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TRENDS IN STUDENT ENROLMENT AND PERFORMANCE IN GEOGRAPHY IN MAURITIUS 2012-2019

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Abstract

In this study, statistics from the Mauritius Examinations Syndicate (MES) were used to show trends in the Cambridge International Examinations (CIE) enrolment and performances in Geography for the period 2012 to 2019 at School Certificate level. All school candidates who sat for these examinations within the years under review constituted the target population for the study. Statistical data analysis was carried out using Microsoft Excel with its in-built trend line capabilities. Quantitative analysis showed an overall decline of 15.2% in the number of students opting for Geography at School Certificate level from 2012 to 2019. Findings also demonstrated that male candidates were more likely to achieve a pass mark than female candidates. A t-test analysis revealed a statistically significant difference between grades achieved by girls and boys at $p < 0.05$. Ultimately, a thorough analysis of chief examiners' reports indicated that the recurring weak performances were often associated with rubric offences, and poor question comprehension.

Keywords: Student Enrolment, Cambridge International Examinations, Student Performance, Secondary School; Mauritius

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INTRODUCTION

Like many developing countries, Geography struggles much to find a place in the hierarchy of subjects offered in the school curriculum (Walford, 2001) in Mauritius. The array of elective subjects offered at secondary school level has been regularly re-visited throughout the years such that Geography is probably being squeezed among them (Tilbury & Williams, 2002). There is some reluctance to include Geography as a separate subject in the school curriculum as most of its contents are strongly connected with other subjects such as the natural sciences, social sciences and humanities (Alam, 2016; Baerwald, 2010; Gaite, 2011; Thrift, 2002). Dealing with controversial environmental issues such as pollution, urban sprawl, land-use planning (Fatima et al., 2015), Geography is indeed a subject which affects people and their actions. Geography has an influence on people's lifestyles as they adapt to changing environmental conditions and build their climate resilience. None of this is understandable or will be manageable without consideration of Geography. It is therefore important to engage students in such issues to prepare them to face future challenges. Unfortunately, the pressure which arises from limited amount of curriculum time (Tilbury & Williams, 2002) and the students' focus on employability (Fatima, 2016) might be accounting for students' aversion for Geography beyond lower secondary.

While the Mauritian context provides limited research on student perception, enrolment and performance in Geography at secondary school level, much concern has been expressed in recent times over the dwindling interest of students opting for Geography. Many students who have studied Geography at secondary level are unwilling to invest time and money in this discipline at tertiary level since career opportunities remain scarce in Mauritius. It is a common perception that students who choose to study Geography consider it to be a "soft subject" as they fail to understand that Geography stands between the "hard-physical science" and the "soft-social science" (Fatima et al., 2015; Kubiatko et al., 2012). Some students choose to study Geography probably because they were unable to secure admissions to the other high-demand subjects (Fatima, 2016). This paper aims to analyse student enrolment and performance in Geography at secondary school level in Mauritius for the period 2012 to 2019, drawing on secondary data from the Mauritius Examinations Syndicate (MES).

LITERATURE REVIEW

The Education System in Mauritius: an Historical Overview

Prior to the Independence of Mauritius in 1968, the Primary School Leaving Certificate (PSLC) and the Junior Scholarship Examination (JSE) were the examinations conducted at the end of the Primary Cycle and these examinations were established under the British Colonial rule. Getting access to education was, in general, the privilege of the social elite. With Independence in March 1968, this trend changed as providing free education to all children at primary school level was made a priority. Later, free secondary education was granted to all Mauritian citizens in 1977, as a result of which there was a drastic increase in the rate of enrolment in educational institutions. Several secondary schools were also built on a regional basis to widen access to secondary education. In 1980, the Certificate of Primary Education (CPE) was introduced to replace the PSLC. Finally, in 2017, the Primary School Achievement Certificate (PSAC) examinations replaced the CPE to assess learners holistically.

The Mauritius Institute of Education (MIE) was bestowed with the responsibility to develop curriculum activities and a National Curriculum Framework (NCF) for education from Grade 1 to Grade 13 since 1973. Teaching is carried out in English except for Asian languages and other languages. With the implementation of the Nine-Year Continuous Basic Education (NYCBE) which started in 2017, all children having completed the first six years of primary education (Grades 1 to 6), move on to Grade 7 in a secondary school. Today, lower primary education consists of Grades 1 to 3 while upper primary consists of Grades 4 to 6 in all state schools. On the other hand, lower secondary school refers to Grades 7 to 9 and also represents the last three years of the NYCBE. After successfully completing the NYCBE, students move on to Grades 10 and 11 at the end of which they sit for the Cambridge School Certificate. Upper secondary education corresponds to Grades 12 and 13. Secondary education is a seven-year cycle and, since 2005, is compulsory up to the age of 16 years old (Ministry of Education, Tertiary

Education, Science and Technology, 2020). Formerly, the compulsory core subjects of the curriculum in primary school were English, French, Mathematics, Environmental Studies (EVS), Creative Arts, Physical Education and Asian Languages. Later, EVS has been split into Science, History & Geography, and new subjects have been introduced, namely Social, Scientific and Environmental Education, Values and Citizenship Education, The Arts, Health and Physical Education, and Information and Communication Technology (ICT). In upper primary, History and Geography are considered worthy enough for inclusion as a separate, yet integrated, subject in the so-called "core curriculum". Both are part of the compulsory core curriculum in all upper primary schools until the age of 11, then become blended in the Social and Modern Studies subject in lower secondary schools up to Grade 9. After that, students have the option to drop both; the only core subjects taught in primary schools which are discontinued in most secondary institutions in Mauritius.

In 2002, with the abolition of the ranking system associated with the Certificate of Primary Education (CPE), there was an urge to set up more regional secondary schools to accommodate the flux of incoming students. Only a few institutions ensured that History and Geography are taught up to Ordinary Level (O-Level) and Advanced Level (A-Level). Given the small number of institutions offering Geography at School Certificate Level in Mauritius, a stable trend in the number of entries would be required to provide a strong justification for the aim of teaching Geography in all secondary schools.

