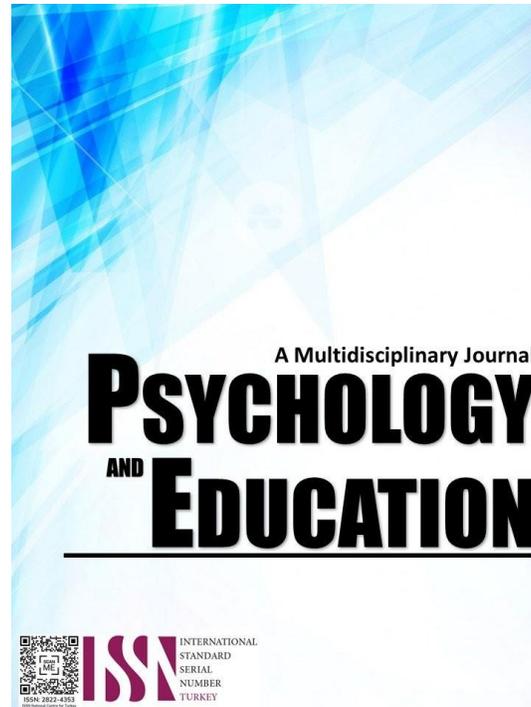


# CORRELATES OF ARITHMETIC PROFICIENCY OF GRADE 7 STUDENTS OF WAO, LANA O DEL SUR



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## Correlates of Arithmetic Proficiency of Grade 7 Students of Wao, Lanao Del Sur

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### Abstract

The main aim of this study is to investigate the student's arithmetic proficiency level and the factors affecting their proficiency. Specifically, the following are the objectives; (a) What is the profile of the students in terms of their age, sex, school type, and family income? (b) What is the arithmetic proficiency of grade 7 students? (c) What are the students' ratings on the following variables that affect learning Mathematics in terms of interest, study habits, teacher's personality traits, teaching skills, instructional materials, and parents' support? (d) Is there a significant relationship between the selected characteristics of the students and arithmetic proficiency level of the grade 7 students? And (e) Is there a significant relationship between the arithmetic proficiency level and the students' ratings on the variables affecting the learning Mathematics? This was conducted in both public and private schools in Wao, Lanao del Sur with quantitative design. The research revealed that while the students possess positive attitude towards the subject, the schools, teachers and parents, most probably have to take this opportunity to translate this to students' maximum learning such as providing and/or equipping students with proper education training. Further, especially parents play a crucial role in child development. Despite of the student's positivity and willingness in learning Mathematics, it is still not related to their level of proficiency.

**Keywords:** *correlates, arithmetic, proficiency, mathematics, instructional*

### Introduction

The teaching and learning of Mathematics concept is highly necessary in schooling. Mathematics is considered the mother of arts and sciences. It is in almost every field: measurement in fashion, angles in sports, technology and economics (Andaya, Olive Joy F. 2014). This perspective on Mathematics has gained more attention with the rapid advances of information and communication. Mathematics is not just computation but a tool for understanding structure, relationship and pattern to produce solutions for complex real-life problems. Mathematics is a necessity for people of all ages to be successful in life. Lyons IM et al. (2015) states that the numerical and mathematical skills are the critical predictors of academic success.

Learning in the current context in which students are immersed, must be in accordance with the changes and needs of our time, so that the students can develop with a critical-reflective vision and behavior in accordance with the current society. Learning is influenced by environmental factors including culture, technology and instructional practices. Learning does not occur in a vacuum. Teacher play a majority interactive role with both the learner and learning environment (Corpuz and Lucas, 2014). In mathematics concept, the teacher will always be a prime mover in the content of the lesson that requires higher order thinking skills. According to Piaget's theory of cognitive development, an individual whose age is 14, 15, or 16 years attain formal operational thought and they are able to apply mental operations not only to concrete object, but to objects, situations, ideas and concept that are not directly perceived. This potential will happen if proper learning experiences are encountered by the individual.

