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THE TRENDS OF HIGH SCHOOL PERFORMANCE IN WESTERN HIGHLANDS PROVINCE: BASIS FOR INTERVENTION PROGRAMS

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ABSTRACT

This study was conducted to investigate the trends of high schools' performance in Western Highland Province, Papua New Guinea measured by the Mean Rating Index (MRI). This study utilized a descriptive-correlational approach to finding answers to the research questions. It involved twenty-two high schools in Western Highlands Province, Papua New Guinea. The data gathered were from the records of the Measurements and Standards Division of the National Department of Education in Papua New Guinea. Only schools were included with data for the last five years (2017-2021). Subject areas included in the data analysis were English, Mathematics, Personal Development, Science, Social Science, and Business Studies as these subjects were commonly nominated by the participating schools and have had complete data in the last five years. The descriptive was utilized to determine the mean of the school's Mean Rating Index (MRI) for each of the subjects and the 5-year average MRI. The Mann-Whitney test was utilized to determine if there was a significant relationship between the school classification and the 5-year average MRI. Among the twenty-two schools involved in the study, school 11 performed well in Grade 10 examinations in the last five years. Among the twenty-two schools involved in the study, school 14 performed the poorest in Grade 10 examinations in the last five years. It can be concluded that among the six subject areas, English is deemed to be a priority for crafting an intervention program to address the low performance across all high schools. There is evidence that urban schools performed well in comparison with rural schools. More attention is needed for rural schools in terms of uplifting the education standards in the province. Rural schools should be the priority recipients of capacity-building activities for these schools to perform to the expected standards.

Keywords: assessment, exit examinations, intervention program, school performance

1. INTRODUCTION

The education system of Papua New Guinea is said to be inherited from the British and Australian educational systems-being their colonizers. The historical development of its educational system can be classified into mission education, colonial education, and independence education. The primary intention of mission education was evangelism. Literacy was taught to translate the Bible, thus converting them to Christianity. Colonial education was primarily for economic interest- the indigenous people were trained in crafts, mechanical skills, electrical skills, and other related skills, which are a valuable source of cheap labor.

On its independence in 1975, the education system structure was established. The education system was comprised of primary, secondary, and tertiary levels. In 1986, known as Matane Report, Papua Guinea developed its education philosophy- the education reformation stage. Papua New Guinea's education system was geared toward achieving national goals, socio-economic, cultural, and political development, and advancement for its people.

1.1 Related Work

There have been a couple of education system restructurings beginning in 1993 shifting from 6-4-2 to 3-6-4 in which students spent three years in elementary school, six years in primary school, and four years in secondary school [1]. As of the National Executive Council's Decision No.315/2016, Papua New Guinea is transitioning to another education structure known as the 1 -6-6 structure [2]. The legacy education structure followed a 3-6-4 structure, where three years were dedicated for the Elementary sector (Elementary Prep, Elementary 1, Elementary 2), six years were dedicated for the Primary sector (Grade 3 -8) and four years were dedicated for the Secondary sector (Grade 9-10). In the new education structure, one year is dedicated to Pre-School, six years are dedicated to the Primary sector (Grade 1 to 6) and another six years are dedicated to the Secondary sector (Grade 7-12).

In the legacy education structure, there are three exit examinations and they are used for the selection of students moving up to the next upper-grade level. The primary level is culminated by a Certificate of Basic Education Examination (COBEE) at the end of grade 8. Students who passed the examination are selected to move up to grade 9 and are to complete the lower secondary program (grade 9-10). The lower secondary level is culminated by a Lower Secondary School Certificate Examination (LSSCE) at the end of grade 10. Similarly, students who passed the examination are selected to move up to Grade 11 and are to complete the upper secondary program (grade 11-12). Finally, the upper secondary level is culminated by an Upper Secondary School Certificate Examination (USSCE) at the end of grade 12. Students who passed the examination are selected to continue their tertiary education.

As of the time of this writing, Papua New Guinea is in the initial stage of rolling out the 1 -6-6 education structure, and the three exit examinations are still implemented for the selection of students moving up to the next upper level. Students who do not make the selections have an option to upgrade their marks through Flexible Open and Distance Education (FODE), which may allow them to reintegrate into the formal education system [3]. Alternatively, a technical-vocational pathway is also available.

Several factors interplay for a school to perform to the expected performance standards. At the school level, a study suggested strengthening school-based management to improve a school's performance [4]. At the classroom level, the use of educational technology such as video interactive simulation may enhance students' academic performance [5]. Tiria & Caballes suggested the use of gamification across learning areas [6]. Montellano & Caballes recommended the use of Technology-Based Supplementary Material (TBSM) as a remediation activity, especially for the Physical Science subject [7]. Throughout the cycle of the teaching-learning process, assessment results are important pieces of evidence of learning.