Mauritius: Curriculum Making with Geography

The discipline of Geography is either slowly being swallowed up by other Sciences or is gradually being demoted in many countries (Tanyanyiwa, 2015). In Mauritius, Geography has survived the two bold educational reforms in the education system. First, the ranking system was phased out in 2002, giving way to a system of regionalisation. Second, the implementation of the NYCBE schooling started in 2017 and the first PSAC examinations, were conducted at the end of 2017 in all primary schools which follow the National Curriculum Framework prescribed by the Ministry of Education, Tertiary Education, Science and Technology. Geography is treated differently at different stages. Geography is not included in the school curriculum in Grades 1 and 2. In Grade 3 of the primary education, Geography topics are taught under the core Social, Scientific and Environmental Education, which consist of Geographical content in the curricula. At upper primary level (Grades 4 to 6), Geography is combined with History topics, and is offered as a compulsory integrated subject, History and Geography. (Table 1)

From Grades 7 to 9 at lower secondary level, Geography is not an independent subject, but is reflected in the more generalist and integrated Social and Modern Studies (Table 1). Social and Modern Studies is a new subject which has replaced Social Studies when the implementation of the nine-year schooling started in 2017. During the last four years of secondary education, that is, from Grades 10 to 13, subjects are of optional status and they are often in strong competition for students. In a few private grant-aided and private fee-paying schools which follow the National Curriculum Framework, Geography is treated as a compulsory separate subject at the age of 14 (Grade 9). Some fee-paying institutions have also included Geography as part of their French and English Baccalaureate programmes.

Table 1 below summarises the place occupied by Geography in the primary and secondary school curriculum in Mauritius.

Table 1: Teaching Geography in Primary and Secondary Schools in Mauritius

Grade(s)	Place Occupied by Geography In The School Curriculum		
	1 Compulsory subject by incorporating with other subjects	2 Compulsory subject as a separate subject	3 Compulsory subject as an integrated subject
Lower Primary (1 & 2)	×	×	×
Lower Primary (3)	✓	×	×
Upper Primary (4-6)	×	×	✓
Lower Secondary (7-8)	×	×	✓
Lower Secondary (9)	×	✓	✓

		Optional subject as a separate subject	
Upper Secondary (10-11) (O-Level)	×	✓	×
Upper Secondary (12-13) (A-Level)	×	✓	×

Source: Ministry of Education, Tertiary Education, Science and Technology (2020): National Curriculum Framework. (Primary &Secondary)

Worldwide Challenges and Opportunities Facing Geography

Although Geography is recognised today as an academic subject in many countries, there is still much speculation about its future in the school curriculum (Burnett & Crowe, 2016; Thrift, 2002; Tilbury & Williams, 2002). Reasons for the uncertain future of Geography are numerous. The geographer is mainly dependent on other disciplines, for instance, if a geographer refers to soils, it is assumed that the agriculturalist knows more, if the subject deals with people, the sociologist is expected to know better, if it is related to plate movements, one shall look for the geologist. Gradually, the discipline became overshadowed by its competitors treating subjects almost identical to Geography.

Lisowski (2011) assessed Geography as an independent science and claimed that the weakness of Geography lied in the fact that Geography would burrow much scientific knowledge from other fields. In a dynamic world, where disciplines rapidly evolve over time, scientists would fill in the gap where geographical subjects would remain static (Incekara, 2010), as geographical subjects would deal with issues which have become of interest to many other scientific disciplines (Lisowski, 2011).

However, Morgan (2004) examined the roots of "Geography is dead" thesis and argued that this statement provides an exaggerated over-estimate of the distance-time-destroying capacity of Information and Communications Technology (ICT) as a result of globalisation and digitalisation. There have been emerging trends in Geography which can be illustrated through the introduction of Geographic Information Systems, the proliferation of remote sensing, for e.g., radar, satellite, mapping and other spatial based applications that are delivered to us on our computers and smart phones in a timely manner. These new Geography-related technologies raised the value of the so-called "dying" subject.

While the declension of Geography as an academic subject has been mentioned a few times in literature (Harvey & Foster, 2004; Smith, 2009; Weeden, 2007), others have noted an increase in the number of students opting for Geography at different academic levels (Murphy, 2007; Opoku et al., 2020). As a matter of fact, several studies have investigated the perception of students towards Geography as this may have an influence on their selection of subjects (Al-Nofli, 2010; Fatima, 2016; Opoku, 2019; Opoku, 2020; Smith, 2009; Verma & Deshpande, 2016). Verma & Deshpande (2016) studied Year 1 students of Geography Bachelor in Education Programme in Fiji. Their study revealed that the choice of Geography is usually secondary. Fatima (2016) surveyed 106 students, of which 45 were male and 61 were female students, to critically analyse students' perceptions on Geographical concepts, themes, nature and scope, choice of Geography as an academic subject, major problems they were facing while studying Geography and possible career opportunities in Pakistan. Findings revealed that higher secondary school students considered Geography as their last option or least ranked subject of their subject combination.

Smith (2009) embarked on a study in the Illawarra and South-East region of New South Wales to investigate the understanding of Geography as a vocational influence on their selection of subjects in their senior years of schooling. He concluded that many students decided to choose other competing subjects as they found them more interesting and more vocationally relevant than Geography. In his study, 188 students of Years 10 and 11 were surveyed to examine how students understood Geography as a subject and a vocation. His results showed that a majority of males were able to provide a positive description of the subject matter of Geography, compared to female students who were slightly neutral.

Similarly, Kubiatko et al. (2012) found that males expressed more positive perceptions of Geography lessons resulting in males achieving higher scores in Geography than the females in Czech Republic. Males viewed Geography lessons as an easy subject, and more relevant than females. In their study, Akinnuoye et al. (2015) found that females had a negative perception about Geography because of the poor teaching methods on behalf of their teachers in Malaysia. Many females strongly felt that they

were being looked down upon by other students who take Science subjects instead of Geography. On the other hand, Opoku (2020) found no significant difference in the preferred aspect of Geography between boys and girls.

Al-Nofli (2010) attempted to examine the shared perceptions and experiences of 48 students, including both males and females in two basic-education schools of Grade 6 and Grade 10 of the second cycle in Oman. There, students had been exposed to Geography instruction since grade three. His results showed that students were positive about Geography and most students had a clear idea about the subject. Likewise, in his qualitative study of the gender differences in Senior High Schools of Ghana, where 24 females and 24 males were involved, Opoku (2020) indicated that both males and females demonstrated an appreciable level of knowledge and understanding of the subject matter of Geography.