The nation needs a mathematically literate citizenry. But most of the graduates from high school do not have adequate mathematical comprehensive and even those other graduates from college especially those students who do not like Mathematics subject. The students must develop critical and creative thinking skills especially on the lessons that require higher-order thinking skills.

Despite the usefulness of mathematics in daily life, there are factors that adversely affect the students' ability to understand and apply Mathematics concept. A growing body of research findings indicate that demographic, individual, instructional, classroom management, and evaluation factors have an impact on the mathematical achievement of the students. Olive Joy F. Andaya, 2014.

Based on the results of the National Career Assessment Examination (NCAE) specifically in Lanao del Sur in the year 2017, majority of the high school takers who were the grade 9 students got poor performance in Mathematical Ability (MA), Science, Technology, Engineering and Math (STEM) and Accountancy, Business and Management (ABM). By this, the researcher wants to find out what is the most influential factors to the students' learning in Mathematics. Identifying factors that affect Mathematics achievement is important to effectively educate the students.

Furthermore, this study intended to examine and explore the correlation of arithmetic proficiency of the students with the identified factors such as the teacher-related factors including personality trait, teaching skills and instructional materials, student-related factors including their interest and study habits, family related factors that include parents' support and the students' profile including their age, sex, socio-economic status, and the type of their school.

### Research Questions

This study aimed to find out the factors affecting the arithmetic proficiency of the Grade 7 students among the schools of Wao, Lanao

del Sur. This was conducted in both public and private schools in the said municipality. This study sought answers to the following questions:

1. What is the profile of the respondents in terms of;
  - 1.1. age;
  - 1.2. sex;
  - 1.3. type of school; and
  - 1.4. family income?
2. What is the arithmetic proficiency level of the Grade 7 students of Wao, Lanao del Sur as of S.Y 2019-2020?
3. What are the students' ratings on the following variables that affect learning Mathematics in terms of;
  - 3.1. interest;
  - 3.2. study habits;
  - 3.3. teacher's personality traits;
  - 3.4. teaching skills;
  - 3.5. instructional materials; and
  - 3.6. parents' support?
4. Is there a significant relationship between the selected characteristic of the students and arithmetic proficiency level of the Grade 7 students?
5. Is there a significant relationship between the arithmetic proficiency level and the students' ratings on the variables affecting the learning in Mathematics?

## Methodology

### Research Design

Correlational design was used because it intends to determine if there is a significant relationship on the arithmetic proficiency level of the Grade 7 students of Wao, Lanao Del Sur, the students' profile and ratings on variables such as student-related variable; teacher-related variable and family-related variable.

### Respondents

A total of 244 grade 7 students from different secondary schools at Wao, Lanao del Sur were identified to be the respondents of this study. The name of the schools and the number of grade 7 students who were identified participants of this study were as follows: Adiong Memorial College Foundation, Inc. (40 respondents); Del Sur Good Shepherd College, Inc. (7 respondents); Kili-kili National High School (32 respondents); La Purisima High School (20 respondents); Masiricampo Abantas Memorial National High School (36 respondents); Milaya Saripada National High School (14 respondents); Mindanao

State University Wao Community High School (48 respondents); Pagalongan National High School-Main (16 respondents); Pagalongan National High School- Annex A (9 respondents); Pagalongan National High School –Annex B (8 respondents), and lastly, Panang National High School (14 respondents).

### Instrument

Survey questionnaire was used in this study. It consisted of three (3) main parts: The first part was the demographic profile of the respondents in terms of their age, gender, type of school (private or public school) and family income (upper class, upper middle class, middle class, lower middle class, or lower class) which was adapted from B.G Prasad's Socio-economic status scale (proposed updating for January 2017), Singh T. et al. *Int J Res Med Sci.* 2017 Jul; 5(7):32643267. The respondents answered it by putting a check mark () on the box that corresponds to their family income or monthly salary of their parents.