In the 3-6-4 education structure of Papua New Guinea, various forms of ongoing assessments or formative assessments are regularly administered at the classroom level, as part of the teaching-learning cycle. At the national level, there are only a few methods of assessing the quality of learning outcomes, namely the exit examinations [8]. Though these exit examinations do not necessarily measure students' achievement levels they may reflect students' performance [8].

Papua New Guinea participates in the regional assessment exercise known as Pacific Islands Literacy and Numeracy Assessment (PILNA). The assessment targets grade 4 and 6 students' literacy and numeracy proficiency. Certificate of Basic Education Examination, Lower Secondary School Certificate Examination, and Upper Secondary School Examination are the current primary assessment tools in the country for measuring students' performance- thus measuring schools' performance, in the country. There is a plan that the country will participate in the Program for International Students Assessment (PISA) and Trends in International Maths and Science Study (TIMSS), and the Progress in International Literacy Study [9].

The rating index is an approximate measure of how well a school has performed, compared with all other schools in the country [10]. The Mean Rating Index indicates student performance, obtaining Distinction, Credit, and Upper Pass ratings in all of the subjects (National Department of Education, 2020). The average performance is 50 percent, which is the benchmark of performance for high schools. Mean Rating Index (MRI) can shed some light on which school is performing or not, the subject areas a school is performing well, and which subjects it needs to improve on.

1.2 Statement of the Problem

This study was conducted to investigate the trends of high school performance in Western Highland Province, Papua New Guinea measured by the Mean Rating Index (MRI). Specifically, it sought to answer the following research questions:

1. What are the trends of the schools' performance in Western Highlands Province as indicated in the Grade 10 examination Mean Rating Index (MRI) in the last five (5) years?
2. What are the trends of the schools' performance in Western Highlands Province as indicated in the Grade 10 examination Mean Rating Index (MRI) in the last five (5) years in the following subject areas?
 - a. English
 - b. Mathematics
 - c. Science
 - d. Social Science

- e. Personal Development
 - f. Business Studies
3. Is there a significant relationship between a school's classification, being urban or rural, and the 5-year average Mean Rating Index (MRI) of a school?

2. RESEARCH METHODOLOGY

This study utilized a descriptive-correlational approach to finding answers to the research questions. It involved twenty-two high schools in Western Highlands Province, Papua New Guinea.

The data gathered were from the records of the Measurements and Standards Division of the National Department of Education in Papua New Guinea. Only schools were included with data for the last five years (2017-2021). Subject areas included in the data analysis were English, Mathematics, Personal Development, Science, Social Science, and Business Studies as these subjects were commonly nominated by the participating schools and have had complete data in the last five years. Schools that do not have complete 5-year data were excluded. The descriptive was utilized to determine the mean of the school's Mean Rating Index (MRI) for each of the subjects and the 5-year average MRI. The Mann-Whitney test was utilized to determine if there was a significant relationship between the school classification and the 5-year average MRI.

3. RESULTS AND DISCUSSION

3.1 Schools' Mean Rating Index (MRI) in The Last Five Years

Table 1. Mean of the Schools' Mean Rating Index (MRI) in The Last Five Years

School	Mean	Std. Deviation
s1	51.89	15.87
s2	48.05	7.61
s3	41.16	17.44
s4	39.68	9.50
s5	69.14	7.74
s6	44.71	8.83
s7	42.95	9.36
s8	34.86	12.16
s9	62.79	10.12
s10	47.55	10.31
s11	86.77	6.18
s12	47.76	8.59
s13	41.25	9.34
s14	34.63	14.56
s15	57.20	11.03
s16	48.74	10.66
s17	42.05	10.83
s18	46.32	10.24
s19	58.58	15.76
s20	49.75	13.84
s21	65.94	5.32
s22	46.45	14.51

Table 1 shows the mean of the schools’ Mean Rating Index in the last five years. Benchmarking the mean scores at 50.00, being the national average, Table 1 shows that school 11 was the top performer with a mean of 86.77, while school 14 is at the bottom with a mean of 34.63, among 22 schools. Moreover, Table 1 shows that seven (7) schools- school 11 (86.77), school 5 (69.14), school 21 (65.94), school 9 (62.79), school 19 (58.58), school 15 (57.2), and school 1 (51.89) earned mean scores which were above the national average of 50.00. The remaining fifteen (15) schools- school 20 (49.75), school 16 (48.74), school 2 (48.05), school 12 (47.76), school 10 (47.55), school 22 (46.45), school 18 (46.32), school 6 (44.71), school 7 (42.95), school 17 (42.05), school 13 (41.25), school 3 (41.16), school 4 (39.68), school 8 (34.86), and school 14 (34.63) earned mean scores which were below the national average.