The causes of students' performances in exams have also been reported a few times in literature (Anlimachie, 2019; Eze, 2021; Opoku, 2020). Eze (2021) analysed examiners' reports published by the West African Examinations Council (WAEC) from 2008 – 2018. His findings revealed that students' weak performances in Geography were mainly attributed to poor map work, inadequate preparation, and scanty explanation of points.

PURPOSE OF STUDY

There has not been much research in the field of Geography Education in Mauritius. This study aims to fill this research gap by analysing the trend in student enrolment and performance at School Certificate Level in Mauritius. The findings of this study will be useful to investigate students' perception on Geography to further understand the trends in student enrolment and academic performance in the subject at School Certificate level in Mauritius.

The study was guided by the following research questions:

1. What is the trend in student enrolment in Geography examinations at School Certificate level from 2012 to 2019 in Mauritius?
2. What is the trend in students' academic performance in Geography examinations at School Certificate level from 2012 to 2019 in Mauritius?
3. Is there any significant difference between the percentage of males and females achieving a pass mark and a credit in the Geography examinations at School Certificate level from 2012 to 2019?
4. What are the causes of students' weak and excellent performances, and the recommendations pointed out in Examiners' reports from 2012 to 2018?

DATA AND METHODOLOGY

This study uses two sets of secondary data. First, a set of statistics published by the MES was used. This statistical data consisted of students' final CIE Syllabus 2217 results in Mauritius. All school candidates who enrolled and sat for the above examinations from 2012 to 2019 constituted the target population. Second, a set of examiners' reports were used to determine the factors influencing students' performances during the years under review. This study uses a mixed-method approach. A mixed – method study is research intentionally combining quantitative and qualitative approaches as components of the research (Ponce & Pagán-Maldonado, 2015). Quantitative research methods used included a time series analysis to observe the changes in the number of girls, boys and total number of students sitting for the CIE Geography examination papers 12 & 22 Syllabus 2217 during the study period. Trends and patterns have been analysed in other studies (Bell, 2001; Weeden, 2007) to provide a clearer understanding of the patterns of enrolment in a subject within the whole curriculum, including trends over time. Additionally, the percentage of students by gender achieving a pass mark and a credit in Geography at secondary school level between 2012 and 2019 was calculated. A t-test analysis was also carried out to find out if there was a significant

difference between the marks achieved by male students and those achieved by their female counterparts. Qualitative research method included a paragraph-by-paragraph approach which was adapted from (Eze, 2021). The paragraph-by-paragraph approach would enable a systematic review of the Chief Examiners' reports and would identify repetitive themes on the strengths of high-achieving students per year, weaknesses leading to poor performances and suggested recommendations.

Datasets

Mauritius Examinations Syndicate Statistical data

The MES publishes results of the Cambridge International Examinations, under its Statistics section. From November 2012 to November 2019, candidates in Mauritius have taken Geography (2217), Paper 12 and Paper 22, in which questions are structured with gradients of difficulty. Geography (2217) represents the syllabus taken in Mauritius at School Certificate level or Ordinary level (O-Level). Paper 12 (Geographical Themes), which stands for Paper 1 of Zone 2, is mainly concerned with Assessment Objectives: knowledge and understanding, skills and analysis, and judgement and decision making. It consists of 6 questions which are divided into 3 sections: Section A, Section B, and Section C as shown in Table 2. Students are required to answer three questions, one question from each section. Paper 22, which stands for Paper 2 of Zone 2, examines skills of application, interpretation, and analysis of geographical information (Table 3). Candidates are assessed on the methodology of questionnaires, observation, counts and measurement techniques, and testing hypotheses appropriate to specific topics. As from 2020, students will be required to sit for three papers following a change in syllabus.

Table 2: Structure of Paper 12 of the Cambridge O-Level Geography Syllabus 2217

Paper 12	Theme	Topic
Section A	1	Population and Settlement Dynamics
Section B	2	Our Natural Environment
Section C	3	Economic Development

Source: University of Cambridge International Examinations: Cambridge O-Level Geography Syllabus (2217), 1-33

Table 3: Structure of Paper 22 of the Cambridge O-Level Geography Syllabus 2217

Paper 22	Theme	Topic
Section A	1	Geographical Skills
Section B	2	Geographical Investigations (Physical)
Section C	3	Geographical Investigations (Human)

Source: University of Cambridge International Examinations: Cambridge O-Level Geography Syllabus (2217), 1-33

Examiners' Reports

Cambridge School Certificate Examiners' reports provided readily available information to identify weaknesses and strengths of students in Geography examinations, Paper 12 and Paper 22. An analysis of these reports was carried out in this study from 2012 to 2018, for the October/November series. This was to investigate the reported causes of students' poor performance, high achievement, and the recommendations made to reach the required standards and meet the expectations of examiners. All the reports for the period 2012 to 2018 were readily available online, except for the year 2016. Six reports out of seven were available for analysis. Based on Eze (2021) study, a paragraph-by-paragraph approach was used. General comments in the reports were thoroughly analysed and recurring statements were regrouped under one theme. Some statements were quoted as evidence. Each quotation can be understood by the description below:

2217_w12_er

(*where 2217* is the subject syllabus, *w* is the type of examination October/November, *12* is the year of study, *er* means Examiner's Report)

Methods of Analysis

A Time Series Approach

Yearly changes in the number of student entries in Geography were shown for the period 2012 to 2019. Moreover, the percentage of male and female candidates achieving a pass mark and a credit in the CIE Geography (2217) examinations, were also shown using a time series approach.

Correlation Analysis

A correlation analysis was used to statistically assess a relationship between the percentage of male candidates and the percentage of female candidates achieving a pass mark and a credit for the CIE Geography examinations from 2012 to 2019 in Mauritius. The value of r is between 1 and – 1. The correlation analysis was given by:

$$C = \sum_{i=1}^{N} \frac{(x_i - x)(y_i - y)}{N\sigma_x \sigma_y}$$

(*where x* and *y* represented the two data series to be correlated. N represented the record length, and σ_x and σ_y represented the standard deviations of *x* and *y* series, respectively.)

