years or less experience as principals.

How are the behavioral issues exhibited by students in the school associated with their achievement scores in reading, writing, and mathematics literacy?

Results have shown that the lowest mean scores were computed for students in schools in which truancy is encountered daily. Furthermore, an unexpected result showed that bullying is much more prevalent and happens daily in schools with higher mean scores in reading, writing, and mathematics. A more in-depth data exploration needs to be conducted to explain this finding.

It was also found that there was no significant difference in the mean student achievement scores across the different levels of frequency of bullying in schools and across the three domains.

The highest mean scores were obtained by schools with no problem of violence or schools that encountered them monthly. Lastly, the mean scores were highest for students studying in schools with no incidence of offensive behavior to Persons with Disabilities (PWDs).

What are the different profiles of the teachers of the Grade 5 children sampled in the SEA- PLM 2019 study?

It was found that when it comes to research work, multi-age teaching, laboratory activities, and Information and Communication Technology (ICT)-supported activities, a large portion of Grade 5 students had teachers who were not very confident or not all confident in using them in teaching.

More than half of the Grade 5 students had teachers who said that absenteeism, disruptiveness in class, poor health, and lack of interest affected their students from moderate to a large extent. The majority of Filipino Grade 5 children had teachers who deemed the following content areas very important: what is happening in countries near the Philippines, what is happening in the world, how things that happen in other countries affect the Philippines, understanding people that have a different ethnicity, how to solve disagreements with classmates peacefully, how to protect the environment, and how they can help to solve problems in their own community.

It was also revealed that only around half of the Filipino Grade 5 students had teachers who mentioned that their preservice teaching education prepared them to teach current global events,

and globalization very well. Less than half of the Grade 5 students had teachers who said that they were very confident to teach global current events and globalization.

In reading, it was found that more than half of the Grade 5 students had teachers who responded that their students read aloud to the teacher, repeated aloud after the teacher, read silently, and took books home to read daily or almost daily. Moreover, about a quarter of Grade 5 students had teachers handling English reading and writing classes who said that they placed a strong emphasis on decoding sounds and words, fluency (reading aloud without error), and reading aloud with expression. It was found that only 29.5% of the Grade 5 students had teachers teaching English who said their students summarized what they read daily or almost daily.

When it comes to mathematics, the least common activities their students performed in class daily or almost daily were using computer-based mathematics learning resources (19.8%) and understanding extended mathematics investigations (13.2%). Additionally, most of the Grade 5 students had teachers who were very confident in helping students appreciate the value of learning mathematics (81.5%),

What are the student- and school-level factors that are associated with students' attitudes related to global citizenship topics?

Results have shown that the Filipino Grade 5 students with more resources at home, with parents who were more engaged with their children's school activities, with more books at home, and coming from more well-off families, had more exposure to GC topics at school. Furthermore, female students and students from urban communities were more exposed to GC topics at school.

Meanwhile, parental engagement, student's sex, approximate number of books at home, and SES appeared to be significantly correlated with the student's Asian identity. Female students and those from urban communities were found to be more concerned about global issues. In addition to that, female students and students living in urban communities, studying in private schools, having more resources at home, more engaged parents, and more books at home were likely to have better expected civic behavior.

Filipino Grade 5 students living in urban communities and coming from families with high SES were likely to have lower scores for behavioral intentions associated with GC. The students with more resources at home, more engaged parents, more books at home, and coming from families with higher SES tended to have a more positive attitude towards learning about GC-related issues.

In general, for the six constructs under GC, it appears that SES and parental engagement were consistently associated with them.

Recommendations

Based on the key findings, the following are the recommendations of this study.

- Because Filipino Grade 5 students' access to learning resources and opportunities can be limited due to their SES, the government should provide interventions on how to mitigate the impact of SES on children's access to quality education.

- Efforts must be made to provide students with with adequate resources at home (e.g., home possessions, number of meals a child had per day, quality of household walls, lighting type, presence of utilities, number of books in the household). Parents must be encouraged to be more involved in the schoolwork of the students and to change the mindset of their children so that they would have a positive attitude towards the school.

- Increasing access to pre-school through different strategies (e.g., changes in policy, incentives and communication campaigns) should be prioritized.

- School and teacher interventions such as remedial measures should be implemented to support students who are not performing well academically to avoid grade level repetition.

- For mathematics literacy, teachers and parents should formulate ways on how students can have a positive attitude towards mathematics.

- Safeguards such as building a positive school culture, providing mediation, counseling, and peer support for affected students need to be put in place to mitigate any untoward incident or act of violence in school that could negatively impact the academic performance of the students.

- Provide professional development workshops to make teachers more confident in using research work, multi-age teaching, laboratory activities, and ICT-supported activities in teaching.

- Trainings on social studies, inclusive or special needs, and writing in English should also be offered to teachers

- Integrate the topics on current global events and globalization in the preservice teaching education to make the teachers confident in teaching these GC-related topics to their students.

SECTION 1:
INTRODUCTION

This report is a supplementary report to the Southeast Asia Primary Learning Metrics (SEA- PLM) national report published in March 2021. The national report provides the analysis of both the cognitive instrument and the background questionnaire. On the other hand, this supplementary report offers more in-depth analyses of the contextual variables affecting student achievements. More technical statistical methodologies were utilized in this report, such as hierarchical linear modeling and cluster analysis.

The SEA-PLM Program is a large-scale regional assessment program launched by the Southeast Asian Ministers of Education Organization (SEAMEO) Secretariat and UNICEF East Asia and Pacific Regional Office. It primarily aims to assess Grade 5 students' learning outcomes, inform policymaking bodies, and ensure that all children achieve meaningful learning. The assessment primarily measures learning outcomes in reading, writing, mathematics, and Global Citizenship (GC). It has been developed after analyzing the curricula of different countries in the Southeast Asian region. SEA-PLM aims to contribute to countries' efforts to achieve progress on SDG 4, ensure inclusive and equitable quality education, promote lifelong learning opportunities for all, and mainly track progress on foundational learning (SDG 4.1.1) and knowledge and skills related to GC (SDG 4.7).

One of the main goals of SEA-PLM is to collect reliable data and evidence for monitoring learning outcomes across and within countries and identifying the factors that can facilitate or hinder the effective learning of children in school. For these reasons, aside from the assessment questionnaires that measure students' abilities in the four domains, SEA-PLM also included background questionnaires for students, parents, teachers, and school principals.

SEA-PLM also aims to boost exchange on education policies and capacitate participating countries in designing and conducting solid learning assessments. It also endeavors to bolster the ability of national education stakeholders in the collection, analysis, interpretation, and application of assessment data. Lastly, it envisions to help the participating countries to identify, prioritize, and address the challenges in including curriculum development, resource allocation, pedagogical practice, and planning at the national and sub-national levels (UNICEF & SEAMEO, 2020).

The SEA-PLM Assessment was formally launched in 2014, with six participating countries attached to the project: the Kingdom of Cambodia, Lao People's Republic, Malaysia, Myanmar, Republic of the Philippines, and Viet Nam. The first cycle of the assessment was administered during School Year 2018-2019. Multistage stratified sampling was used in the Philippines to choose the regions, divisions, and schools to be included in the study. In February 2019, 6,083 Grade 5 students took the SEA-PLM assessment via a paper-and-pencil test which measures their academic performances on reading, writing, mathematics, and GC. At the same timeframe, background questionnaires were administered to 5,780 parents, 1,153 Grade 5 teachers, and 173 school heads.

Section 2 of the report presents the research questions and the purpose of the study. Section 3 briefly discusses the methodologies used in the analyses. Section 4 then details the results and discussion of the analyses. The last section presents the conclusions and recommendations to address the key findings based on the Philippines' SEA-PLM assessment data analyses.



SECTION 2: OBJECTIVES

The learning outcomes of children in primary school are undeniably essential to their development. The skills that children learn in primary school are critical for later learning and their engagement and potential to contribute to society. Various investments and efforts have been made by the government and private sectors to enhance learning in the Asian region. Adequate monitoring and assessment mechanisms should be implemented to determine the effectiveness of education system programs, policies, and interventions. These mechanisms can provide inputs for policy making, governance, and system accountability to improve each child's learning.

To achieve this goal, SEA-PLM aims to provide reliable evidence for monitoring learning outcomes in the entire Southeast Asian region and understand what factors facilitate or hinder effective learning in primary school. While the SEA-PLM 2019 National Report of the Philippines analyzed the contextual variables of the Grade 5 students to better understand their performance in three domains - reading, writing, and mathematics, the analysis performed did not consider the simultaneous impact of contextual variables. That is, each contextual variable was analyzed with respect to the students' performance without consideration of the other variables. Hence, it is imperative to explore the simultaneous relationship of these contextual variables with the student's performance in the three domains.

Specifically, this supplementary report covered the following research questions:

1. To what extent do reading, writing, and mathematics literacy scores vary across schools?

2. To what extent are the student-level factors (contextual variables) associated with reading, writing, and mathematics achievement scores?
    a. Socioeconomic Status (SES) of the student
    b. Sex of the student
    c. Resources at home of the student
    d. Positive attitude towards school of the student
    e. Parental engagement
    f. Language spoken at home by the student
    g. Community attitude of the student
    h. Frequency of issues occurring among students
    i. School readiness of the student
    j. Whether student repeated grade level
    k. Whether student attended preschool

3. To what extent are the school-level factors (contextual variables) associated with reading, writing, and mathematics achievement scores?
    a. Average SES of students in a school
    b. School type/management (public or private)
    c. School location (rural or urban)
    d. Student-teacher ratio of the school
    e. School size
    f. Approximate age of principal

g. Community attitudes of teachers
h. Years as school principal

4. How are the school-level contextual variables associated with average achievement scores in reading, writing, and mathematics literacy?

5. How are the behavioral issues exhibited by students in the school associated with their achievement scores in reading, writing, and mathematics literacy?

6. What are the different profiles of the teachers of the Grade 5 children sampled in the SEA-PLM 2019 study?

7. What are the student- and school-level factors that are associated with the students':
   a. exposure to GC issues at school?
   b. attitudes about Asian identity?
   c. concern for GC?
   d. expected civic behavior?
   e. behavioral intentions associated with GC?
   f. attitude towards learning about GC-related issues?

SECTION 3: METHOD

3.1 Sample

In the Philippines, participants for the main survey were sampled using stratified random sampling. A total of 6,083 Grade 5 students took the SEA-PLM assessments in reading, writing, and mathematics literacy in February 2019 through a paper-and-pencil test. The background questionnaires were administered to 5,780 parents, 1,153 Grade 5 teachers, and 173 school heads. Some exclusions were made due to peace and order issues, remote locations, or different curricula being used (e.g., BARMM, international schools).

3.2 Data Source and Measures

The SEA-PLM 2019 data on students, parents, teachers and school heads in the Philippines were employed in this supplementary report. In analyzing the performance of the Grade 5 students in the three domains, the five plausible values available were used[1]. Hence, in predicting the student performance in a domain, regression analysis was conducted five times (a total of 15 regression analyses for the three domains). Meanwhile, for variables related to GC, the indices computed using an item response theory model and provided in the SEA-PLM 2019 were used. Lastly, the responses of the teachers of the sampled Grade 5 students in the Philippines were explored. While they were not representative sample of teachers in the Philippines, based on the sampling scheme used, information based on their responses can still be useful for the Department of Education (DepEd) .

3.3 Data Analyses

Different statistical methods were conducted to answer the research questions (RQs) stated in Section 3. To answer RQs (1) – (3), hierarchical linear models (HLMs), also called multilevel models, were fitted to the SEA-PLM 2019 data because of the inherent hierarchical structure of the data. Students in the same school have similarities in their student performance due to school-specific factors such as the same curricula being followed, same policies being implemented, same teacher training, etc. Random intercept hierarchical linear models were employed in this report.

The explanatory or independent variables used in HLMs were further analyzed using cluster analysis to answer RQ (4). To group the schools based on the covariates used in the HLM, Hierarchical Cluster Analysis was employed. Because the covariates were a combination of continuous and categorical variables, Gower's distance was used to measure the distances among schools. The means and percentages of the variables were computed to describe the characteristics of the clusters.