The second part was the related variables in learning Mathematics which was divided into three. These were the students-related variable, teacher-related variable and the family-related variable. The students-related variable consists of the interest and study habits of the respondent. There were seven statements under the interest and seven also for their study habits. The respondents rated themselves based on how they actually performed as learner.

The teacher-related variable consisted of personality traits, teaching skills and instructional materials. Also included were seven statements in each indicator of the teacher variable. The respondent rated each item as to extent/desire. Further, they rated the items with number scale from 1-5 and the same description with the above item. The questionnaire of these two variables (students and teacher-related variable) was adapted from Researcher-Made Questionnaire on Factors Affecting Mathematics Performance of Laboratory High School Students at Laguna State Polytechnic University A.Y. 2009-2010. The third variable was the family-related variable which consisted of parents' support, this also contained seven (7) statements that the respondents rated according to the extent/desire that their family/parents/guardian traits and behavior displayed. This was adapted from a previous study entitled Level of Influence of Parental Involvement toward the Science Curriculum (2017).

The third part was the arithmetic proficiency test. This test was adapted from California Standards Tests administered as part of

Standardized Testing and Reporting (STAR) Program under policies set by the State Board of education for grade 7. This was also aligned with K to 12 curriculum. It was a multiple-choice test that consisted of 20 items. The contents of the test were from mathematics 7. The respondents were allowed to use calculator in answering the given test.

### Procedure

The researcher sent a letter to the principal in every secondary school in Wao, Lanao del Sur to ask permission to conduct the study. The letter was noted first by the research adviser. After the request was approved, the researcher administered the survey questionnaires to the grade 7 students in their Mathematics subject schedule with at least one (1) hour time allotment. Before taking the test, the students were oriented by the researcher on the general purposes of the study and they were informed that the result of their math proficiency test will not affect their grades. After the respondents answered the questionnaire, the researcher checked the papers and recorded all the results and then categorized the scores according to the scores obtained. The scores obtained by the researcher was kept and recorded and served as data of the study.

### Data Analysis

To identify and summarize the responses of the grade 7 students among the schools of Wao, Lanao del Sur both public and private school, statistical treatment of this study was used percentages, frequency distribution, mean, standard deviation, correlation and analysis of variance (ANOVA).

First, frequency, percentage, mean and standard deviation will be used to measure the demographic profile of the respondents which included the age, gender, type of school and family income. Second, mean and standard deviation will be used to measures the ratings on the variables affecting the arithmetic proficiency of the grade 7 students. Third, frequency distribution, percentage, mean and standard deviation was used to measure the arithmetic proficiency level of the grade 7 students. Fourth, the correlation was used to measure if there is a significant relationship between the profile and the arithmetic proficiency level of the grade 7 students in Wao, Lanao del Sur.

Lastly, analysis of variance (ANOVA) was used to measure if there is a significant relationship between the arithmetic proficiency level and the ratings on the variables such interest, study habits, teacher personality traits, teaching skills, instructional materials and parents' support.

### Results and Discussion

This section presents the tallied and organized data with statistical analysis and interpretation of findings. It presents the profile of the students, related variables in learning mathematics such as students-related variable, teacher-related variable and family-related variable, and the arithmetic proficiency level of the Grade 7 students of Wao, Lanao del Sur. Also included are the significant relationship among the students' profile, related variables in learning Mathematics and the arithmetic proficiency level of the students based on the tables presented.

One of the objectives of the study was to determine the students' profile in terms of their age, sex, type of school and family income.