Student T-Test

Correlation coefficients with a significantly high *r* values were tested at a 95% confidence interval using a two-tailed student t-test. The two-tailed Student t-test was used assuming the data to follow a normal distribution. The student t-test aims to support quantitatively the observed correlation analysis and to provide evidence that changes in exam performances are not due to local random factors, but due to gender. The student t-test was based on 8 years and the t-value was calculated using the equation below:

$$t = \frac{\mu_1 - \mu_2}{S_{12}}, \text{ where } S_{12} = \sqrt{\frac{\sigma_1^2}{n_1}} + \sqrt{\frac{\sigma_2^2}{n_2}}$$

(*where* μ represented mean percentage pass rate, *σ* represented the standard deviation and *n* represented the number of years for variables 1 and 2.)

The student t-test was done to test whether the observed value of the null hypothesis was significantly different from the theoretical value H_1. The following null hypothesis was stated and tested in this study:

H_0 (null hypothesis): There was no significant difference between the Geography CIE (2217) performance of male and female students in secondary schools in Mauritius.

H_1: There was a significant difference between the Geography CIE (2217) performance of male and female students in secondary schools in Mauritius from 2012 to 2019.

RESULTS

A Comparison of Entries between Geography (2217) and Other Subjects Offered at O-Level in Mauritius

Results showed that Geography was positioned at the 31st place when ranking subjects by their number of entries, with an average of 1% of the total CIE entries for the period 2017-2019 (Figure 1). It was the second most popular Social Science subject in Mauritius. Sociology was the most popular Social Science subject, with an average annual entry of 19.2%, and the least popular being History, with a mean annual intake of 0.34 %. Results also demonstrated that Geography lied in a group of subjects with similar levels of uptake, including Environmental Management, Marine Science, and Agriculture (Figure 1).

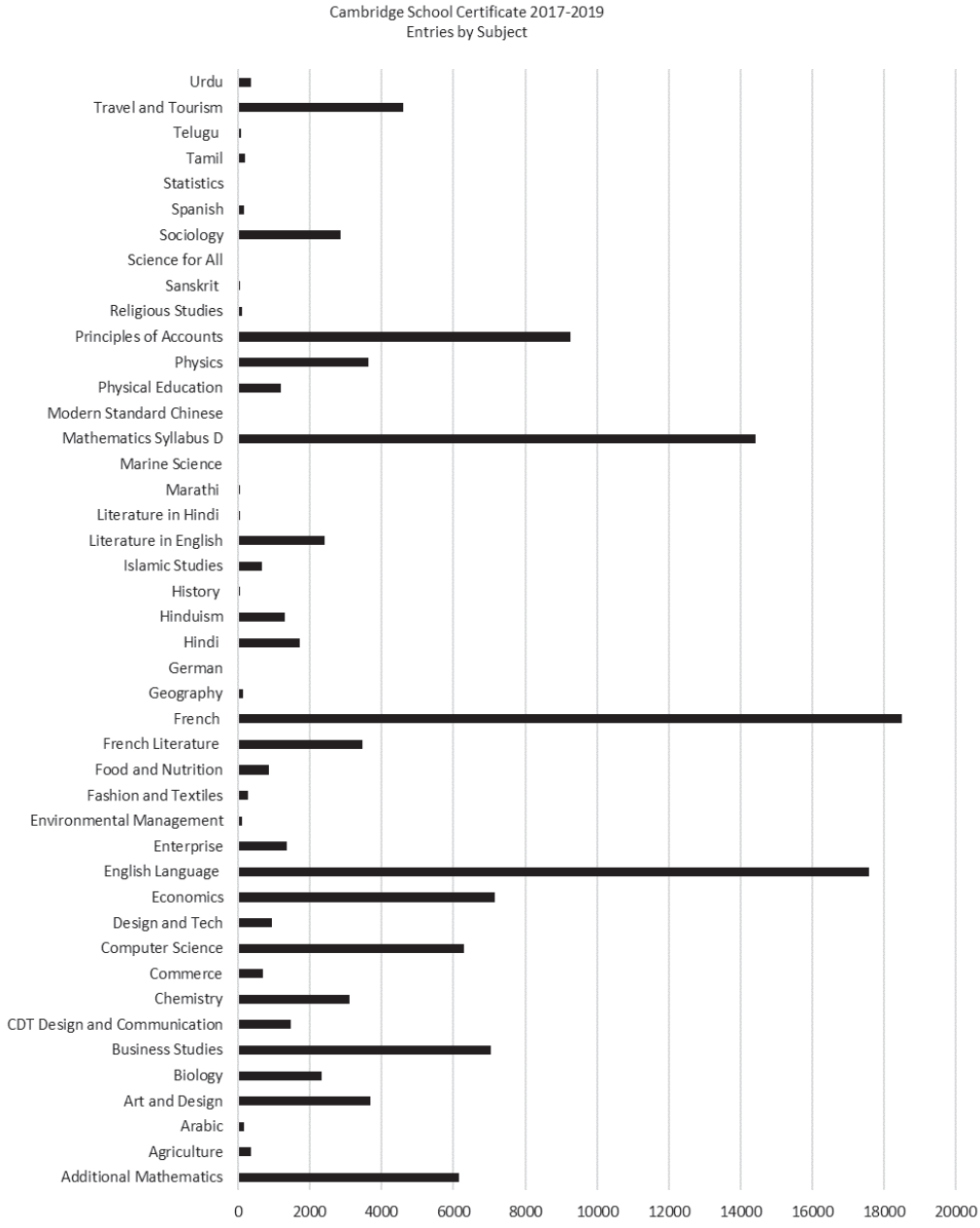

Figure 1: Average number of entries for all subjects at CIE 'O' Level from 2017 to 2019

Trends in Secondary School CIE Geography (2217) Enrolment in Mauritius

Results showed a slight decline in the overall number of students who sat for the Geography CIE O-Level (2217) from 2012 to 2019 (Figure 2). The total number of candidates examined in Geography CIE (2217) in 2012 was 145, that is, 0.89% of the overall number of entries for CIE for that year, and the total number in 2019 was 123, representing 0.84 % of the total number of entries in 2019. The total number of candidates examined peaked in 2017, with 189 entries, and the lowest for the period 2012-2019 was in 2019, with 123 candidates. From 2017 to 2019, the number of entrants went down by 34.9%.