To answer RQ (5), the mean scores of the students in the schools were obtained based on the five plausible values for each domain. The school achievement scores were averaged based on the frequency of issues encountered by the students in the school. The mean scores were tested whether they were statistically significant or not.

[1] *https://www.air.org/sites/default/files/EdSurvey-Mixed_Models.pdf*

To address RQ (6), the responses to the pertinent questions included in the teacher's background questionnaire were summarized, and a descriptive analysis was performed. Finally, for RQ (7), regression analyses with the indices related to GC were performed to determine which variables are statistically associated with them. R 4.0.5, SAS 9.4, and SPSS 23 (with Replicates module) were used in answering these RQs.

SECTION 4:
RESULTS AND DISCUSSION

4.1 To what extent do reading, writing, and mathematics literacy scores vary across schools?

The variability of the achievement scores in SEA-PLM 2019 of the Filipino Grade 5 students can be attributed to their individual differences and their school memberships. In performing HLM analysis, these are called the within-school variance and the between-school variance. The within-school variance is lower than the between-school variance if students within a school have common characteristics. These two components are used to compute the so-called intraclass correlation coefficient (ICC) to determine whether HLM needs to be employed.

The value of ICC ranges from 0 to 1. A value close to 0 indicates that using HLM is not necessary, implying that the result of HLM would be similar to that of the usual linear regression analysis. As its value goes farther away from 0, it suggests that HLM needs to be employed to account for the hierarchy present in the data.

In the SEA-PLM 2019 assessment, five plausible values were generated for each domain. To compute for an overall ICC for each domain, the average of the five ICCs was calculated[2]. It was found that 48.2%, 37.2%, and 43.6% of the overall variation in the reading, writing, and mathematics achievement scores of the students are accounted for by between-school differences, which is considered large for education research (Xia, Izumi, & Gao, 2015). This is a clear indication that there is presence of clustering of students' achievement scores in each school, hence, the need to utilize HLMs in analyzing the achievement scores.

4.2 To what extent are the student- and school-level factors (contextual variables) associated with reading, writing, and mathematics achievement scores?

According to social cognitive theory, students' learning is based on the interactions between personal characteristics, behavior, and environmental aspects (Bandura, 2008). Since the publication of the Coleman Report (Coleman et al., 1966), which exemplifies the relationship of student achievement with different student and school-level factors, there has been extensive research about student's learning and the factors that affect it. This subsection aims to examine the relationships of different factors from students, schools, and parents with student achievement in SEA-PLM 2019.

To address RQs 2 and 3, a random intercept model was fitted to the data for the three domains. The random intercepts account for the departure of each school from the mean achievement score. Table 1 presents the fixed effects coefficients of each independent variable used in the analyses. Note that the same set of independent variables was used for reading and writing, except for mathematics with an additional independent variable, which is the attitude towards mathematics. Model diagnostic checking on the residuals and random effect estimates was also performed.

[2] *https://www.air.org/sites/default/files/EdSurvey-Mixed_Models.pdf*

Table 1.
Fixed Effects Results of the HLM for Reading, Writing, and Mathematics Achievement Scores

Independent Variables	Reading		Writing		Mathematics	
	Coef	***SE***	***Coef***	***SE***	***Coef***	***SE***
Intercept	253.44***	8.80	243.48***	12.34	249.11***	9.47
Student-related Factors						
Student's Sex (Girl=1; Boy=0)	4.61***	1..27	9.24***	1.94	0.60***	1.48
Positive attitude towards School	0.33***	0.02	0.36***	0.03	0.29***	0.03
Community attitudes of Students	-0.04	0.07	-0.01	0.10	-0.02	0.08
Frequency of issues occuring among Students	-0.05	0.05	-0.02	0.08	0.01	0.06
School Readiness (Ready=1; Not ready=0)	3.54***	0.57	4.65***	0.89	3.54***	0.56
Grade Repetition (Repeater=1; Not repeater=0)	-4.39***	0.51	-6.72	0.82	-5.85***	0.56
Preschool Attendance (Attended=1; Did not=0)	2.76***	0.68	3.50***	1.02	2.47***	0.81
Attitude towards Mathematics	-	-	-	-	0.06*	0.03
Teacher-related Factor						
Community attitudes of Teachers	-0.06	0.08	0.06	0.11	-0.05	0.09
School-related Factors						
Mean SES	14.39***	2.60	12.08***	3.16	10.84***	2.78
School Management (Public=1; Private=0)	-3.03	4.00	-1.57	5.41	-0.21	4.04
School Location (Rural=1; Urban=0)	-0.10	4.12	-3.35	5.72	-1.26	4.46
Student - Teacher ratio	-0.049*	0.03	-0.06	0.04	-0.04	0.03
School size	0.001	0.00	0.00	0.001	0.00	0.00
Approximate age of Principal	0.06	0.06	0.08	0.09	0.04	0.07
Resources in local area index	0.05	0.07	-0.01	0.10	0.04	0.07
Issues hindering School capacity	-0.03	0.06	-0.03	0.08	-0.05	0.06
Years as Principal	-0.38	0.43	-0.55	0.59	-0.65	0.47
Family-related Factors						
Centered SES[3]	1.77*	0.98	2.90**	1.19	0.39	0.88
Resources at home	1.05***	0.34	1.51***	0.52	1.36***	0.36
Parental Engagement	0.45***	0.03	0.46***	0.04	0.50***	0.02
Language spoken at home (English=1; Others=0)	-0.69	0.78	-3.98***	1.18	-2.67***	0.78
Interaction of Factors						
Centered SES*Language spoken at home	2.83**	1.34	3.06*	1.67	2.52**	1.17
Mean SES*School Management	1.78*	0.92	0.85	1.15	1.92**	0.81
Mean SES*School Location	1.49	2.59	5.14	3.58	3.03	2.65
Student's Sex*School Management	-4.74**	2.24	-0.38	3.19	-2.94	2.39
Centered SES*School Management	-0.64	1.31	-0.75	2.05	-0.55	1.64
School Management*School Location	-0.50	0.61	-0.84	0.87	-0.23	0.60
Centered SES*Preschool Attendance	0.20	4.14	3.49	5.78	1.80	4.50

*Note: Coef is the Coefficient estimate of the independent variable; SE is the standard error of the coefficient estimate; * means p- value<0.10; ** means p-value<0.05; *** means p-value<0.01*

[3] *There is a statistical advantage in performing centering of SES in HLMs (Paccagnella, 2006)*

Student-related Factors

The student-related factors used in modeling the achievement scores in reading, writing, and mathematics are the sex of the student assigned at birth, positive attitudes of students in schooling, community attitudes of students, issues occurring among students, school readiness of students, grade repetition, and preschool education.

Sex of the student

Controlling for other factors, **girls in Grade 5 significantly outperformed the boys in reading ($p<0.001$) and writing literacy ($p<0.001$) by 4.61 and 9.24 points, respectively. However, girls and boys did not significantly differ in their performance in mathematics achievement.** In contrast, the female Filipino students performed better than their male counterparts in the mathematics domain of PISA 2018. In Harmouch et al. (2017), for instance, the sex of the student assigned at birth has a conflicting association to student's achievement in mathematics. They found a significant difference in the TIMSS 2015 mathematics scores between girls and boys in Singapore but not in Lebanon.

Positive Attitude towards School

For SEA-PLM 2019, an index on the positive attitude towards school was constructed. It includes liking school, feeling safe, having a sense of belonging, learning useful things, and making friends easily. While Mohammadpour, Shekarchizadeh, and Kalantarrashidi (2015) found that a positive attitude towards schooling is not significantly associated with students' achievement, Table 1 shows that a **positive attitude towards school has significant positive correlation with reading ($p<0.001$), writing ($p<0.001$), and mathematics ($p<0.001$) achievement scores of Filipino Grade 5 students.** Hence, measures and programs in school that will make students like being at school, feeling safe while at school, feeling belonging to the school, and making friends easily at school will help them perform better academically.

Community Attitudes of Students

School heads were asked to describe the current situation of students at their respective schools. Particularly, they were asked to determine to what extent students have a positive attitude towards the school, work with enthusiasm, take pride in the school, feel part of the school community, and have high morale in the school. An index was generated to summarize these responses from the school administrators. Table 1 shows that, when other factors are controlled, **the community attitudes of the students did not have a significant contribution in explaining the achievement scores in reading, writing, and mathematics.**

Issues Occurring among Students

Issues occurring among students such as coming late for class, truancy, cheating, vandalism, bullying, violence, and offensive behavior might affect students' academic performance in school. The school heads were asked how frequently these issues occur on their school premises. As shown in Table 1, **the frequency of issues occurring among students was not significantly associated with reading, writing, and mathematics scores, fixing other independent variables.** A study by Erson and Rodriguez (2020) also found that the safety and orderliness of the school appeared to be not

significantly associated with achievement scores.

School Readiness

Aggregated school readiness has a significant positive relationship with the school's mean achievement in mathematics (Ersan and Rodriguez, 2020). At the same time, they also noted that the early literacy and numeracy activities before beginning primary school of students positively correlate with the student's achievement in mathematics.

In SEA-PLM 2019, parents of the Filipino Grade 5 students were asked which language and mathematical tasks their children could perform before attending primary school. The students were grouped by those who could complete ten or more of the tasks before attending primary school and those who could complete fewer than ten before attending primary school. As presented in Table 1, school readiness has a significant relationship with reading ($p<0.001$), writing ($p<0.001$), and mathematics ($p<0.001$) achievement scores, holding other independent variables constant. **The Grade 5 children who could complete ten or more of the tasks before primary school were expected to obtain significantly higher scores than those who could complete fewer than ten tasks.**

Grade Repetition

Gomes-Neto and Hanushek (1994) found that the scores of the students who repeated second grade improved tremendously in mathematics. They concluded that grade repetition has a significant positive effect on student achievement. However, when Ikeda and Garcia (2014) analyzed the PISA 2009 data, they found that students who never repeated grade levels tend to have higher student achievement in reading than those who repeated at least once in primary or secondary school. Furthermore, they concluded that grade repetition in primary school tends to have more impact on student achievement than in secondary schools. As shown in Table 1, grade repetition has a significant inverse relationship with achievement scores in reading ($p<0.001$), writing ($p<0.001$), and mathematics ($p<0.001$). Those children who repeated grade level were expected to obtain lower scores than those who did not in all domains.

Preschool Attendance

Preschool education can improve student achievement and lessen the gap between the students from poor and wealthy families, especially in developing countries (e.g., Duncan & Magnuson, 2013; Engle et al., 2011; Kagitcibasi et al., 2009; Tucker-Drob, 2012). Several studies also stated that higher student achievements in mathematics for primary level and upper-secondary school level were observed on students with pre-primary education (e.g., Altun & Çakan, 2008; Berlinski et al., 2009; Sandoval-Hernandez et al., 2013; Tramontana et al., 1988; Ağırdağ et al., 2015; Ersan and Rodriguez, 2020).

Table 1 shows that **Grade 5 children who attended preschool significantly performed better in reading ($p<0.001$), writing ($p<0.001$), and mathematics ($p<0.001$) than those who did not,** when other independent variables were fixed. In the Philippines Early Childhood Care and Development Longitudinal Study, Cheng et al. (2021) also found that students who attended preschool or day care had higher performance in literacy at each round of their study. These consistent findings only underscore the importance of preschool education, having an impact on the academic performance of the children in the long run.

Although preschool education is deemed necessary in bridging students' achievement gaps from poor and wealthy families, preschool education itself is affected by socio-economic factors (Batyra, 2017). However, in Table 1, the effect of preschool education on student achievement being moderated by the centered SES (i.e., the interaction term between preschool attendance and centered SES) did not appear significant in any of the three domains. Nevertheless, early educational activities related to literacy and numeracy conducted at home would tend to reduce the gap in students' achievement from poor and wealthy families.