#### Students' Profile

Table 1. *Students' Profile*

Variables	Frequency (f)	Percentage (%)
Age		
12	84	34.4
13	114	46.7
14	42	17.2
15	2	0.8
Sex		
Female	138	56.6
Male	106	43.4
Type of School		
Public	177	72.5
Private	67	27.5
Family Income		
Low Class	23	9.4
Low Middle Class	74	30.3
Middle Class	89	36.5
Upper Middle Class	38	15.6
Upper Class	20	8.2
Total	244	100

The table 1 shows the profile of the students in terms of their age, sex, type of school and family income. In terms of age, 114 or 46.6% of students were 13 years of age, it is followed by 12 years of age at 84 or 34.4%, 14 years of age at 42 or 17.2% and 15 years of age at 2 or 0.8%. Determining the age of the learners is an important matter in terms of learning and teaching. A teacher, must identify the level of their thinking skills because in every stage of human development, there is a cognitive process or changes in mental ability appropriately attached to it. Also, age is an important characteristic in understanding the views of students about the particular problems. It indicates the level of maturity of individuals. There were more female grade 7 students than boys with a total of 138 or 56.6% and the boys were 106 or 43.4%. There were 177 or 72.5% respondents who came from public schools while 67 or 27.5% came from private schools.

The table also shows that eighty-nine (89) or 36.5% of the students have family income of Php11,000 to 20,000/month or “middle class”. There were 38 or 15.6% of the respondents who rated their family income as an Upper Middle Class which was in the bracket of (Php 30,000-40,000/monthly) and the Upper Class obtained only 20 out 244 respondents or 8.2% which was in the bracket of (Php 50,000-60,000/monthly). There were more students who rated their family income as Low Middle Class which obtained 74 or 30.3% which was in (Php6,00010,000/monthly) and the Low Class obtained was 23 or 9.4% which was in the bracket of (Php 1,000-5,000/monthly). This status of family income was also observed within the community since majority of the parents were farmers. The family income may contribute to students’ success since the higher the income of the family, the bigger financial support the students will receive.

The other study represented how students from families with high income were having best performance than low-income family students. The impact of the income can be shown in the progress of student’s learning. With this, schools and teachers must have a background about the student’s family income because there are learning areas that demand some homework and assignment with many requirements. Not all the students can buy those materials that are need for their project and not all the students can access the internet when the teacher instructed them to search certain topics. Teachers must be careful with this factor when evaluating the students (Sean, 2013).

The second problem of the study focused on the arithmetic proficiency level of the grade 7 students of Wao, Lanao del Sur. The students must obtain the score of at least 9 items among the 20 items to be considered as good performance in mathematics.

### Arithmetic Proficiency Level of the Students

Table 2. Arithmetic Proficiency Level of the Students

Score Range	Description	Frequency (f)	Percentage (%)
17-20	Advanced	0	0
13-16	Proficient	3	1.2
9-12	Approaching	105	43
5-8	Developing	118	48.4
0-4	Beginning	18	7.5
Total		244	100
Overall Mean = 7.77 (Developing)		SD= 2.18	

The table shows the Arithmetic Proficiency Test result taken by the grade 7 students of Wao, Lanao del Sur as the respondents of the study. Generally, the respondents’ arithmetic proficiency level is still at “developing” ( $\bar{x} = 7.77$ ;  $SD = 2.19$ ). In detail, it shows that the highest score ranges from 5 to 8 which obtained the frequency of one hundred eighteen (118) or 48.4% which is described as developing. The students who got score range from 9 to 12 obtained the frequency of 105 or 43% which is described as approaching proficiency which implies as moderate or average level in arithmetic proficiency. Only three (3) out of 244 students who got the score range of 13 to 16 described as proficient which implies as “high level” in arithmetic proficiency and 18 or 7.5% of the students got the score range from 0-4 which is described as beginning which can be interpreted as very low level in arithmetic proficiency.

This means that students have a low level of arithmetic proficiency. They have poor understanding on how to apply and perform mathematical operations. With this, students must be given an opportunity to build their confidence in solving

Mathematics problems, encourage questioning and make space for their curiosity and emphasize their conceptual understanding over procedure. Teacher must provide authentic problems that increase students’ drive to engage with math and share positive attitudes about math. So that, students will be given a chance to improve their performance in Mathematics.