Small positive and negative changes were noted in the total number of entries by gender during the study period (Figure 2). The total number of boys enrolled in these examinations was lower (389) compared to the total number of girls (863) during the years under review. The average number of male candidates enrolled in the Geography (2217) syllabus examinations for the period 2012 to 2019 was 48.6 compared to 107.9 for female candidates for the same study period. The highest number of male entrants was 59 in 2017 and dropped down to 43 since. In 2019, 80 female candidates sat for the examinations compared to 130 in 2017 (Figure 2).

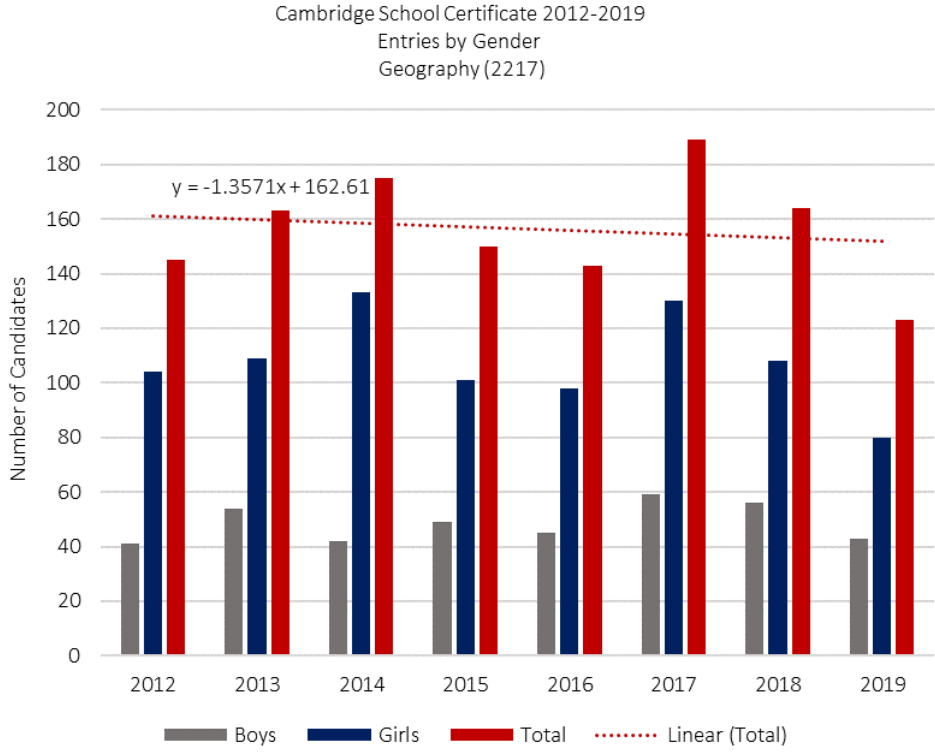

Figure 2: Changes in the number of entries in Geography CIE (2217) by gender for the period 2012-2019.

Trends in Secondary School CIE Geography (2217) Performance in Mauritius

When analysing the results of students per school year in the last eight years, boys were more likely to score a pass mark than girls (Figure 3), although the overall percentage of students achieving a pass mark was seen to be declining (-2.1029x + 85.965) from 2012 to 2019 (Figure 3). A decrease was also noted in the percentage of students achieving a credit (1-6) with a clear decreasing trend both for boys (y=-2.93x+59.086) and for girls (-1.4486x + 40.104) (Figure 4). However, the gap between the percentage of female and male candidates achieving a credit was seen to be reducing from 2012 to 2019 (Figure 4).

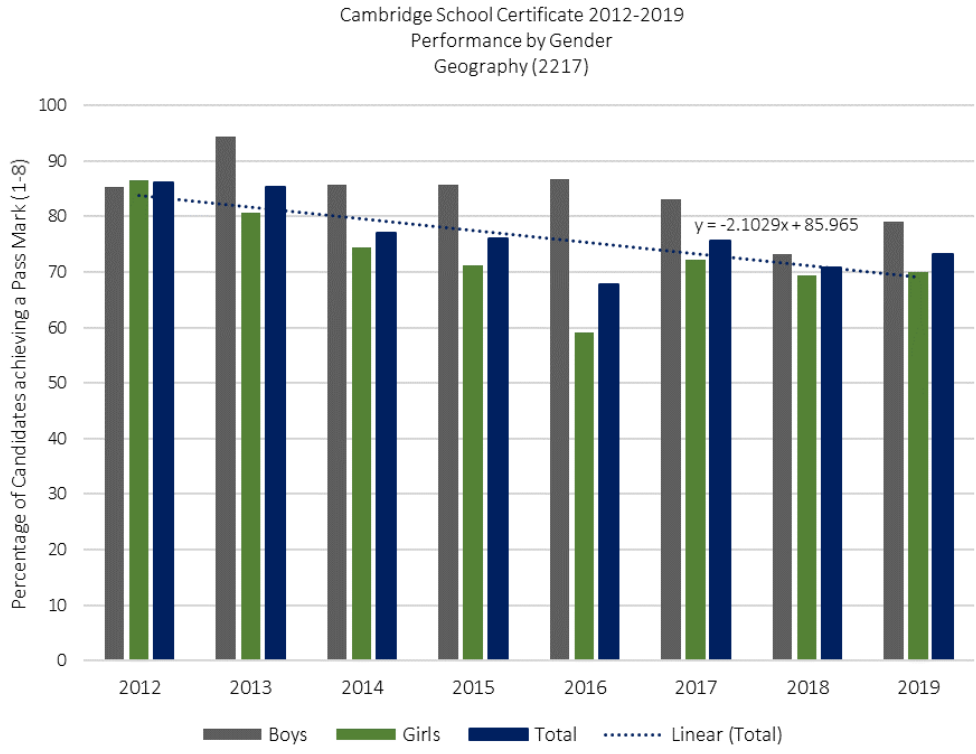

Figure 3: Trends in the percentage of male and female candidates achieving a Pass (1-8) in Geography CIE (2217) O-Level, 2012-2019.