Attitude towards Mathematics

An index summarizing the attitude of the students towards mathematics was used an explanatory variable for mathematics achievement scores. Table 1 shows that **Grade 5 children who had a more positive attitude towards mathematics were likely to obtain significantly higher scores in mathematics literacy (p<0.10).** Ersan and Rodriguez (2020) concluded that students' positive engagement to instruction and the amount of motivation a student has for mathematics have a significant impact on student achievement. Additionally, Harmouch et al. (2017) concluded that Singaporean and Lebanese students who had a more positive attitude towards mathematics had higher mathematics scores on TIMSS 2015 than those with a less positive attitude towards mathematics.

Teacher-related Factor[4]

School administrators were asked to what extent different statements describe the current situation of teachers at their school. These include teachers having a positive attitude towards the school, feeling they belong to the school community, having high morale in the school, working with enthusiasm, and taking pride in the school. To summarize their responses to these statements, an index on community attitudes of teachers was calculated. **When regressed to the achievement scores in reading, writing, and mathematics, the community attitude of the teachers was found not to be statistically significant.**

School-related Factors

The school-related factors included in this analysis are mean SES of the students in the school, the school's location (whether located in urban or rural communities), school management (whether the school is public or private), teacher-student ratio, years of experience of the principal, school size, and school size and issues hindering school capacity.

Mean Socioeconomic Status

The mean SES of the school is simply the average of the SES of the students in the school. When SES is aggregated to the school level, it has a stronger association with student's achievement than the individual SES of students (e.g., Sirin, 2005; White, 1982). It provides a picture of how well off the families of the students are studying in that school. Table 1 shows that the mean SES has a significant association with reading (p<0.001), writing (p<0.001), and mathematics (p<0.001) achievement scores. This finding suggests that **schools with students mainly coming from well-off families are likely to obtain higher scores than those schools with students primarily coming from poor families.**

[4] *While there are other teacher-related variables that can be used as independent variables, merging them with the student data can be a concern because there are sampled schools with only one teacher who answered the teacher's questionnaire.*

School's effect in relation to the student's SES has more association with students' achievement in low-income countries than the wealthier ones (Chudgar and Luschei, 2009).

School management

School management, whether public or private, was not significantly associated with achievement scores in reading, writing, and mathematics when other independent variables are taken into account. This was in contrast with the findings when mean achievement scores in SEA-PLM 2019 and PISA 2018 of public and private schools were compared. A similar study in Turkey using PISA 2015 reading scores found no significant relationship between school management and reading (Atas and Karadag, 2017). However, **when the effect of school management is moderated with the mean SES of the school, its relationship with reading ($p<0.10$) and mathematics ($p<0.05$) scores is statistically significant, while with writing scores is not.** The positive coefficient estimates in reading and mathematics of the interaction between mean SES and school management, as shown in Table 1, suggests that the impact of mean SES on reading and mathematics achievement scores becomes larger when students come from public schools.

Additionally, the relationship between school management and achievement scores moderated by student's sex appeared to be statistically significant in reading ($p<0.05$) but not in writing and mathematics. This finding suggests that girls studying in public schools are expected to score lower than boys and girls in private schools. It can also be noted that the relationship of school management with student achievement in all domains did not appear to depend on the (centered) SES of the students.

School location

While other independent variables are controlled, school location did not appear to have a significant contribution in explaining differences in reading, writing, and mathematics scores. In addition to that, when the school location's impact on achievement scores is moderated by the mean SES of students in the school, it is not significant as well. Contrary to several studies stating that students in urban schools tend to have higher student achievements than students from rural schools as there are more school resources in urban communities, and families from rural areas tend to have lower socio-economic indexes (Howie, 2006; Young, 1998). Furthermore, it was also found that the relationship between school location and achievement scores being moderated by school management is not also statistically significant.

Student-Teacher ratio

The student-teacher ratio appeared to be significantly inversely correlated with reading scores ($p<0.10$) but not with writing and mathematics when other independent variables are taken into account. This finding suggests that **higher student-teacher ratios tend to have lower reading scores than those with lower student-teacher ratios.** There is inconsistency in research regarding the relationship between class size and student achievement. For instance, Atas and Karadag (2017) also found that the number of teachers per student was not statistically significant in their model for the reading achievement score. Mohammadpour, Shekarchizadeh, and Kalantarrashidi (2015) also found that class size has no significant effects on student achievement. However, Hanushek (1999) found that a reduction in class size can improve students' achievement. In contrast to this, several studies stated that there must be a significant difference in the class size for the difference in student achievement to be noticeable (Shapson, Wright, Eason, & Fitzgerald, 1980).

School size

It was found that **school size is not significantly associated with student achievement in reading, writing, and mathematics,** as shown in Table 1. There were large schools that obtained high and low scores. This observation also holds for smaller schools.

Approximate age of Principal

Having older school principals could mean more experience in school administration, hence impacting student achievement. However, Table 1 shows that **the approximate age of principals did not significantly contribute to explaining student achievement in reading, writing, and mathematics.**

Resources in local area

School principals were asked to identify whether resources such as public libraries, cinemas, theatres/ music halls, foreign language schools, hospitals/clinics, youth cultural centers, etc. are available in their school's local area. An index was derived for resources in their local area based on their responses. Having higher schools implies greater cultural, social, and health infrastructure resources available in the local area of the school where children are enrolled. This index was used as an independent variable in the analysis. It was found that **having more resources in the local area where the school is located did not necessarily mean higher scores in reading, writing, and mathematics.**

Issues hindering school capacity

Issues hindering school capacity include shortage of computers, shortage or inadequacy of classrooms, instructional materials or toilets, and lack of qualified teachers. An index was derived based on these issues, with high values indicating the presence of more issues hindering school capacity. Table 1 shows that **higher achievement scores in reading, writing, and mathematics were not significantly associated with fewer issues hindering school capacity,** controlling for other independent variables.

Years as principal

Clark, Martorell, and Rockoff (2009) found a positive relationship between the years of experience of the principal and the school's performance in mathematics. However, in Table 1, it was found that **the years as principal did not have a significant association with achievement scores in reading, writing, and mathematics.**

Family-related Factors

The family-related factors discussed in this report are SES, resources at home of the student, parental engagement in schooling, and language spoken at home.

Centered SES

The centered SES is the deviation of a student's SES from the school mean SES. Hence, positive values of centered SES would mean the students have higher SES than the average SES of the school they are enrolled in. Table 1 shows that **Grade 5 students from more well- off families relative to other students were likely to have higher scores in reading and writing, but not necessarily in mathematics.** Several studies about education have already found a positive modest to moderate relationship between SES and students' achievement (e.g., Erson and Rodgriquez, 2020; Atas and Karadag, 2017; Harwell, Maeda, Bishop, and Xie, 2017; Mohammadpour, Shekarchizadeh, and Kalantarrashidi, 2015; Sirin, 2005; White, 1982).

Resource at home

The home resources index was derived from the available resources of the family at home, including home possessions, the number of meals a child had per day, the quality of household walls, the presence of utilities, and the number of books in the household. Table 1 shows that the resources at home index is significantly positively associated with achievement scores in reading ($p<0.001$), writing ($p<0.001$), and mathematics ($p<0.001$). **Students with more resources at home were more likely to better performance in the assessments in the three domains.** This finding is consistent with similar studies in Lebanon and Singapore using the TIMSS 2015 data (Harmouch et al., 2017). Furthermore, several multilevel studies have also stated that the number of resources at home of students that relates to culture, such as books, computers, calculators, etc., implies a better positive effect on achievement for wealthier countries than poorer ones (e.g., Chiu, 2007; Chiu and Xihua, 2008).

Parental engagement

Amponsah et al. (2018) documented a significant positive correlation between parental involvement and academic achievement of students in Mathematics and English in senior high school in Ghana. Lara and Saracostti (2019) also found that students with low scores in parental engagement tend to get clustered in groups wherein there are low student achievement scores. In SEA-PLM 2019, an index for parental engagement was constructed, with its high values indicating that parents are more engaged in schooling. It can be seen in Table 1 that parental engagement plays a significant role in student achievement in reading ($p<0.001$), writing ($p<0.001$), and mathematics ($p<0.001$). This finding suggests that **Grade 5 students whose parents were more engaged in schooling were more likely to achieve higher scores in reading, writing, and mathematics.**

However, parents with low SES scores tend to practice academic socialization with children, which is an aspect of parental engagement (Carolan and Wasserman, 2015). Parents in wealthy families tend to communicate more with their children and engage in home-based educational activities (Fantuzzo et al., 2004; Conger and Donnellan, 2007). Hence, measures should be put into place to encourage the parents, especially those coming from the marginalized sector, to engage in their children's schooling.

Language spoken at home

The language of the assessment used is English, as it is also the medium of instruction used in Grade 5. However, not all students spoke English at home. Others spoke different languages depending on their background or where they are. When considered with all other factors that influence students' achievement, the language spoken at home is a significant factor for writing ($p<0.001$) and

mathematics ($p<0.001$) but not for reading. Results in Table 1 show that **students who did not speak English at home scored significantly higher than those who spoke English at home in writing and mathematics.** A more interesting finding is that the influence of language spoken at home on student achievement when moderated by centered SES became significant. This finding suggests that **students who spoke English at home from more well-off families were likely to obtain higher achievement scores in reading, writing, and mathematics than others.**

4.3 How are the school-level contextual variables associated with average achievement scores in reading, writing, and mathematics literacy?

Hierarchical Cluster Analysis was employed to classify schools into several groups possessing, on the average, similar characteristics. Gower's Distance was used as the dissimilarity index for clustering a combination of continuous and categorical variables. Across the three separate analyses for each of the knowledge domains, the number of clusters is three since the average silhouettes are consistently highest for the number of clusters equal to three.

The names of the three clusters across the three domains were low-performing schools (Cluster 1), middle performing schools (Cluster 2), and high performing schools (Cluster 3). The names of the groups were based on the average scores of the schools included in the classes: Cluster 1 had the lowest mean score for Reading, Writing, and Mathematics, Cluster 2 had schools that contained medium mean score for Reading, Writing, and Mathematics in comparison with the other two clusters, and Cluster 3 included schools that had the highest scores in Reading, Writing, and Mathematics.

The variables used for the analyses for each domain were the school-wise averages of the five plausible values of that domain and the factors used in the previous hierarchical modeling. To describe the clusters, weighted means and weighted proportions were computed with the school weights utilized. Plausible values are imputed values similar to the scores of examinees and approximately have the same distribution of the skill of the examinee that is being measured. The analysis of SEA-PLM data used five plausible values to have better estimates of the actual population characteristics.

Reading Literacy

Fourteen schools were classified under the low-performing schools in reading, 111 were classified to middle-performing schools, and 32 were classified as high-performing schools. The mean plausible value was 269.27 for low-performing schools in reading, which was inside Band 2 and below. This means that, on the average, the students in the schools in this cluster can at most identify between words and their meanings. **The average for the middle- performing schools in reading was 283.27, which was inside Band 3, which means that the schools in this cluster had students who at most can read a range of everyday tests fluently and begin to engage with their meaning.** Lastly, for the high-performing schools in reading, the average mean plausible value was 308.04, falling under Band 5. The schools in this band can make connections to understand key ideas.

