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## **Factors Affecting the Academic Performance of Grade 11 Students in General Mathematics in Tabuk City District**

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### **ABSTRACT**

The study determined the factors perceived as affecting the academic performance in General Mathematics during the first semester, S.Y. 2022-2023 of the 156 Grade 11 students at the four public senior high schools in Tabuk City district.

The study made use of the descriptive correlational research design with the questionnaire as the main instrument in gathering the data needed. The data gathered were coded, tabulated, and analyzed using the Statistics Program for Social Sciences (SPSS). Mean and percentage distribution were used to determine the profile of the respondents and the factors perceived to influence their performance in General Mathematics. Data were interpreted using the Likert's scale. The relationship between the respondents' profile and the factors perceived to influence their performance in mathematics were tested by Pearson's Moment Correlation and Chi-Square test of independence. Of the 156 respondents, most are 17 years old with a mean age of 17.20. the Grade 11 students in Luna district are mostly females. 27.56 percent are enrolled in HUMSS, 26.92 percent in STEM, 19.23 percent in ABM, 17.95 percent in Tour Guiding/Travel Services, and 8.33 percent in Housekeeping. 96.15 percent of the respondents came from public junior high school. Most of the respondents are Ilocano with a percentage of 88.46. Most of their parents graduated in college with an average of 25.00 percent for the father and 26.92 percent for the mother. 35.00 percent of family's monthly income ranges from ₱5,000 and below.

The Grade 11 students' extent of performance is 'average.' Specifically, attitude towards General Mathematics, study habit, family's proper guidance, and class schedule as perceived by the student-respondents are 'moderately favorable.' Family's support, class size, teacher's competency, teaching strategy and mastery of the subject matter, use of instructional materials in teaching, and teacher's attitude and working relationship are 'favorable' to the students' academic performance. Peer factor indicators are perceived to be 'influencing,' learning materials and facilities at home are adequate, and school facilities, equipment, and/or building are 'very adequate.'

The Grade 11 students in Tabuk City district have 'satisfactory' performance as evaluated through the Grading Sheet.

Their age and track/strand are significantly related to their academic performance.

Finally, school-related factor in terms of class size and peer factor/influence are significantly related to the students' academic performance.

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### **INTRODUCTION**

The new curriculum aims to nurture the nature of higher order thinking skills within each topic. In contrast with the old curriculum which emphasizes learning of content but not learning to learn and does not even encourage meta-cognitive processes, a restricted range of higher order thinking skills is developed, many of which are 21st century skills. In the new curriculum, there is a placed emphasis on student evidence of understanding and skills development rather than on content coverage. There is an ensured continuity of the content that drives skill development across topics as the curriculum moves from Grade 10 to Grades 11 & 12.

Mathematics from K-10 is a skills subject. By itself, it is all about quantities, shapes and figures, functions, logic, and reasoning. Mathematics is also a tool of science and a language complete with its own notations and symbols and "grammar" rules, with which concepts and ideas are effectively expressed. The K to 10 Mathematics Curriculum provides a solid foundation for Mathematics at Grades 11 to 12. More importantly, it provides necessary concepts and life skills needed by Filipino learners as they proceed to the next stage in their life as learners and as citizens of the Philippines.

Students are the most essential asset for any educational institute. The social and economic development of the country is directly linked with student academic performance. The students' performance (academic achievement) plays an important role in producing the best quality graduates who will become great leader and manpower for the country thus responsible for the country's economic and social development (Ali et.al, 2020). Student academic performance measurement has received considerable attention in previous research, it is challenging aspects of academic literature, and math

student performance are affected due to social, psychological, economic, environmental and personal factors. These factors strongly influence on the student performance, but these factors vary from person to person and country to country.

The identified factors perceived as affecting students' performance are student-related, home-related, school-related, teacher-related, and peer factors. This research was focused on the public secondary senior high schools in Tabuk City, Kalinga.

## METHODS

### Research Design

The descriptive-correlational research design was used in this study since the profile of the senior high school students in terms of age, sex, strand, previous junior high school attended, ethnicity, parents' educational attainment, and parents' monthly income and the factors affecting academic performance of SHS students in Math class were described and correlated to the students' performance.

### Respondents and Sampling

The respondents of this study were the Grade 11 students from the four SHS in Tabuk City, Kalinga, namely Cudal National High School, Balawag National High School, Tabuk City National High School, and Kalinga National High School. The schools are offering math subjects on K to 12 curriculum under Academic, Sports, and TVL Track.

The distribution of respondents is presented in the table below.