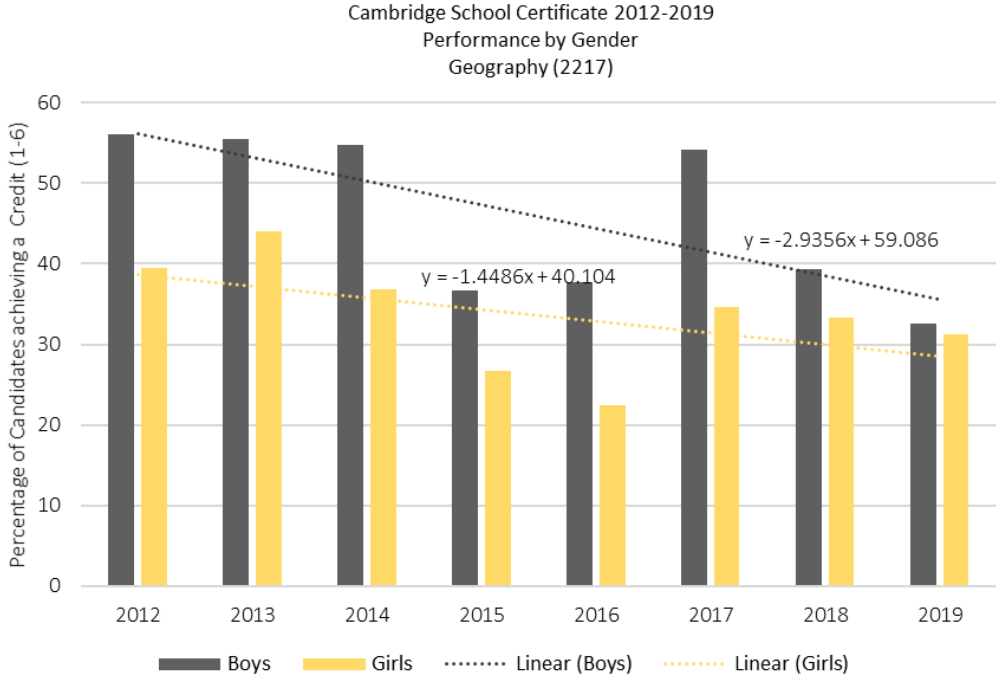

Figure 4: Trends in the percentage of male and female candidates achieving a Credit (1-6) in Geography CIE (2217) O-Level, 2012-2019.

Correlation Analysis and Significance Testing of Gender and Mean Students' Academic Performance in CIE Geography (2217) at O-Level for the Period 2012-2019 in Mauritius

Table 4: Association between Gender and Mean Students' Academic Performance (Percentage of Students Achieving a Pass Mark) in CIE Geography (2217) at School Certificate Level for the Period 2012-2019

Variable	Mean % Pass	Standard Deviation (SD)	N	df	r	t	p-value
Male (V_1)	84.154	5.758	8	7	0.33	3.31	0.01
Female (V_2)	72.991	8.117					

Table 5: Association between Gender and Mean Students' Academic Performance (Percentage of Students Achieving a Credit) in CIE Geography (2217) at School Certificate Level for the Period 2012-2019

Variable	Mean % Credit	Standard Deviation (SD)	N	df	r	t	p-value
Male (V_3)	45.876	9.466	8	7	0.79	2.84	0.02
Female (V_4)	33.585	6.437					

The results in Tables 4 and 5 were summarised in accordance with the hypotheses set below for the study.

H_0: There was no significant difference between the percentage of male and female candidates achieving a pass mark and a credit in Geography CIE for the syllabus 2217 in secondary schools in Mauritius from 2012 to 2019.

H_1: There was a significant difference between the percentage of male and female candidates achieving a pass mark and a credit in Geography CIE for the syllabus 2217 in secondary schools in Mauritius from 2012 to 2019.

The descriptive statistics obtained, as shown in Tables 4 and 5, indicated that a higher percentage of male students obtained a pass mark (V_1= 84.154; SD_1 =5.758) and a credit (V_3= 45.876; SD_3=9.466) in Geography than their female counterparts (V_2= 72.991; SD_2 = 8.117) (V_4=33.585; SD_4=6.437). The statistical correlation between the percentage of male and female candidates achieving a pass mark and a credit in Geography (2217) CIE was calculated. An independent t-test was also conducted to determine if there was any statistically significant difference between the percentage of male candidates achieving a credit and a pass mark and percentage of female candidates achieving a credit and a pass mark in Geography (2217) CIE from 2012 to 2019. In cases where the *p*-value was lower than the significance level, i.e., 0.05, the null hypothesis was rejected.

Results demonstrated a relatively high *r* value and low *p*-value when correlating the percentage of male candidates achieving a credit with that of female candidates ($r=0.79$, $t = 2.84$; $df =7$; $p<0.05$) (Table 5). This suggested that academic performances may be influenced by gender rather than some other random factors. Analysis also revealed a weak relationship between the percentage of male and female candidates achieving a pass mark in these examinations ($r=0.33$, $t = 3.31$; $df =7$; $p<0.05$) (Table 4), but since its *p*-value was lower than the significance level, i.e., 0.05, the null hypothesis was rejected. Hence, it was concluded that there was a significant difference between the percentage of male students achieving a pass mark and a credit and the percentage of female candidates achieving a pass mark and a credit in Geography CIE (2217) in secondary schools in Mauritius from 2012 to 2019.

Examiners' Reports: A Frequency Analysis of the General Comments

The general strengths and weaknesses of candidates who sat for the Geography (2217) CIE Paper 12 for the October/November series from 2012 to 2018, excluding 2016, were examined using a qualitative approach. According to the set of Examiners' Report studied, candidates who were able to show their level of ability and obtained high grades were those who managed their time effectively, used geographical terminology appropriately and confidently and were able to recall case studies in detail, particularly when there are case studies local to them or from within their own country (Table 6). On the other hand, the weaknesses identified by these reports seemed to be recurring. Occasional rubric errors were observed throughout all the years under review (Table 7). Many students were also poorly prepared. Moreover, there was a lack of sustained effort throughout the questions and/or linguistic difficulties in understanding the question fully, particularly in the final parts of questions where the gradient of difficulty increases. Thus, omission rates were high (Table 7). Many candidates failed to give place specific information in case studies to gain the full Level 3 marks, many having given some very

detailed Level 2 responses. Weaker candidates were likely to list their responses in bullet point form and as a result did not score more than Level 1 due to a lack of in-depth knowledge of the subject (Table 7). Strengths and weaknesses were summarised in Tables 6 and 7. Recommendations made by examiners during the study period were summarised in Table 8.

Table 6: Frequency of Strengths of High Performing Students in CIE Geography at School Certificate Level from Selected Quotations from Chief Examiners' Reports for Examinations Held in October/November 2012-2018.