Table 2.
Cluster Analysis Results for Reading

Variables	Low Performing Schools	Middle Performing Schools	High Performing Schools
Number of Schools	14	111	38
Mean Plausible Value	269.27	283.27	308.04
Mean SES Index	-1.04	-0.13	0.82
Mean Proportion of Females in Grade 5	0.46	0.49	0.49
Mean Home Resources Index	-1.09	-0.11	0.72
Mean Positive Attitude to Schooling Index	45.28	45.37	50.2
Mean Parental Engagement Index	45.21	47.75	53.64
Mean Proportion of Students who Speaks English at Home	0.04	0.08	0.08
Mean Community Attitudes of Students Index	47.58	53.54	57.88
Mean Frequency of Issues Among Students Index	59.23	57.21	53.42
Mean Proportion of Studnets who have at Least Ten Skills Before Going to Primary School	0.64	0.88	0.95
Mean Proportion of Students who Repeated Grade	0.38	0.41	0.13
Mean Proportion of Students who Attended Preschool	0.88	0.82	0.9
Mean Student Teacher to Teacher Ratio	27.01	31.79	24.36
Mean School Size	414.88	1289.92	1538.05
Mean Age of Principal	44.09	48.36	56.42
Mean Community Attitudes of Teachers' Index	46.27	53.54	56.42
Mean Confidence in Teaching Index	46.01	49.96	53.09
Mean Student Attitude According to Teachers' Index	45.14	46.88	47.78
Proportion of Public Schools	0.94	0.99	0.59
Percentage of Schools Located in Rural Communities	1.00	0.75	0.62
Percentage of Schools Administered by Principals with 2 Years or Less Experience as Principal	0.76	0.33	0.56
Percentage of Schools Administered by Principals with 3-5 Years Experience as Principal	0.24	0.34	0.1
Percentage of Schools Administered by Principals with 6-10 Years Experience as Principal	0	0.17	0.14
Percentage of Schools Administered by Principals with 11-20 Years Experience as Principal	0	0.13	0.14
Percentage of Schools Administered by Principals with 31 Years or More Experience as Principal	0	0.03	0.05

The mean SES index and mean home resources index were both lowest for the low performing schools in Reading. Meanwhile, both were highest for high performing schools in reading. This finding implies that the high-performing schools mainly were composed of students with enough resources in their homes and are economically well-off.

The lowest overall mean proportion of female Grade 5 students across the clusters involved in reading was in low-performing schools. Meanwhile, the mean proportion of female Grade 5 students was equal for middle and high performing schools.

In terms of attitude towards schooling, low-performing schools' clusters in Reading had the lowest mean index on positive attitude towards schooling, and high-performing schools had the highest mean index on positive attitude towards schooling. It means that **high-performing schools in reading are primarily composed of students with a better positive attitude towards schooling.**

Low-performing schools in reading had the lowest mean index on parental engagement. The high-performing schools in reading had the highest mean index on parental engagement. This result means that **the high-performing schools in reading were mainly composed of students with parents that were more involved in their children's studies.**

There was a lower mean proportion of students who speak English at home for low-performing schools. On the other hand, both middle-performing and high-performing schools in reading had the same mean proportion of students who spoke English at home at 8%.

The community attitude index of students measures the perception of positive attitude among students (student pride, student enthusiasm, etc.). The highest mean community attitude index for parents, students, and teachers were recorded for high-performing schools. This result implies that schools located in a community with better positive attitudes among students had better performance in reading.

The frequency of issues among students is a measure of the number of issues the school has among their students, including cheating, bullying, violence, and offensive behaviors among females, persons with disabilities (PWDs), and teachers, etc. Based on Table 2, the mean index for frequency of student issues was highest among low-performing schools, and it was lowest among good performing schools. **This result implies that schools encountering issues among students more frequently had, on the average, lower performance in the examination.**

Among the three clusters, the **low-performing schools in reading had the lowest mean proportion of students who could do at least ten skills before going to primary school.** On the other side of the spectrum, the schools classified as good performing in reading have, on the average, 95% of students who possessed at least ten skills before going to primary school.

Both low and middle-performing schools in reading had the highest mean proportion of students who repeated grade level, whereas high-performing schools had the lowest mean proportion of students who repeated grade level.

Among the three clusters, **the high-performing schools had the highest mean proportion of students who attended preschool accounting for nine out of ten students.** Next to it were the low-performing schools with 88%.

The lowest mean student-to-teacher ratio was obtained by high-performing schools in reading. The highest mean student-to-teacher ratio was recorded for middle-performing schools with 32 students per one teacher.

Among the three clusters, the high-performing schools in reading had the highest mean number of students, followed by middle-performing schools. It is also important to note that the average size of the low-performing schools was just around one-third of the average size of the middle- performing schools.

The mean age of principals was lowest for the low-performing schools in reading, and it was highest for the high-performing schools. Meanwhile, the community attitude index of teachers measures the perception of positive attitude among teachers (whether teachers belong, teacher's morale, etc.). The highest mean community attitude index for teachers was recorded for high-performing schools. This result implies that schools located in a community with better positive attitudes among teachers had better performance in reading.

The confidence in teaching index measures how confident and how prepared the teachers think they are with their teaching in the classroom. A higher score implies a higher perception of confidence in teaching. Based on Table 2, the high-performing schools in Reading had the highest mean confidence teaching index, followed by middle and low-performing schools, respectively. This finding implies that schools with more equipped and more prepared teachers had students with better performance in reading.

The student attitudes according to teachers index measures how the students behave in the classroom. Some of the questions asked in this questionnaire were whether students show lack of interest in lessons, whether students are disruptive in class, or whether students are frequently absent or not. The mean student attitudes according to teachers' index was highest for high-performing schools in reading, followed by middle and low-performing schools, respectively.

Almost all schools assigned in low-performing and middle-performing schools were public schools. Meanwhile, only around 59% of the high-performing schools were public schools. All low-performing schools in reading were located in rural areas. Three out of four schools considered to be middle-performing schools were in rural communities. Around four out of ten high-performing schools are from urban areas.

All principals who participated in the study administering the low-performing schools in reading assessment had five years or less experience as principals. The highest percentage of schools administered by principals with two years or less experience as principal was recorded to low-performing schools. The highest percentage of schools administered by principals with 31 years or more experience as principal was recorded to high-performing schools. Two out of three schools in middle-performing schools in reading had principals with less than or equal to five years of experience as a principal.

Writing Literacy

Ninety-nine schools were grouped as low-performing schools in terms of writing, 24 were classified as middle-performing schools, and 40 were classified as high-performing schools. The mean plausible value was 278.10 for low-performing schools in writing, which is under Band 1 and below. In this band, the students have limited ability to present ideas in Writing. The mean plausible value for the middle-performing schools in writing was 291.69, which is inside Band 2. The schools in this cluster had students who at most can produce very limited writing, with fragmented ideas and inadequate vocabulary. Lastly, for the high-performing schools in writing, the mean plausible value was 309.67, which is under Band 4. The students in this band can produce limited writing, conveying simple ideas with basic vocabulary.

Table 3.
Cluster Analysis Results for Writing

Variables	Low Performing Schools	Middle Performing Schools	High Performing Schools
Number of Schools	99	24	40
Mean Plausible Value	278.1	291.69	309.67
Mean SES Index	-0.36	0.14	0.81
Mean Proportion of Females in Grade 5	0.48	0.49	0.5
Mean Home Resources Index	-0.35	0.19	0.71
Mean Positive Attitude to Schooling Index	44.88	47	50.02
Mean Parental Engagement Index	47.19	48.68	53.18
Mean Proportion of Students who Speaks English at Home	0.08	0.05	0.09
Mean Community Attitudes of Students Index	52.8	51.58	58.41
Mean Frequency of Issues Among Students Index	57.39	59.44	52.68
Mean Proportion of Studnets who have at Least Ten Skills Before Going to Primary School	0.84	0.88	0.95
Mean Proportion of Students who Repeated Grade	0.42	0.38	0.13
Mean Proportion of Students who Attended Preschool	0.83	0.81	0.9
Mean Student Teacher to Teacher Ratio	31.08	30.62	25.42
Mean School Size	778.97	2558.64	1621.75
Mean Age of Principal	47.8	47.16	51.62
Mean Community Attitudes of Teachers' Index	52.78	51.59	56.67
Mean Confidence in Teaching Index	49.06	51.46	52.77
Mean Student Attitude According to Teachers' Index	47.15	44.43	47.97
Proportion of Public Schools	1	0.88	0.65
Percentage of Schools Located in Rural Communities	0.97	0.12	0.61
Percentage of Schools Administered by Principals with 2 Years or Less Experience as Principal	0.43	0.22	0.54
Percentage of Schools Administered by Principals with 3-5 Years Experience as Principal	0.3	0.44	0.1
Percentage of Schools Administered by Principals with 6-10 Years Experience as Principal	0.13	0.22	0.13
Percentage of Schools Administered by Principals with 11-20 Years Experience as Principal	0.12	0.11	0.14
Percentage of Schools Administered by Principals with 31 Years or More Experience as Principal	0.01	0	0.09

The mean SES index and mean home resources index were both lowest for the low-performing schools in writing. On the other hand, both were highest for the high-performing schools. This result means that the high-performing schools in writing mainly were composed of economically well-off students and had good educational resources in their home.

Low-performing schools had the lowest overall mean proportion of female Grade 5 students across the clusters involved in writing. Meanwhile, the mean proportion of female Grade 5 students was highest for high-performing schools in writing.

Low-performing schools' clusters in writing had the lowest mean index on positive attitude towards schooling, and high-performing schools had the highest mean index on positive attitude towards schooling. This finding suggests that **high performing schools in writing mainly were composed of students with better positive attitudes towards schooling.**

The lowest mean index on parental engagement was calculated from the low-performing schools. The highest mean index on parental engagement was calculated from high-performing schools in writing. **This finding implies that the schools with good performance in writing mainly were composed of students with parents that have better engagement with their children.**

There was a lower mean proportion of students who spoke English at home for middle- performing schools in writing. On the other hand, high-performing schools in writing had the highest mean proportion of students who spoke English at home at 9%.

Based on Table 3, the highest mean community attitude index for students was recorded for high-performing schools in writing, and the lowest was from low-performing schools in writing. This is an indication that schools located in a community with better positive attitudes among students had performed better in writing.

The highest mean index for frequency of student issues was recorded among low-performing schools, and it was lowest among high-performing schools. This implies that **schools encountering issues among students more frequently had, on the average, lower performance in writing.**

Among the three clusters, **the low-performing schools in writing had the lowest mean proportion of students who could perform at least ten skills before going to primary school.** On the other hand, the schools classified as high-performing schools in writing had, on the average, 95% of students who possessed at least ten skills before going to primary school.

As with results in the reading assessment, both low-performing schools and middle-performing schools in writing had the highest mean proportion of students who repeated grade level, whereas high-performing schools had the lowest mean proportion of students who repeated grade.

The high-performing schools had the highest mean proportion of students who attended preschool, accounting for nine out of ten students from the three clusters. They were followed by low-performing schools with 83%. The cluster with the lowest mean proportion of students who attended preschool was the middle-performing schools in writing with 81%.

The lowest mean student-to-teacher ratio was obtained from high-performing schools in writing. The highest mean student-to-teacher ratio was recorded for low-performing schools with 31 students per one teacher.

The middle-performing schools in writing had the highest mean number of students among the three cluster. Next to it in terms of size were the high-performing schools. It is also important to note

that the average size of the high-performing schools is around twice the average size of the middle-performing schools, and the average size of middle-performing schools is more than thrice the size of the low-performing schools in writing.

The mean age of principals was lowest for the low-performing schools and middle-performing schools in writing, and it is highest for the high-performing schools.

Among the three clusters, the highest mean community attitude index for teachers was computed from high-performing schools. This implies that schools located in a community with better positive attitudes among teachers have better performance in writing.

The high-performing schools in writing had the highest mean confidence teaching index, followed by middle and low-performing schools, respectively. This finding implies that schools with teachers that were more confident in teaching have students with better performance in writing.

Based on Table 3, the high-performing schools in writing and low-performing schools in Writing had the highest mean student attitude according to the teachers index. The mean student attitudes according to teachers index as highest for high-performing schools in writing, followed low and middle-performing schools, respectively.

All schools assigned in low-performing schools were public schools. Almost nine out of ten schools assigned in middle-performing schools were public schools. Meanwhile, around 65% of the high-performing schools were public schools.

Almost all low-performing schools in writing were from rural areas. Nine out of ten schools classified in middle-performing schools in writing were in urban communities. At the same time, around four out of ten schools in high-performing schools were from urban areas.

Around 70% of the low-performing schools in the writing assessment had five years or less experience as principals. The highest percentage of schools administered by principals with two years or less experience as principal was recorded from high-performing schools in Writing. The highest percentage of schools administered by principals with 31 years or more experience as principal was documented to high-performing schools also. Two out of three schools in middle-performing schools in Writing had principals with less than or equal to five years of experience as a principal.

Mathematics Literacy

Forty-one schools were classified under low-performing schools in mathematics, 85 were classified to middle-performing schools, and 37 were classified as high-performing schools.