3.2. Mean of the School’s Mean Rating Index (MRI) for Subject Areas in the Last Five Years

Table 2. Mean of the School’s Mean Rating Index (MRI) for Subject Areas in the Last Five Years

Subjects	Mean	Std. Deviation
English	39.31	16.97
Mathematics	52.71	10.08
Personal Development	50.09	14.24
Science	52.29	12.75
Social Science	53.27	11.55
Business Studies	54.58	11.86

Table 2 shows the mean of the school’s Mean Rating Index (MRI) for subject areas in the last five years. It can be observed that among the six subject areas, schools performed best in Business Studies with a mean score of 54.58. Moreover, among the six subject areas, schools performed poorly in English with a mean score of 39.31. Among the six subject areas, schools performed above the national average (50.00) in five subject areas; Business Studies (54.58), Social Science (53.27), Science (52.29), and Personal Development (50.09), and Mathematics (52.71).

3.3 Relationship Between the School’s Classification and the 5-Year Average Mean Rating Index (MRI)

Table 3. Relationship Between the School’s Classification and the 5-Year Average Mean Rating Index (MRI)

Test	Sig	Decision
Mann-Whitney U Test	0.026	Reject null hypothesis

Table 3 shows the relationship between the schools’ classification- being urban or rural schools, and the 5-year average Mean Rating Index (MRI). The calculated *p-value* of 0.026 is lower than the alpha level at 0.05 and is statistically significant. Therefore, the null hypothesis which states that there is no significant relationship between a school’s classification and the 5-year average Mean Rating Index (MRI) of a school, is rejected.

3.4 Mean of the School’s Mean Rating Index (MRI) in the Last Five Years and Their Classification

Table 4. Mean of the School’s Mean Rating Index (MRI) in the Last Five Years and Their Classification

School	Mean	Classification
s1	51.89	rural
s2	48.05	urban
s3	41.16	rural
s4	39.68	rural
s5	69.14	rural
s6	44.71	rural
s7	42.95	rural
s8	34.86	rural
s9	62.79	rural

s10	47.55	rural
s11	86.77	urban
s12	47.76	rural
s13	41.25	rural
s14	34.63	rural
s15	57.20	urban
s16	48.74	rural
s17	42.05	rural
s18	46.32	rural
s19	58.58	rural
s20	49.75	rural
s21	65.94	urban
s22	46.45	rural

Table 4 shows the Mean of the Schools’ Mean Rating Index (MRI) in the Last Five Years and Their Classification. It can be observed that schools 2, 11, 15, and 21 were classified as urban schools. There were four schools classified as urban schools. These schools were located in or near the town area. Moreover, it can be noted that schools 1, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 16, 17, 18, 19, 20, and 22 were classified as schools in the rural setting. There were eighteen schools classified as rural schools. These schools were located outside the town area.

3.5 Mean Comparison of Urban and Rural Schools’ 5-Year Average Mean Rating Index (MRI)

Table 5. Mean Comparison of Urban and Rural Schools’ 5-Year Average Mean Rating Index (MRI)

School Classification	Mean	Std. Deviation
Urban	64.90	16.55
Rural	47.24	9.00
Total	50.38	12.29

Table 5 shows the mean comparison of urban and rural schools’ 5-year average Mean Rating Index (MRI). It can be noted that urban schools appeared to have performed better with a mean of 64.90 and a standard deviation of 16.55 than schools in the rural setting with a mean of 47.90 and a standard deviation of 9.00.

4. CONCLUSION AND RECOMMENDATION

Among the twenty-two schools involved in the study, school 11 performed well in Grade 10 examinations in the last five years. Among the twenty-two schools involved in the study, school 14 performed the poorest in Grade 10 examinations in the last five years. It can be concluded that among the six subject areas, English is deemed to be a priority for crafting an intervention program to address the low performance across all high schools. There is evidence that urban schools performed well in comparison with rural schools.

Based on the above findings and conclusions, the following the recommendations:

1. It is recommended that the low-performing school will revisit its curriculum program, and teaching-learning practices, and conduct a SWOT analysis to gain a deeper understanding of the situation.
2. It is also recommended the respective education department conduct a performance review on various school departments and teachers, and craft an “academic recovery” plan for the fifteen low-performing schools.
3. Moreover, it is also recommended that schools will be provided with the needed support in terms of professional development programs and additional learning materials. There is a dire need to address the schools’ low performance in English.
4. It is recommended to conduct a follow-up provincial-wide root cause analysis or SWOT analysis to gain a comprehensive understanding of the situation. Once more information is gathered, a series of provincial-wide in-service programs should be carried out.
5. More attention is needed to rural schools in terms of uplifting the education standards in the province. Rural schools should be the priority recipients of capacity-building activities for these schools to perform to the expected standard.

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