Theme	Selected Quotations	Years reported
Time management	"There seemed to be little, if any, evidence of candidates being short of time."	2217_w12_er, 2217_w13_er, 2217_w14_er, 2217_w17_er, 2217_w18_er.
Presentation of work	"A considerable number of candidates presented work of a very high standard which was pleasing to see."	2217_w12_er
	"Presentation of answers was variable, though almost all were legible".	2217_w17_er, 2217_w18_er
Observation of rubrics	"Most students followed rubric by answering one question from each section".	2217_w12_er, 2217_w17_er
Case studies	"Candidates who tend to achieve well on case study questions are the ones who use local case study questions because their knowledge and understanding really shrines through and they score good Level 2 or high Level 3 marks".	2217_w17_er, 2217_w18_er
	"Stronger responses in case studies were characterised by developed ideas with some appropriate place detail"	2217_w12_er

Table 7: Frequency of Weaknesses of Poor Performing Students in CIE Geography (2217) at School Certificate Level from Selected Quotations from Chief Examiners' Reports for Examinations Held in October/November 2012-2018.

Theme	Selected Quotations	Reported Years
Time management	"Crossed out several lengthy answers wasting time which could have been spent on their chosen answers."	2217_w15_er
Presentation of work	"Handwriting of some candidates was difficult to read"	2217_w15_er
Observation of rubrics	"Occasional rubric errors"	2217_w12_er, 2217_w13_er, 2217_w14_er, 2217_w15_er, 2217_w17_er, 2217_w18_er
Comprehension of questions	"Only a few candidates who did not fully comprehend what was required in the questions."	2217_w12_er
	"Difficult to interpret tasks and write effective responses to some or all questions"	2217_w15_er, 2217_w17_er, 2217_w18_er
	"Incorrect responses to keywords in the questions, especially command words"	2217_w14_er
	"Misunderstanding and ignoring command words"	2217_w12_er, 2217_w13_er, 2217_w15_er
	"Many candidates were weaker in the final parts of questions"	2217_w13_er
	"Not fully reading the question or taking time to thoroughly understand the resources referred to"	2217_w12_er, 2217_w15_er
	"Omissions rates were high"	2217_w17_er, 2217_w18_er
Case studies	"Errors were made when identifying case studies, for example studies at the wrong scale, and such errors cost candidates marks."	2217_w14_er
	"Characterised by the use of simple statements"	2217_w15_er, 2217_w17_er
	"When 'an area' is required, choosing a country usually tends to be unacceptable as this is likely to be too large a scale"	2217_w15_er. 2217_w17_er
	"Long and unnecessary introductions"	2217_w15_er, 2217_w17_er, 2217_w18_er
	"Too many candidates who are learning case studies from previous marking schemes which is not really conducive to candidates' understanding of the Geography involved. This stands out especially when an answer does not 'fit' with the question being asked."	2217_w12_er
	"Where case studies contained developed ideas, they tended to be generic development of ideas with little place detail to support them"	2217_w14_er, 2217_w17_er, 2217_w18_er

Table 8: Chief Examiners' Recommendations to Improve Students' Performances in CIE Geography (2217) at School Certificate Level

Theme	Selected Quotations	Reported Years
Case studies	"The use of local case studies that candidates can write about in detail with place specific information should be encouraged as opposed to learning about distant case studies that have little relevance to candidates' everyday life. Select, wherever possible, up-to-date examples that have been in the news recently."	2217_w14_er
Work presentation	"Write only in the space provided, not underneath the final line or elsewhere on the page. Continue any answers which they do not have space for on the lined pages at the back."	2217_w15_er

All the weaknesses examiners identified (Table 7) led to the loss of marks. Results showed that the most common reason for failure in CIE Geography during the study period was poor comprehension of the questions and inadequate explanation of points when writing case studies. Another reason for failure worthy of note is non-adherence to rubrics, with a frequency of 6 out of the 6 years under review (100 % occurrence). Candidates who attemp all questions instead of following the rubric do not advantage themselves as this does not give them the opportunity to answer in the required detail. The focus of the examiners' recommendations was mainly on case studies and work presentation as shown in Table 8.

DISCUSSION

Analysis revealed a slight decrease in the overall number of students sitting for the CIE 'O' Level Geography (2217) for the period 2012-2019 (Figure 1) (Figure 2). These results are consistent with the findings of Kubiatko et al. (2012); Smith (2009); Thomas Brown (2011). Several reasons have been suggested in literature to account for this decline in the number of entries in Geography as an elective academic subject.

The perception of students towards Geography has often been cited as one on the reasons for the declension of Geography in schools (Adey & Biddulph, 2001; Al-Nofli 2010; Fatima 2016; Smith, 2009; Verma & Deshpande, 2016; Weeden, 2007). A positive perception is likely to increase the number of entries while a negative perception is more likely to decrease the number of entries. While Fatima (2016) attributed the negative perception towards Geography to a low vocational value and a lack of research in Geography education, Smith (2009) argued that the declension of Geography was due to a majority of the students finding the subject uninteresting, irrelevant and boring. Furthermore, an increase in competing and modern subjects (Breckon & Gardner, 2004) including Science and other Humanities, were noted, and unattractive Geography lessons would redirect students towards other subjects.

According to Weeden (2007), subject choice decision can be influenced by an individual's perception of the subject, and from a range of external factors, such as the array of subject combinations offered which often changes annually, family and community expectations. Individual's perception will often be influenced by interest in the subject, importance of the subject, and ability to secure good marks in it. Eventually, students will gather evidence by themselves and will weigh up the options available to them.

Smith (2009) concluded a lack of trained teachers in Geography to be the reason for the declension of the subject. This was further supported by Shimura (2015) who concluded that qualitative difference in teaching activities depended on whether or not teachers were specialised in the subject taught, and this will determine their ability to customise teaching materials to make Geography classes more appealing.

However, these results are incongruous with the findings of Opoku (2020). In his study, he noted that enrolment in Geography in Secondary Schools in Ghana has increased in the past few years, with more boys opting for the subject than girls. His findings demonstrated that male candidates favoured Geography as the scope of Geography would help them to achieve professional success. Female candidates found that acquiring geographic knowledge would enable them to understand their actions in their everyday life. Significantly, both genders were able to connect the relevance of Geography education to daily life experiences.