The mean plausible value was 271.99 for low-performing schools in mathematics, which is under Band 3. In this band, the students can understand place values and scales of measurement. The mean plausible values for the middle-performing schools in mathematics was 286.80, which is inside Band 4. The schools in this cluster had students who can apply number properties and units of measurement, on the average. Lastly, for the high-performing schools in Mathematics, the mean plausible value was 306.47, belonging to Band 5. The students in this band can fluently solve arithmetic problems.

Table 4.
Cluster Analysis Results for Mathematics

Variables	Low Performing Schools	Middle Performing Schools	High Performing Schools
Number of Schools	41	85	37
Mean Plausible Value	271.99	286.8	306.47
Mean SES Index	-0.75	-0.01	0.85
Mean Proportion of Females in Grade 5	0.49	0.49	0.49
Mean Home Resources Index	-0.85	0.05	0.74
Mean Positive Attitude to Schooling Index	44.13	45.88	50.36
Mean Parental Engagement Index	45.3	48.51	53.58
Mean Proportion of Students who Speaks English at Home	0.09	0.07	0.09
Mean Community Attitudes of Students Index	49.44	54.23	58.24
Mean Frequency of Issues Among Students Index	58.27	57.1	53.25
Mean Proportion of Studnets who have at Least Ten Skills Before Going to Primary School	0.75	0.9	0.95
Mean Proportion of Students who Repeated Grade	0.49	0.37	0.12
Mean Proportion of Students who Attended Preschool	0.84	0.82	0.91
Mean Student Teacher to Teacher Ratio	26.93	33.18	23.97
Mean School Size	542.01	1541.62	1398.02
Mean Age of Principal	49.23	47.43	51.1
Mean Community Attitudes of Teachers' Index	50.52	53.72	56.39
Mean Confidence in Teaching Index	48.13	50.12	53.17
Mean Student Attitude According to Teachers' Index	47.48	46.26	47.98
Proportion of Public Schools	0.98	0.99	0.58
Percentage of Schools Located in Rural Communities	0.94	0.72	0.61
Percentage of Schools Administered by Principals with 2 Years or Less Experience as Principal	0.51	0.37	0.49
Percentage of Schools Administered by Principals with 3-5 Years Experience as Principal	0.37	0.3	0.11
Percentage of Schools Administered by Principals with 6-10 Years Experience as Principal	0.02	0.2	0.15
Percentage of Schools Administered by Principals with 11-20 Years Experience as Principal	0.09	0.13	0.15
Percentage of Schools Administered by Principals with 31 Years or More Experience as Principal	0.02	0	0.1

Based on Table 4, the mean SES index and mean home resources index were both lowest for the low-performing schools in mathematics. On the other side of the spectrum, both statistics were highest from the high-performing schools in mathematics. This result means that the high- performing schools in mathematics were, on the average, composed of students that were economically well-off and has good educational resources in their homes.

Across the three clusters, all of them had equal mean proportion of females in Grade 5 at 49%. Low-performing schools' cluster in mathematics had the lowest mean index on positive attitude towards schooling, followed by middle and high-performing schools, respectively. This is an indication that high-performing schools in mathematics mainly were composed of students with better positive attitudes towards schooling.

The lowest mean index on parental engagement was calculated from the low-performing schools, and the highest mean index on parental engagement were calculated from high- performing schools in mathematics. This finding means that **the schools with good performance in mathematics were mostly composed of students with parents that had a better engagement in their studies with their children.**

High and low-performing schools in mathematics had the highest mean proportion of students who spoke English at home at 9%. Meanwhile, 7% was the mean proportion of students who spoke English at home in middle-performing schools.

The highest mean community attitude index for students was calculated for high-performing schools in Mathematics, and the computed statistic of interest was lowest for low-performing schools in Mathematics. This indicates that schools located in a community with better positive attitudes among students had performed better in the mathematics assessment.

As with the previous two domains, the highest mean index for frequency of student issues was recorded among low-performing schools, and it was lowest among high-performing schools. This finding implies that **schools encountering issues among students more frequently had, on the average, lower student achievement in mathematics.**

The low-performing schools in mathematics obtained the lowest mean proportion of students who could do at least ten skills before going to primary school. On the average, three out of four students in the low-performing schools could perform at least ten skills before going to primary school. Additionally, the schools classified as high-performing schools in mathematics had, on the average, 95% of students who possessed at least ten skills before going to primary school. Lastly, nine out of ten students in middle-performing schools in Mathematics could perform at least ten skills before going to primary schools.

Both low- and middle-performing schools in mathematics had the highest mean proportion of students who repeated grade level, whereas high-performing schools had the lowest mean proportion of students who repeated grade level.

Among the three clusters, the high-performing schools had the highest mean proportion of students who attended preschool, accounting for nine out of ten students. Low-performing schools followed with 84%. **The cluster with the lowest mean proportion of students who attended preschool was the middle-performing schools in mathematics with 82%.**

The lowest and second lowest mean student-to-teacher ratios were obtained by high and low-performing schools in mathematics, respectively. The highest mean student-to-teacher ratio was recorded for middle-performing schools with 33 students per teacher.

The middle-performing schools in mathematics had the largest mean number of students from the three clusters, followed by the high-performing schools. The size of low-performing schools in mathematics is just one-third the size of middle-performing schools and high- performing schools.

The mean age of principals was lowest for the low and middle-performing schools in mathematics, and it is highest for the high-performing schools. The highest mean community attitude index for teachers was recorded from high-performing schools. This result implies that schools located in a community with better positive attitudes from teachers had better performance in the examination for Mathematics.

Among the three clusters, the high-performing schools in mathematics had the highest mean confidence teaching index, followed by middle and low-performing schools, respectively. As with the two previous domains, this is an indication that schools with teachers that were more confident in teaching had students with better achievement in mathematics.

Based on Table 4, the high and low-performing schools in mathematics had the highest mean student attitude according to the teachers index. The highest mean student attitudes according to teachers index was recorded for high-performing schools, followed by low and middle-performing schools in mathematics, respectively.

Almost all schools assigned in low-performing schools and middle-performing schools in Mathematics were public schools. Meanwhile, around 58% of the high-performing schools were public schools.

Most of the low-performing schools in mathematics were from rural communities. Seventy- two percent of the schools in middle-performing schools are from rural areas. On the other hand, around four out of ten high-performing schools were located in urban areas.

Around nine out of ten schools from the low-performing schools in the mathematics assessment have five years or less experience as principals. The highest percentage of schools administered by principals with two years or less experience as principal was recorded from low-performing schools in mathematics. The highest percentage of schools administered by principals with 31 years or more experience as principals was obtained from high- performing schools with a percentage accounting for 10%. Lastly, around two out of three schools in middle-performing schools in mathematics had principals with less than or equal to five years of experience as a principal.

4.4 How are the behavioral issues exhibited by students in the school associated with their achievement scores in reading, writing, and mathematics literacy?

Figures 1 and 2 show the relationship of the mean scores of students in reading, writing, and mathematics literacy and how frequently some behavioral issues are experienced in school according to their school heads. These behavioral issues include being late for class, truancy, classroom disturbance, cheating, vandalism, aggression to ethnic people, aggression to religious people, bullying, violence, and offensive behaviors to females, teachers, and PWDs.

Based on Figure 1, the highest mean scores for reading, writing, and mathematics were obtained by the students in school that never or hardly ever had a problem in students being late for class. On the other hand, schools having daily instances of students being late in class had the lowest mean scores in all three domains. However, it is important to note that for the issue involving students being late for class, there was no significant difference in the means across the four categories in the frequency of the issue.

On truancy, the highest average scores were obtained from students studying in schools in which it is never or hardly ever an issue. Meanwhile, **the lowest mean scores were computed for students in schools in which truancy is encountered daily.** For reading, writing and mathematics, there were significant differences in the mean scores between schools experiencing truancy daily and schools that never or hardly ever encounter the same issue. For reading, there was a significant difference in the mean scores of schools that had weekly issues of truancy against schools with daily issues of truancy. Additionally, those schools that encountered issues of truancy monthly against schools with the issue of truancy daily. There was also a significant difference in the mean score of schools that had never had problems of truancy versus schools that encountered them monthly.

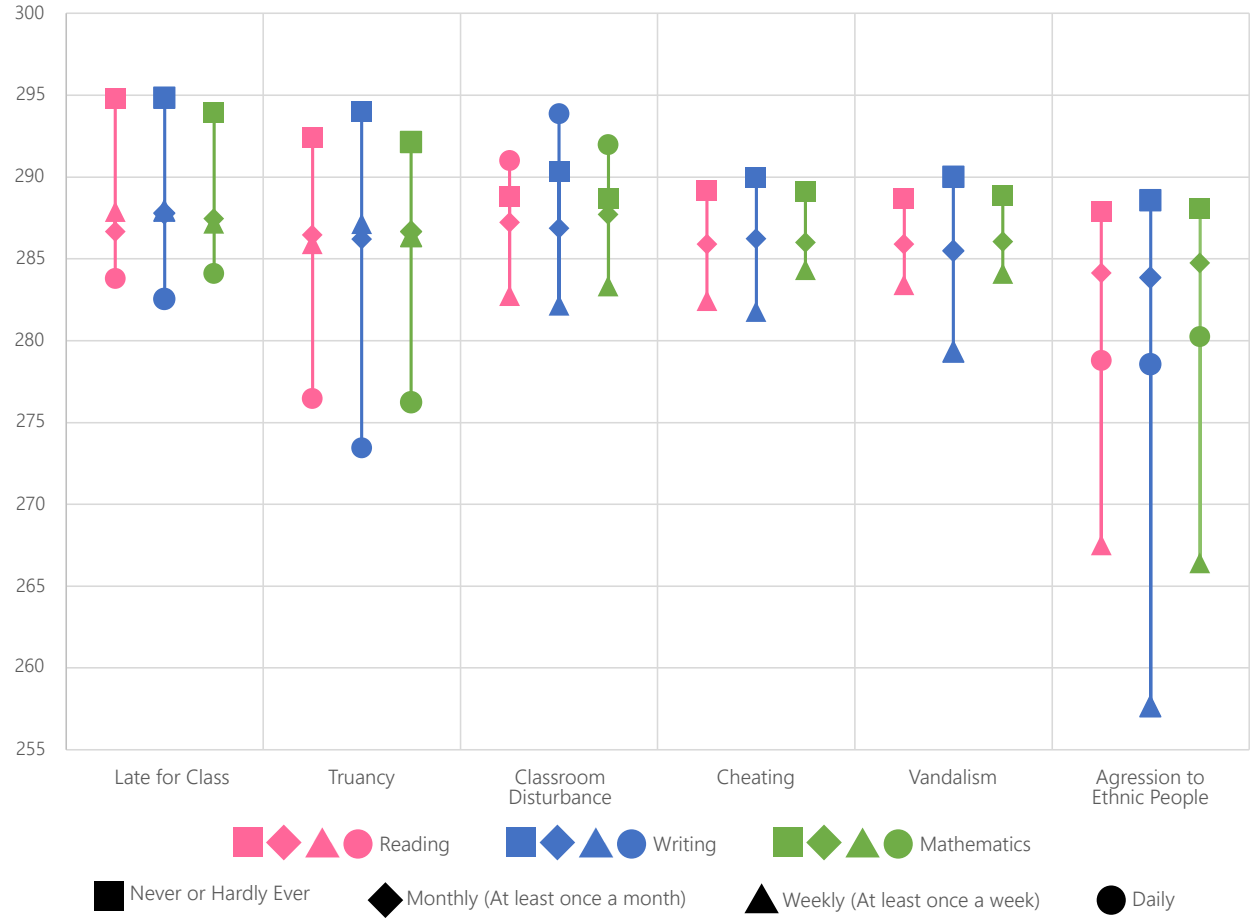
The highest mean scores across the three domains were computed in schools that had daily instances of classroom disturbance. The lowest mean scores were obtained by schools having weekly issues of classroom disturbance. However, there was no significant difference in the mean scores across the different categories and domains. It is also important to note that only two school administrators have stated that they have daily issues of classroom disturbance.