To achieve the goal of Mathematics proficiency for all, many components of the educational system must be changed. In particular, instruction, instructional materials, assessments, teacher education and professional development, and the broader educational system must work together to ensure that students become engaged with Mathematics throughout their elementary and middle school years (National Research Council, 2002)

Tables from 3 to 8 reveal the students’ ratings on the three variables in learning Mathematics such as the students-related variable, teacher-related variable and family-related variable.

### Students' Ratings on their Interest in Learning Mathematics

The students' ratings on their interest in learning Mathematics subject is shown in the table on the next page. The students' level of interest was based on the following statements such as level of preparation for Mathematics subject, attention to teacher's lecture, active participation in class discussion, desire in getting good grades, finding strategic method, appreciation in solving Mathematics problems, and excitement level during class hour.

Table 3. *Students' Ratings on their Interest in Learning Mathematics*

Statement	Mean	SD	Description
1. I make myself prepared for the math subject.	3.7	0.9	Often
2. I listen attentively to the lecture of my math teacher.	3.7	0.9	Often
3. I actively participate in the discussion, answering exercises and/or clarifying things, I did not understand.	3.6	0.86	Often
4. I want to get good grades on tests, quizzes, 5. assignments and projects.	3.7	0.87	Often
6. I am looking for another method or strategy which is easiest to me.	3.7	0.87	Often
7. I love solving mathematics problem.	3.6	0.82	Often
8. I am excited during mathematics class hour.	3.7	0.87	Often
Overall Mean	3.7	0.87	Often

Legend: 4.21-5.00, Always; 3.41-4.20, Often; 2.61-3.40, Sometimes; 1.81-2.60, Rarely; 1.00-1.80, Never

Generally, students rated their interest in learning Mathematics as "often" ( $\bar{x}=3.7$ ;  $SD=0.87$ ). This means that the students are willing to learn Mathematics subject. This result implies also a high level of positive attitude towards learning

Mathematics. Most notable statements with "often" ratings are: (a) item no. 1 – "I make myself prepared for the math subject."; (b) item no. 2 – "I listen attentively to the lecture of my math teacher."; (c) item no. 4 – "I want to get good grades on tests, quizzes, assignments and projects"; (d). item no. 5 – "I am looking for another method or strategy which is easiest to me."; and item no. 7 – "I am excited during mathematics class hour." Considering the above-mentioned findings, it shows that students actively participate in the discussion especially when experiencing difficulty in understanding the topic. They are eager to learn Mathematics topics and do whatever it takes to get high grades. In such case, the challenge is on the part of the teacher on how to maximize or take advantage of this "higher" interest/enthusiasm.

Researchers had previously hypothesized that the brain's reward centers might drive the link between attitude and achievement perhaps children with better attitudes were better performance in math because they found it more rewarding or motivating. If the students have a strong interest and self-perceived ability in math, it results in enhanced memory and more efficient engagement of the brain's problem-solving capacities" (Menon, 2018).

The table 4 as shown on the next page, shows the students' ratings on study habits. Overall, the students rated their study habits as "often" ( $\bar{x}=3.7$ ;  $SD=0.83$ ). This means that grade 7 students' study habit is in high positivity towards learning the subject. All the statements mentioned are rated by the students as "often". It implies that students do their assignment regularly, exert more efforts when there's a difficulty, spend their vacant time in studying a lesson, study those lessons they missed out due to absences, prepared themselves for quizzes and exams, study harder to improve their performance when they got a low grade, spend less time with friends to concentrate more on study.

Overall, the students' study habits are qualities of a good learner. Students were responsible in their studies. Usually, study habits influence the academic performance of the students.