Similarly, Murphy (2007) noted that Geography's institutional position in United States colleges and universities has strengthened and the number of students sitting for Geography Examinations has increased. Therefore, opting for Geography as an elective subject in secondary schools seems to be due to a complex interaction between individual student perception of Geography, quality of teaching, the whole school-option systems, and the need to remedy to subject deficiencies (Verma & Deshpande 2016; Weeden, 2007).

In Mauritius, although the number of entries in Geography fluctuated across the study period, girls were more likely to opt and eventually sit for the Geography (2217) CIE at School Certificate Level than boys (Figure 2). Gender differences in students' geographical knowledge, interests, and academic performances are rarely reported. The higher number of female entries may be the result of societal perception of some courses being more feminine than masculine. Previous studies demonstrated that teachers at school might encourage male students to learn Science more, for e.g., by praising them for their correctly conducted physical experiments, whereas female students might be motivated to study literature, according to a socially shared schema of Science being a male-dominated subject and Humanities being a female dominated one (Eccles et al.1990; Jussim et al.,1996; Simpkins et.al., 2018; Watson et al., 2019).

Results also indicated a significant gender difference in students' performance in CIE Geography (2217) 'O' Level Examinations. These results are congruent with the findings of Akinnuoye et al. (2015) where males showed positive knowledge and interest of Geography more than females. The study of Akinnuoye et al. (2015) revealed that females had a negative perception about Geography as a result of the poor teaching methods on behalf of their teachers. Many females strongly felt that they were being looked down upon by other students who take Science subjects instead of Geography. Students' low interest in the subject could affect their attitude and motivation to study (Bunce et al., 2010; Anlimachie 2019).

On the other hand, in his qualitative study of the gender differences in Senior High Schools of Ghana, Opoku (2020) indicated that both males and females demonstrated an appreciable level of knowledge and understanding of the subject matter of Geography. This was further supported by Fatima (2016) who concluded that Geography was equally important for both boys and girls in Pakistan. In addition, Akintade's (2011) survey in Ilorin, Nigeria, also found no significant difference in the attitudes of male and female students towards the study of Geography. Both male and female candidates were positive about Geography and had chosen Geography because it related to their career choices.

Some argued that the gap in educational experience and performance of schematically male versus female subjects among students cannot be justified by their individual differences in abilities, but to some extent by the long existing cultural transmission of gender stereotypes (Li 1999; Nguyen & Ryan, 2008; Robnett, 2016; Spencer et al., 1999; Tiedemann, 2000; Watson et al., 2019). Females' selections were mostly influenced by teachers' expectancies, while for males, by their self-judgements. It seems that consistent reminders of teachers' expectancies related to gender stereotypes reflected in preferential treatment of females and males in Arts and Mathematics classes, respectively, may lead the former to select Humanities and Social Sciences majors and the latter Technology and Science ones (Harris & Rosenthal, 1985; Rubie-Davies 2014).

Reports pointed out areas of strengths to be an adequate time management, well-labelled diagrams, and the ability to cite local examples in case studies to support answers. A few candidates usually distinguished themselves in the examinations. However, weaker responses were often due to poor comprehension of questions, difficulty in writing effective responses, illegible writing, high omission rates, inadequate preparation time, and little attention paid to rubrics. These findings are consistent with Eze (2021). In his study, Eze (2021) claimed that poor expression of answers was either due to poor grammar structure, misspelt words, or illogical presentation of ideas. Mauritius is a multilingual island with English as the official language of the country and the language of instruction in many schools. At primary level, Daby (2015) conducted a study in some schools in Mauritius and concluded that English as a language of instruction, represented a barrier to academic achievement. Most students communicate in Mauritian Creole and they are the least exposed to English language outside classroom hours. Therefore, the influence of English language as a mode of instruction on academic achievement of students in Geography would be another avenue which could be investigated in the future. High omissions rates could be a lack of interest in the subject. Anlimachie (2019) argued that

students' lessons must involve practical classes and fieldwork activities to foster students' interest in Geography. The Cambridge Assessment International Education has established three assessment objectives. These are knowledge with understanding, skills and analysis, and judgment and decision-making. Consequently, the methods of teaching Geography employed in secondary schools in Mauritius could be investigated to find out the educational skills which learners are lacking to grasp the glossary of Geography terms and to structure their responses effectively. Shimura (2015) found that the ability to customise teaching materials to make Geography classes more appealing is greatly determined by whether a teacher is specialised in the subject area or not. Teaching methods are likely to impact on students' perceptions and attitudes towards the subject (Smith, 2009). The teaching methods and materials used in public schools could also be compared with the teaching methods used in the private institutions offering the French and the English Baccalaureate programmes. Finally, teachers could make use of recommendations from previous examiners' reports to strengthen students' preparation for future examinations.

CONCLUSIONS

Going Beyond The "Ends" of Geography

Results in this study concluded that:

1. There was a slight declining trend in the overall number of students opting for CIE Geography (2217) as an elective subject at School Certificate Level from 2012 to 2019 in Mauritius.
2. Female candidates were more likely to opt for CIE Geography (2217) as an elective subject at School Certificate Level than male candidates from 2012 to 2019 in Mauritius.
3. The percentage of male students achieving a pass mark and a credit was significantly higher than the percentage of female candidates achieving a pass mark and a credit from 2012 to 2019 in Mauritius.
4. The overall weak performance of students sitting for the CIE Geography (2217) at School Certificate Level, from 2012 to 2019 in Mauritius, was due to a lack of attention paid to the rubric, poor comprehension of questions, all of which resulted in an overall poor expression of answers.

The real question for this discipline is "what are the ends of Geography?", rather than acknowledging the subsidence of Geography. Geographers in Mauritius could be given an opportunity to study issues and developments taking place in the discipline, to contribute to the formulation of results that are policy relevant, as well as, to educate new generations who can take up the responsibilities of teaching Geography as a separate subject from Grades 7 to 9 in all secondary schools in the future. This vital subject will help students to develop an informed concern about the world as the plethora of issues facing the world is non-exhaustive. This study finally makes a plea or a case for to extend the study of Geography in all secondary schools since it provides students with knowledge about our rapidly changing world and how humans are impacting our planet. Not discontinuing it after Grade 6 will indeed be a step forward in Education in Mauritius.

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