There were no schools that had stated they had daily issues of cheating. The highest average scores for reading, writing, and mathematics were for schools that never or rarely ever encountered issues of cheating. The lowest mean scores came from schools that had issues of cheating every week. As with the other issues, there was no significant difference in the mean scores across the different categories for frequency of cheating and different domains.

As with the issue of cheating, no school administrator stated that they had daily issues of vandalism. The mean student achievement score for Reading, Writing, and Mathematics is constantly the highest for students who had no issue of vandalism in their schools. On the other hand, the lowest mean scores were garnered by students studying in schools with weekly issues of vandalism. There was no significant difference in the mean scores of students across the different categories of frequencies of issues and across different domains.

It is important to note that only one school administrator answered that they had daily issues of aggression to ethnic people. One school administrator also answered that they had weekly issues of aggression to ethnic people. The highest mean scores were obtained by students who had no issues of aggression toward ethnic people. Meanwhile, it was lowest for schools with weekly issues of aggression to ethnic people. There was no significant difference between the mean scores of students studying in schools with no issues on aggression to ethnic people and that of those studying in schools with monthly instances of aggression to ethnic people.

Figure 1.
Mean Scores of Students and the Frequency of Issues in the School

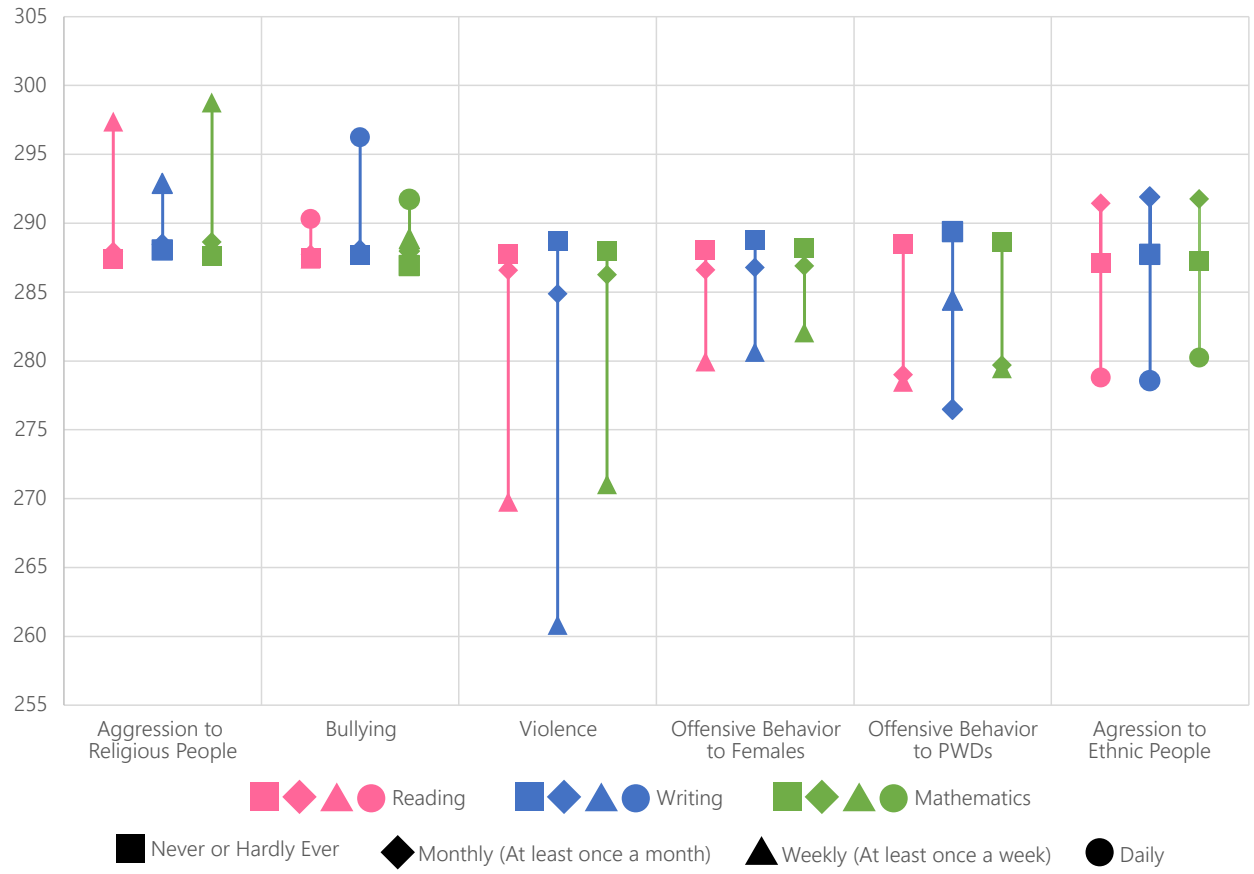


Note: Mean differences are not statistically significant for Being Late for Class, Classroom Disturbance, Cheating, Vandalism, and Aggression to Ethnic People.

Figure 2 demonstrates that the highest mean scores were recorded from schools with weekly issues in aggression to religious people. However, it is important to note as well that only one school administrator stated that they had weekly issues of aggression to religious people. The lowest mean scores were recorded for both schools with no problem of aggression to religious people and schools that encountered them monthly. No school administrator stated that they had daily instances of aggression toward religious people.

As illustrated in Figure 2, **bullying is much more prevalent and happens daily in schools with higher mean scores in reading, writing, and mathematics.** This may be because bullying is said to happen more frequently in schools that foster a more academically competitive environment. Another reason could be that there are more incidences of bullying in larger schools, and larger schools tend to have better performance across the three domains. **It is still important to note that there was no significant difference in the mean student achievement scores across the different levels of frequency of bullying in schools, and across the three domains.**

Figure 2.
Mean Scores of Students and the Frequency of Issues in the School



Note: Mean differences are not statistically significant for Aggression to Religious People, Bullying, and Offensive Behavior to Females.

On the issue of violence, only one school administrator stated that they had weekly incidences of violence in their school. On the other hand, no school administrator said that they had daily problems of violence in their school. **The highest mean scores were obtained by schools with no problem of violence or schools that encountered them monthly.** It was also lowest for schools that had weekly issues of violence in school. There were significant differences in the mean scores of students studying in schools with no incidence of violence against the mean scores of students with weekly issues of violence in school across the three domains. Additionally, there were significant differences in the mean student achievement scores on schools with monthly incidence of violence versus students studying in schools with weekly incidence of violence for reading, writing, and mathematics.

The highest mean scores in reading, writing, and mathematics were computed from schools with never or hardly ever issues of offensive behavior to females. On the other hand, the lowest mean scores across the three domains were the lowest for schools with weekly incidence of offensive behavior to females. However, it should be noted that there was no significant difference in the mean scores of students across the different levels of frequency of issues in school and the three domains of learning.

Only one school administrator has stated that they have weekly issues of offensive behavior to PWDs. Additionally, no school administrator said that they had daily issues of offensive behavior to PWDs. There was a significant difference in the mean scores for schools with no issue on offensive behavior to PWDs against schools with monthly incidence of offensive behavior to PWDs. **The mean scores**

were highest for students studying in schools with no incidence of offensive behavior to PWDs.

Only one school administrator stated that they had daily issues of offensive behavior to teachers. No school administrator said that their school had weekly incidence of offensive behavior to teachers. Across the different levels of frequency of this issue, the highest mean scores across the three domains were obtained by schools with monthly issues of offensive behaviors to teachers. However, it is important to note that there were no significant differences in the mean scores of students in schools with no issue of offensive behavior to teachers against those who had monthly incidence of the same issue. The mean scores were lowest for schools with daily issues of offensive behavior to teachers. There were statistically significant differences in the mean scores of students in schools with daily issues of offensive behavior to teachers versus students in schools with no issue of offensive behavior to teachers across the three domains. Lastly, there were also significant differences in the mean performance of students across reading, writing, and mathematics for students studying in schools with monthly issue of offensive behavior to teachers against those who had daily incidence of the same issue across the three different learning domains.

4.5 What are the different profiles of the teachers of the Grade 5 children sampled in the SEA-PLM 2019 study?

The teacher's questionnaire consists of various questions pertaining to the teacher's profile as well as their perception on the school and students. 76.6% of the teachers who answered the questionnaire were females. Most of them (28.1%) were 45-54 years old, followed by 35-44 years old (27.3%) and 25-34 years old (25.8%), respectively. About 3 in 4 of the teachers who responded to the questionnaire finished their bachelor's degrees. The rest had at least Master's degree. Three in ten teachers have been in the teaching profession for 11-20 years. Only 6% of them have been teaching for 31 years or more. 35.7% of the teachers were teachers of another subject, whereas 31% of them were generalized Grade 5 teachers.

Table 5 presents the distribution of Grade 5 students based on the attendance of their teachers in different trainings. More than 90% of the Grade 5 students had teachers who attended trainings on classroom management, student assessment, and teaching methods, whether during pre-service, in-service, or both pre- and in-service training. On the other hand, around four in ten Grade 5 students had teachers who did not attend any training on social studies and writing in English. Around half of the Grade 5 students had teachers who did not have any inclusive or special needs training.

Table 5.
Distribution of Grade 5 Students based on their Teacher's training

Teacher Training	Yes, during pre-service training	Yes, during in-service training	Yes, during both pre- and in-service traning	No Training
Inclusive/special needs	7.2%	25.1%	17.8%	49.9%
Social studies	7.0%	31.8%	23.8%	37.5%
Writing in English	7.5%	33.3%	25.3%	33.8%
Mathematics	6.6%	33.7%	34.2%	25.6%
Reading in English	5.6%	40.6%	32.3%	21.6%
ICT	9.9%	39.3%	34.9%	16.0%
Differentiated instruction	5.5%	47.4%	34.3%	12.9%
Student assessment	6.7%	42.2%	42.3%	8.8%
Classroom management	8.4%	43.4%	41.3%	6.9%
Teaching methods	7.2%	40.9%	45.0%	6.9%

The distribution of Grade 5 children whose teachers are very or quite confident on different teaching methods and approaches is shown in Figure 3. More than 90% of the students had teachers who were very or quite confident in implementing group work (96.3%), lecturing (95.4%), and collaborative teaching (92.3%). However, **when it comes to research work, multi-age teaching, laboratory activities, and Information and Communications Technology (ICT)-supported activities, a large portion of Grade 5 students had teachers who were not very confident or not all confident in using them in teaching.**

Figure 3.
Distribution of Grade 5 children whose Teachers are very or quite confident on teaching methods and approaches

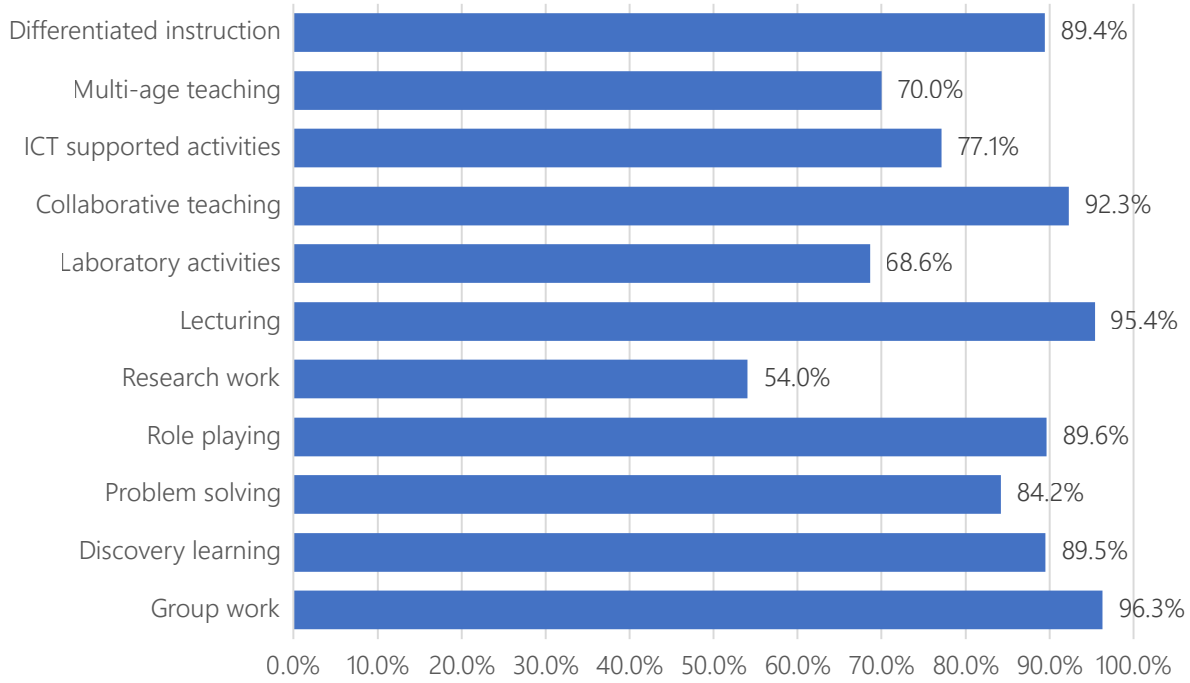


Figure 4.
Distribution of Grade 5 children based on their Teacher's response on the extent to which the issues affect learning