Table 1: Distribution of respondents

Name of School	Track/Strand	Sections	Population	Sample
Cudal National High School	Academic/STEM	Amethyst	35	21
		Diamond	35	21
Balawag National High School	TVL/Housekeeping	Victors	21	13
	Academic/HUMSS	Fidelity	21	13
Tabuk City National High School	TVL/Housekeeping	Zircon	46	28
	Academic/HUMSS	Sunstone	49	30
Kalinga National High School	Academic/ABM	Humility	27	16
		Love	23	14
Total			257	156

### Research Instruments

A structured questionnaire patterned to the *Combined Survey Questionnaire of Alos and Aggarwal (1983)* and modified by Saguban, et al. (2017) was used to elicit from the respondents the necessary information needed in the study.

Part I of the questionnaire deals with the profile of the respondents. Part II consists of varied statements to evaluate the extent of effect of the identified factors to the academic performance of SHS students in Mathematics.

### Data Gathering

Prior to administering the questionnaire to the SHS students, permission to conduct the study was sought from the Schools Division Superintendent of Tabuk City. After which, a copy of the approved request, together with a letter request, was furnished to the School Heads of the four Senior High Schools and the respondents of the respondent school. The researcher personally floated and retrieved the sets of questionnaire with attached letter of request to the respondents.

### Statistical Treatment

The data gathered were recorded, tabulated, summarized, analyzed and interpreted based on the problems of this study. The following statistical treatments were used:

Frequency counts, mean, and percentage distribution were used to treat the profile of the respondents.

The scale below was used in describing the assessment of the respondents on their attitude towards General Mathematics:

Point	Range	Descriptive Value	Transposed Value
4	3.26-4.00	Strongly Agree	Highly Favorable
3	2.51-3.25	Agree	Favorable
2	1.76-2.50	Disagree	Unfavorable

1	1.00-1.75	Strongly Disagree	Highly Unfavorable
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However, for negative statements the above scale was reverted.

The scale below was used in describing the perceived effect of family stress towards their performance in General Mathematics:

<u>Point</u>	<u>Range</u>	<u>Descriptive Value</u>	<u>Transposed Value</u>
5	4.21-5.00	Strongly Agree	Very High Influence
4	3.41-4.20	Agree	High Influence
3	2.61-3.40	Uncertain	Moderately Influence
2	1.81-2.60	Disagree	Slightly Influence
1	1.00-1.80	Strongly Disagree	No Influence

The students' assessment on peer influence was analyzed using the following scale:

<u>Point</u>	<u>Range</u>	<u>Descriptive Value</u>	<u>Transposed Value</u>
5	4.21 – 5. 0	Always	Very High Influence
4	3.41 – 4.2	Often	High Influence
3	2.61 – 3.4	Sometimes	Moderately Influence
2	1.81 – 2.6	Seldom	Slightly Influence
1	1.00 – 1.8	Never	No Influence

For other sub-factors such as family's support, proper guidance, class size, class schedule, teacher-related sub-factors, the scale below was used.

<u>Point</u>	<u>Range</u>	<u>Descriptive Value</u>	<u>Transposed Value</u>
5	4.21-5.00	Strongly Agree	Highly Favorable
4	3.41-4.20	Agree	Favorable
3	2.61-3.40	Uncertain	Moderately Favorable
2	1.81-2.60	Disagree	Unfavorable
1	1.00-1.80	Strongly Disagree	Highly Unfavorable

For the students' assessment of learning materials and facilities available at home and the school facilities, equipment and/or buildings, the three-point Likert Scale below was used.

<u>Point</u>	<u>Range</u>	<u>Descriptive Value</u>
3	2.33-3.00	Very Adequate
2	1.67-2.32	Adequate
1	1.00-1.66	Inadequate

On the students' performance in General Mathematics, the descriptive rating indicated in the School Report Card (Form 138) was used.

<u>Range</u>	<u>Descriptive Value</u>
90 – 100	Outstanding
85 – 89	Very Satisfactory
80 – 84	Satisfactory
75 – 79	Fairly Satisfactory
Below 75	Did not meet expectation

Pearson's Moment Correlation and Chi Square test of independence were used to test the significant relationship of the learning performance of the SHS students to their demographic profile and the factors affecting their academic performance in mathematics.

## **RESULTS AND DISCUSSION**

### *Academic Performance of the Grade 11 Students*

The result of the evaluation shows that among the 156 Grade 11 student-respondents, 18 or 11.54 percent were rated as "outstanding" which means 'very high', 38 or 24.36 were rated as "very satisfactory" leveled as 'high', 41 or 26.28 were rated as "satisfactory" leveled 'average', while 59 or 37.82 percent were rated as "fairly satisfactory" leveled as 'low.' No one were rated as "did not meet expectation" or 'very low.' One of the possible reasons is the release of an order by the Department of Education, namely DepEd Order No.8, s. 2018 stating that Grade 11 and 12 learners who failed a unit/set of competencies must be immediately given remedial classes.

Table 16. Respondents' level of performance in General Mathematics based on the Grading Sheet for the 1<sup>st</sup> semester with a period covered June 2018 – October 2019

Score	Frequency	Percentage	Descriptive Value	Level
90 – 100	18	11.54	Outstanding	Very High
85 – 89	38	24.36	Very Satisfactory	High
80 – 84	41	26.28	Satisfactory	Average
75 – 79	59	37.82	Fairly Satisfactory	Low
Below 75	0	0.00	Did not meet expectation	Very Low
Mean Score = 82.49		100.00	Satisfactory	Average

### ***Relationship between the Respondents' Profile and their Academic Performance***

This study tested whether or not the relationship exists between the demographic profile of the respondents and their academic performance.

Table 17 reveals that the age and respective tracks and strands enrolled by the respondents were found to be significantly related to the academic performance of Grade 11 students. The probability value of 0.001 and critical value of 21.03 at 0.05, respectively record highly significant result.

Age is significantly related to the academic performance of students in General Mathematics. This is seen in their probability value of 0.001 which is lesser than 0.01 level of significance.

Table 17. Relationship between the personal profile of the respondents and their performance in General Mathematics.

Profile	r – value	prob - value	Remarks
Age	-0.260**	0.001	Significant
Parent's monthly income	0.036	0.651	Not Significant

\*\*-Significant @ .01

Variables	Df	X <sup>2</sup> computed	X <sup>2</sup> critical value at (.05)	X <sup>2</sup> critical value at (.01)	Remarks
Sex	3	2.36	7.81	11.34	Not Significant
Track/Strand	12	22.61*	21.03	26.22	Significant
Junior High School Completed from	3	4.08	7.81	11.34	Not Significant
Ethnicity	9	6.37	16.92	12.97	Not Significant
Educational Attainment of Father	15	9.42	24.99	30.58	Not Significant
Educational Attainment of Mother	15	10.87	24.99	30.58	Not Significant

### ***Relationship between the Factors Perceived as Affecting the Performance of the Students and their Academic Performance***

Table 18 reveals the relationship between the perceived factors to influence the performance of the respondents and their performance in general mathematics.

It is revealed in the table that there is a significant relationship between class size and math performance. This is proven by the probability value of 0.043 which is lesser than 0.05 level of significance

Table 18. Relationship between the perceived factors to influence the performance of the respondents and their performance in general mathematics.

Factors	r – value	p – value	Remarks
Attitude on the subject	0.011	0.887	Not Significant
Study Habit	0.156	0.052	Not Significant
Parents' Support	0.008	0.921	Not Significant
Proper Guidance	0.013	0.875	Not Significant
Family Stress	-0.066	0.411	Not Significant
Learning Materials and Facilities Available at Home	0.139	0.089	Not Significant
Class Size	0.163*	0.043	Significant

Class Schedule	0.023	0.774	Not Significant
School Facilities/Equipment/Facilities	0.101	0.209	Not Significant
Teacher's Competency/Teaching Strategy/Mastery of the Subject Matter	0.108	0.828	Not Significant
Use of Instructional Materials in Teaching	0.003	0.975	Not Significant
Teacher's Attitude and Working Relationship	0.054	0.506	Not Significant

Peer factor/Influence	0.204*	0.011	Significant
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## Conclusion

Based on the findings, the following conclusions were drawn:

The student-respondents are at the right age to be in Grade 11. Majority of the respondents were females. Most of the student-respondents were enrolled in Academic track – Humanities and Social Sciences (HUMSS). Majority of the student-respondents completed their junior high school from public schools. Most of the respondents' fathers graduated in college. The result implies that fathers of the respondents can better support their child in successfully pursuing their General Mathematics subject. Most of the respondents' mothers graduated in college.

Student-respondents have unfavorable attitude towards General Mathematics. They are sometimes motivated to study the subject. Their family is found to be supportive in their studies. They are uncertain as to the guidance provided by their family and their parental involvement in academic activities. There are enough learning materials which could facilitate and enhance effective learning of students at home. The number of students accommodated in each class are just enough for the size of the classroom. The class schedule is assessed to be uncertain implying that the subject should be taught in the morning to get the full concentration of the students towards General Mathematics subject. The school facilities/equipment/buildings are very adequate which make the students satisfied with their academic environment. The teachers are found to be competent, employing effective teaching strategies, and showing mastery of the subject matter. They use instructional materials which are appropriate for the topic. Mathematics teachers also know how to maintain good relationship with their students and co-teachers and that they make the best of it to address students' concern regarding the lesson. Peer friends significantly influence the academic life of the students.

The performance of Grade 11 students in general mathematics is average. Age and track/strand enrolled by the students are associated with their performance in general mathematics.

Finally, school-related factor in terms of class size and peer factor/influence are significantly related to their academic performance.

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