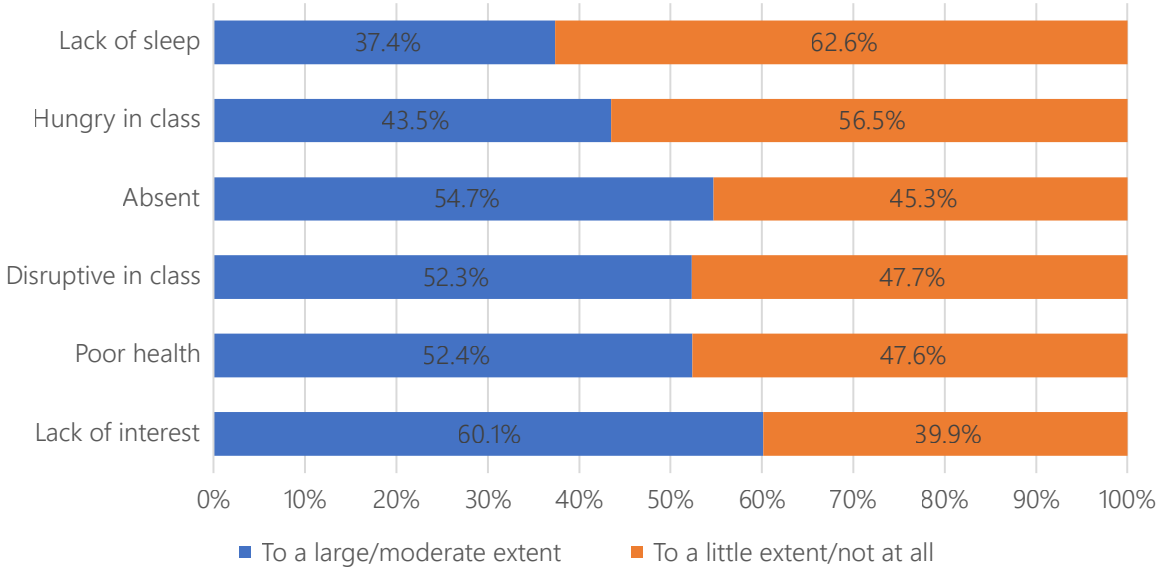


Figure 4 presents the distribution of Grade 5 children based on the responses of their teachers when asked to what extent the different issues affect the learning of their students. **More than half of the Grade 5 students had teachers who said that absenteeism, disruptiveness in class, poor health, and lack of interest affected their students from moderate to a large extent.** In addition to that, a large proportion (37-44%) of Grade 5 students had teachers who stated that being hungry in class and lack of sleep also affected their students from moderate to a large extent.

A subsection of the teacher's questionnaire contained questions that were related to GC. A list of different content areas was presented, and they were asked on how important for Grade 5 students to learn at school about each content area. It was found that the **majority of the Grade 5 children had teachers who deemed the following content areas very important: what is happening in countries near the Philippines, what is happening in the world, how things that happen in other countries affect the Philippines, understanding people that have a different ethnicity, how to solve disagreements with classmates peacefully, how to protect the environment, and how they can help to solve problems in their own community.** On the other hand, a relatively small proportion of the Grade 5 children had teachers who thought that other languages spoken in their country and languages spoken in other countries were very important.

The teachers were also asked how well their pre-service teacher education program prepared them to teach about different topics. Table 6 provides the distribution of Grade 5 students based on pre-service teacher program prepared their teachers to teach different topics. About 82% of Grade 5 students had teachers who said that their preservice teacher education prepared them to teach about children's rights, and environmental protection very well. On the other hand, **only around half of the Grade 5 students had teachers who mentioned that their preservice teaching education prepared them to teach current global events, and globalization very well.**

Table 6.
Distribution of Grade 5 children based on how Pre-service Teacher Program prepared their Teachers to teach different topics

Topics	Very well	Quite well	Not very well	Not at all
Local current events	59.1%	39.0%	1.8%	0.1%
Global current events	43.1%	50.5%	6.3%	0.1%
Globalization	49.3%	44.9%	5.8%	0.1%
Children rights	82.1%	17.8%	0.2%	0.0%
Protect Environment	81.7%	17.8%	0.5%	0.0%
Sustainable Development	68.3%	30.4%	1.4%	0.0%
Respecting diversity	76.0%	23.2%	0.8%	0.0%
Conflict resolution	55.4%	42.0%	2.6%	0.0%
Inequality	61.3%	35.8%	2.3%	0.6%
Injustice	58.0%	37.5%	3.9%	0.5%
Peace and Conflict	70.3%	26.6%	2.8%	0.3%
Challenge inequality	56.6%	40.0%	3.4%	0.0%

The teachers were also asked their level of confidence in teaching the Grade 5 students in their school about the same topics. Children's rights and environmental protection were the same topics that they were very confident to teach about. On the other hand, **less than half of the Grade 5 students had teachers who said that they were very confident to teach global current events and globalization.** This could be attributed to the fact that their preservice teacher education program did not prepare most of them very well to teach these two topics.

Some questions about reading and mathematics-related activities were also asked of the teachers. The teachers teaching English reading and writing were asked how frequently students complete different reading activities in their Grade 5 class. **More than half of the Grade 5 students had teachers who responded that their students read aloud to the teacher, repeated aloud after the teacher, read silently, and took books home to read daily or almost daily.** Less than 50% of the Grade 5 students had teachers who said that students read books of their own choice.

Moreover, **about a quarter of Grade 5 students had teachers handling English reading and writing classes who said they placed a strong emphasis on decoding sounds and words, fluency (reading aloud without error), and reading aloud with expression.** Meanwhile, roughly half of the Grade 5 students had teachers who strongly emphasized skimming or scanning strategies in teaching their Grade 5 class.

Eight reading comprehension activities were presented to the teachers in the questionnaire. These included summarizing what has been read, retrieving information from texts, identifying the main idea within texts, providing definitions of unfamiliar words in texts, evaluating the ideas in texts, analyzing the structure and form of texts, and reflecting on how texts related to the students' own world. The distribution of Grade 5 students based on their teacher's response on how often their students complete reading comprehension activities is provided in Table 7.

The majority of the Grade 5 students had teachers who mentioned that their students completed the following activity daily or almost daily: providing definitions of unfamiliar words in texts (71.6%), evaluating the ideas in texts (61.6%), reflecting on how texts relate to the students' own world (58.1%), and evaluating mood and tone of texts (54.5%). On the other hand, **only 29.5% of the Grade 5 students had teachers teaching English who said their students summarized what they read daily or almost daily.**

Table 7.
Distribution of Grade 5 children based on their Teacher's response on how often their Student complete Reading comprehension activities.

Activities	Never or hardly ever	Montly (at least once a month)	Weekly (at least once a week)	Daily or almost daily
Summarize	2.9%	15.7%	52.0%	29.5%
Retrive information	2.4%	6.2%	39.9%	51.5%
Identify the main idea	2.0%	5.0%	40.5%	52.4%
Provide defenitions	1.5%	3.2%	23.6%	71.6%
Evaluate ideas	1.5%	5.2%	31.7%	61.6%
Analyze structure/form	2.5%	5.9%	39.4%	52.2%
Evaluate mood/tone	2.5%	7.9%	35.2%	54.5%
Reflect and relate	2.5%	8.2%	31.2%	58.1%

A couple of questions on mathematics were asked from the teachers teaching mathematics. They were asked how often their students completed ten different mathematics activities in their Grade 5 class. The distribution of Grade 5 children based on their teacher's response on how often their students completed mathematics activities is presented in Table 8.

The most common activities the Grade 5 students completed in class daily or almost daily based on their teacher's response were listening to the teacher to explain mathematics content to the class (87.6%), answering mathematics questions on paper (82.8%), and answering mathematics questions in front of the whole class (79.7%). **The least common activities their students performed in class daily or almost daily were using computer-based mathematics learning resources (19.8%) and understanding extended mathematics investigations (13.2%).**

Table 8.
Distribution of Grade 5 children based on their Teacher's response on how often their Student complete Mathematics activities.

Activities	Never or hardly ever	Montly (at least once a month)	Weekly (at least once a week)	Daily or almost daily
Listen explaining content	1.1%	1.3%	10.0%	87.6%
Memorize rules/procedures	1.5%	3.0%	38.0%	57.4%
Answer questions in class	1.5%	1.4%	17.4%	79.7%
Answer questions on paper	1.5%	2.0%	13.7%	82.8%
Answer questions in groups	2.0%	5.4%	36.4%	56.2%
Explaining their answers	1.3%	4.9%	23.0%	70.8%
Relate learning to daily lives	1.6%	3.7%	21.0%	73.7%
Take a written test/quiz	1.5%	1.5%	36.2%	60.8%
Use computer-based resources	28.4%	23.2%	28.7%	19.8%
Extended investigaton	22.9%	28.4%	35.4%	13.2%

Table 9 gives the distribution of Grade 5 children based on the confidence level of their teachers in doing different activities in teaching mathematics. It was found that **most of the Grade 5 students had teachers who were very confident in helping students appreciate the value of learning mathematics (81.5%),** followed by showing students the connections between classroom mathematics and the real world (69.6%).

Table 9.
Distribution of Grade 5 children based on their Teacher's confidence level in doing different activities in teaching Mathematics.

Activities	Very confident	Quite confident	Not very confident	Not at all confident
Answer questions	62.6%	32.6%	2.7%	2.1%
Shows strategies	59.1%	38.0%	2.2%	0.7%
Provide challenging tasks	56.0%	39.3%	4.2%	0.6%
Provide remedial support	66.9%	29.8%	3.3%	0.0%
Adapt teaching to engage	68.3%	29.9%	1.0%	0.7%
Helps students appreciate	81.5%	17.7%	0.1%	0.7%
Show the connections	69.6%	29.0%	0.6%	0.7%

4.6 What are the student- and school-level factors that are associated with students' attitude related to GC topics?

GC education has been deemed the solution to a progressively interconnected world problem like human rights violations, inequality, poverty, peace, and sustainability (UNESCO, n.d.). Several studies indicate that education is the main key for advancing ideas for GC, to ready students for an ever-changing future (e.g., Launsky-Tieffenthal, 2014; Halpern, 2017). Meanwhile, primary school teachers commonly associate GC with awareness of different cultures and that a GC is someone who can have an impact on the betterment of the world. Furthermore, the primary school teachers stated that the largest barriers in GC education are the lack of preparation and implementation time, resistance from other teachers, lack of support from parents, parental attitudes on students, the impact of technology on the interpersonal communication skills of students, and lack of monetary resources (Jett, 2013).

Aside from creating an assessment framework tailor-fitted to the Southeast Asian nations, another contribution of SEA-PLM 2019 is the measuring GC perceptions of the Grade 5 students. Several questions were asked regarding the students' exposure to GC issues at school, attitude about their Asian identity, concern for global issues, expected civic behavior, behavioral intentions associated with GC, and attitude towards learning about GC-related issues. As an exploratory study, this subsection attempts to determine which factors had a significant contribution in explaining the students' attitudes related to GC topics. The contextual variables included in the analyses were the resources at home index, parental engagement index, student's gender, approximate number of books at home, language spoken at home, school location, school type, and SES. Table 10 presents the results of performing regression analyses with the GC-related indices.

Table 10 shows the results for exposure to GC topics at school and Asian identity. It was found that resources a home, parental engagement, student's gender, approximate number of books at home, school location, and SES were positively associated with the students' exposure to GC issues at school. This finding suggests that **those students with more resources at home, with parents who were more engaged with their children's school activities, with more books at home, and coming from more well-off families, had more exposure to GC topics at school.** Furthermore, **female students and students from urban communities were more exposed to GC topics at school.** Meanwhile, **parental engagement, student's sex, approximate number of books at home, and SES appeared to be significantly correlated with the student's Asian identity.** Surprisingly, those students whose parents were more involved in school activities were likely to have lower scores for Asian identity (i.e., they are less likely to identify themselves as Asian).

Table 10.
Regression Analysis Outputs for Global Citizenship Topics and Issues

Independent Variable	Exposure to GC topics at school		Asian Identity		Concern for Global Issues		Expected Civic Behavior		Behavioral Intentions Associated with GC		Attitude towards learning about GC-related Issues	
	Coeff	*SE*	*Coeff*	*SE*	*Coeff*	*SE*	*Coeff*	*SE*	*Coeff*	*SE*	*Coeff*	*SE*
Intercept	45.16***	0.8	53.99***	0.91	30.85***	0.89	39.89***	0.96	47.02***	1.2	39.55***	1.05
Student-related Factor												
Student's Sex (Girl=1; Boy=0)	0.57*	0.29	-0.58**	0.28	1.01**	0.25	1.47***	0.26	1.46***	0.35	1.63***	0.34
Family-related Factors												
Resources at Home	0.43**	0.17	0.17	0.23	0.29	0.19	0.45*	0.24	0.27	0.24	0.94***	0.29
Parental Engagement	0.08***	0.02	-0.08***	0.02	0.29**	0.02	0.14***	0.02	0.10***	0.03	0.19***	0.02
Approx. number of books at home	0.01*	0.0	0.01**	0.0	-0.01**	0.0	-0.01*	0.0	-0.01	0.0	-0.01**	0.0
Language spoken at home (English=1; Others=0)	-0.24	0.43	0.79	0.5	0.44	0.47	-0.85	0.55	-0.97	0.64	-1.76***	0.57
SES	0.48**	0.19	-0.80**	0.27	0.76**	0.2	0.78***	0.24	0.59**	0.29	0.84***	0.26
School-related Factors												
School location (Rural=1; Urban=0)	-1.43*	0.49	-0.41	0.47	-1.15**	0.47	-0.97*	0.52	-0.01	0.52	-1.15**	0.51
School Management (Private=1; Public=0)	-0.67	1.29	-1.09	0.81	-2.25	1.46	-2.41**	1.04	0.12	0.81	-1.75	0.78
Interaction terms												
School Location*SES	0.12	0.37	-0.35	0.4	-0.51	0.4	0.09	0.35	1.03***	0.39	0.44	0.48
School Management*SES	-1.54	0.94	-0.43	0.73	-0.1	0.93	-0.42	0.66	0.81	0.5	-0.82	1.24
R^2	0.079	0.01	0.02	0.1	0.212	0.02	0.107	0.01	0.026	0.01	0.113	0.01

*Note: Coef is the Coefficient estimate of the independent variable; SE is the standard error of the coefficient estimate; * means p-value<0.10; ** means p- value<0.05; *** means p-value<0.01*

The regression results for concern for global issues and expected civic behavior of the students are given in Table 10. Parental engagement, student's gender, the approximate number of books, school location, and SES were significant predictors of students' concern for global issues. **Female students and those from urban communities were found to be more concerned about global issues.** Unexpectedly, the approximate number of books at home appeared to be inversely associated with being concerned with global issues. Resources at home, parental engagement, student's gender, the approximate number of books at home, school location, school type, and SES were significantly associated with expected civic behavior of the students. **Female students and students living in urban communities, studying in private schools, having more resources at home, more engaged parents, and more books at home were likely to have better expected civic behavior.**

Finally, Table 10 also presents the regression outputs for students' behavioral intentions associated with GC and attitude towards learning about GC-related issues. Similar to the previous results, parental engagement, student's gender, and SES were found to be significantly correlated with students' behavioral intentions associated with GC. Moreover, the interaction term for school location and SES appeared to be statistically significant as well. Because of the negative coefficient estimate, this finding indicates that **those students living in urban communities and coming from families with high SES were likely to have lower scores for behavioral intentions associated with GC.**

On the other hand, the students' attitudes towards learning about GC-related issues were significantly associated with resources at home, parental engagement, student's sex, number of books at home, speaking English at home, school location, and SES. **Students with more resources at home, more engaged parents, more books at home, and coming from families with higher SES tended to have a more positive attitude towards learning about GC-related issues.** Female students, students speaking English at home, and students from urban communities were more likely to score higher in this construct as well.

In general, for the six constructs under GC, it appears that SES and parental engagement were consistently associated with them. However, it must be noted that the computed coefficients of determination (R^2) were close to zero, indicating that there are still other factors not taken into consideration in the regression model. This result warrants another study in the future.



SECTION 5:
CONCLUSIONS AND RECOMMENDATIONS

This report attempted to provide readers a bigger picture of the relationship between the contextual variables of the Filipino Grade 5 students and their achievement scores in reading, writing, and mathematics literacy in SEA-PLM 2019. The use of HLMs in analyzing the assessment data revealed that a large percentage in the variation in the students' achievement scores in the three domains can be explained by the differences among the schools of the students' profiles.

Several interesting key findings can be noted. The SES of the students plays a crucial role in their academic performance. Their access to learning resources and opportunities can be limited due to their SES. While the issue of inequity cannot be easily addressed, the government should provide interventions on how to mitigate the impact of SES on children's access to quality education.

The student's sex became statistically significant only for reading and writing literacy. Female Grade 5 students were more likely to obtain higher achievement scores compared to their male counterparts. Moreover, the school location and school type separately appeared not to be significantly correlated with the three domains' scores. However, it was found that, for reading literacy, students coming from well-off families were likely to perform better in the assessment even if they were from public schools. Additionally, female students from public schools were more disadvantaged in reading literacy.

Another common denominator among the three domains is that the indices for resources at home, positive attitude towards school, and parental engagement were positively associated with the achievement scores. Cluster analysis results provided more supporting evidence on the characteristics of the three groups of schools. It appears that these are important factors that need attention. Efforts must be made to provide students with adequate resources at home. Parents, on the other hand, must be encouraged to be more involved in the schoolwork of the students, and to change the mindset of their children so that they would have a positive attitude towards the school.

Cluster analysis results revealed that almost all the schools classified as low-performing in reading, writing, and mathematics were public schools situated in rural communities with a small number of students. On the other hand, most of the private schools in urban communities with a huge population of students were classified as good-performing schools across the three domains. However, when the influence of other factors was controlled, school type, community type, and school size were shown to be nonsignificant determinants of students' achievements in reading, writing, and mathematics.

Another implication of the findings is the importance that needs to be put on school readiness and preschool attendance. The results across the three domains consistently showed that children who could perform at least ten tasks or more before going to primary school or who attended preschool have a long-term advantage in their academic performance. This was further confirmed by the cluster analysis results stating that low-scoring schools had the lowest mean proportion of students who could do at least ten tasks before primary school, whereas the high-performing schools had a substantially higher percentage of students who possessed at least ten skills before primary school. For this reason, parents must be urged to send their children to preschool and to teach them some skills before entering primary education.

Grade repetition was also found to be a significant determinant in the performance of students in reading, writing, and mathematics according to the HLM results. This was also evidenced in the cluster analysis results as the schools considered to be low-performing in the three domains have consistently high proportion of students who repeated the grade.

Speaking English at home alone was not necessarily an advantage. For writing and mathematics literacy, students who said that they spoke English at home were, on the average, were likely to obtain lower scores than those who did not. However, students coming from well-off families and who spoke English at home were likely to have higher scores across the three domains. This could also be attributed to the very small percentage of students who did not speak English at home in the dataset.

Lastly, for mathematics literacy, the student's attitude towards mathematics was positively correlated with mathematics achievement scores. Hence, teachers and parents can formulate ways on how students can have a positive attitude towards mathematics. In this manner, they would be likely to perform better in this domain.

The mean achievement scores of the schools were found to be associated with some of the issues encountered by the students. A significant difference in the mean scores across the three domains was found in the frequency of truancy of the students. While findings of bullying stated that it is related to the students' achievement scores, this study showed that there was no significant difference in the mean student achievement scores across the different levels of frequency of bullying in schools, according to the school administrator, in all domains. Furthermore, significant differences were also found in the mean scores of studying in schools with no incidence of violence compared with those of students with weekly issues of violence in school across all domains. Results showed that higher frequency of issues encountered by students was observed in low- scoring schools across the three domains, although the index was found to be statistically nonsignificant for the HLMs in predicting students' achievement. While the responses on how frequently students experience these issues in school were based on the school head or administrator with the whole school as a reference and not only Grade 5 students. These issues should not be taken lightly, and safeguards need to be put in place to prevent any untoward incident in school and any impact on the students' academic performance.

The responses of the teachers in their questionnaire can possibly inform administrators and concerned agencies on how professional development for teachers can be formulated. It was found that when it comes to research work, multi-age teaching, laboratory activities, and ICT-supported activities, a large portion of Grade 5 students had teachers who were not very confident or not all confident in using them in teaching. A considerable percentage of Grade 5 children had teachers who had no training on social studies, inclusive or special needs, and writing in English. Providing professional development for teachers on these topics is indeed necessary.

Moreover, results revealed that only around half of the Filipino Grade 5 students had teachers who mentioned that their preservice teaching education prepared them to teach current global events, and globalization very well. Less than half of the Grade 5 students had teachers who said that they were very confident to teach global current events and globalization. Being part of the SDG, these two topics play an important role in developing the GC of the students. Hence, the inclusion of these topics in the preservice teacher education program is highly recommended.

Another contribution of the SEA-PLM 2019 assessment framework is the inclusion of measuring GC of the Grade 5 students in the Southeast Asian nations. Different constructs underlying were measured in the student's background questionnaire. This includes the students' exposure to GC issues at school, attitude about their Asian identity, concern for global issues, expected civic behavior,

behavioral intentions associated with GC, and attitude towards learning about GC-related issues. This exploratory study found that parental engagement and the SES of the students had an important role in all these constructs. Some factors that were also found to be significantly associated with some of the constructs were school location, school type, resources at home, and student's gender. However, other factors need to be incorporated in the regression model to improve its coefficient of determination. This warrants another study in the future.

Based on the key findings, the following are the recommendations of this study.

- Because Filipino Grade 5 students' access to learning resources and opportunities can be limited due to their SES, the government should provide interventions on how to mitigate the impact of SES on children's access to quality education.

- Efforts must be made to provide students with with adequate resources at home (e.g., home possessions, number of meals a child had per day, quality of household walls, lighting type, presence of utilities, number of books in the household). Parents must be encouraged to be more involved in the schoolwork of the students and to change the mindset of their children so that they would have a positive attitude towards the school.

- Increasing access to pre-school through different strategies (e.g., changes in policy, incentives and communication campaigns) should be prioritized.

- School and teacher interventions such as remedial measures should be implemented to support students who are not performing well academically to avoid grade level repetition.

- For mathematics literacy, teachers and parents should formulate ways on how students can have a positive attitude towards mathematics.

- Safeguards such as building a positive school culture, providing mediation, counseling, and peer support for affected students need to be put in place to mitigate any untoward incident or act of violence in school that could negatively impact the academic performance of the students.

- Provide professional development workshops to make teachers more confident in using research work, multi-age teaching, laboratory activities, and ICT-supported activities in teaching.

- Trainings on social studies, inclusive or special needs, and writing in English should also be offered to teachers

- Integrate the topics on current global events and globalization in the preservice teaching education to make the teachers confident in teaching these GC-related topics to their students.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