Table 4. *Students' Ratings on Study Habits*

Statement	Mean	SD	Description
1. I do my assignments regularly.	3.7	0.83	Often
2. I exert more effort when I do difficult assignments.	3.7	0.85	Often
3. I spend my vacant time in doing assignments or studying my lessons	3.6	0.81	Often
4. I study the lessons I missed if I was absent from the class.	3.7	0.83	Often
5. I study and prepared for quizzes and tests.	3.7	0.85	Often
6. I study harder to improve my performance when I get low grades.	3.7	0.83	Often
7. I spend less time with my friends during school days to concentrate more on my studies	3.7	0.83	Often
Overall Mean	3.7	0.83	Often

Legend: 4.21-5.00, Always; 3.41-4.20, Often; 2.61-3.40, Sometimes; 1.81-2.60, Rarely; 1.00-1.80, Never

Teachers and school guidance counselors should collaboratively guide students on how to develop good study habits; thereby enhancing their academic success. Likewise, study habit is also an important factor of the students' academic performance (Ebele & Olofu, 2017).

The other findings also investigated the influence of study habits on the student's performance. It showed that the study habits had a positive direct relationship on the students' performance. This also encouraged the teachers and parents to motivate the students to engage in productive study habits (Nonis & Hudson, 2010).

Table 5. Students' Ratings on Personality as Perceived by their Mathematics Teachers

Statement	Mean	SD	Description
My mathematics teacher...			
1. has a good relationship with the students and teachers.	3.7	0.84	Often
2. shows smartness, confidence and firmness in making decisions.	3.7	0.83	Often
3. imposes proper discipline and is not lenient in following the prescribed rules	3.7	0.82	Often
4. has an appealing personality and opinions and is worthy of praise.	3.8	0.82	Often
5. is open to suggestions and opinions and is worthy of praise.	3.8	0.83	Often
6. he/she is approachable and has a good looking.	3.8	0.87	Often
7. shows professionalism towards his/her colleagues and to the students	3.8	0.84	Often
Overall Mean	3.8	0.84	Often

Legend: 4.21-5.00, Always; 3.41-4.20, Often; 2.61-3.40, Sometimes; 1.81-2.60, Rarely; 1.00-1.80, Never

The table 5 shows the overall ratings of the students on teacher's personality traits ( $\bar{x}=3.8$ ;  $SD=0.84$ ) which is described as "often". This means that

the students view their teachers as professionals with good demeanor and relationship towards them. Teachers' personality should not be a hindrance but as a springboard or extra "tools" in students' learning. Further, most commonly rated as "often" ( $\bar{x}=3.8$ ) are; (a) item no. 4 "has an appealing personality and opinions and is worthy of praise"; item no. 5 "is open to suggestion and opinions and is worthy of praise"; (c) item no. 6 "he/she is approachable and has a good looking"; and (d) item no. 7 "shows professionalism towards his/her colleagues and to the students". The data imply that teachers and the students have a good relationship as learner and educator. Students feels that they belong and equal to the perspective of their teacher. This good relationship may affect the learning progress of the students by showing them positive pleasantry. In addition to this, teacher's ability to inspire the students through his/her personality traits is a great component of the student's success. It can also change the student's behavior.

Teacher's personality is a key component or aspect of professional attitude of teacher having significant impact upon the student's academics. The study also stated that students are considered keen observers, that is, they observe the teacher from all aspects. Some teachers have such type of personality which motivates the students to adopt his/her personality similarly. Some teachers have such type of personality which remains the topic of comedy for students. It is necessary for teachers to adopt an impressive personality to motivate the students towards its adaptation in academics (Khan, et al., 2016).

### Students' Ratings on Teaching Skills

Table 6. Students' Ratings on Teaching Skills

Statement	Mean	SD	Description
My mathematics teacher...			
1. explain the objectives of the lesson clearly at the start of each period	3.7	0.86	Often
2. has mastery of the subject matter.	3.8	0.83	Often
3. is organized in presenting subject matters by systematically following course outline.	3.7	0.85	Often
4. is updated with present trends, relevant to the subject matter.	3.7	0.82	Often
5. uses various strategies, teaching aids/devices and techniques in presenting the lesson	3.6	0.82	Often
6. relate the subject matter into real life situations.	3.6	0.85	Often
7. give a short recap/review before proceeding to the new lesson.	3.5	0.86	Often
Overall	3.6	0.84	Often

Legend: 4.21-5.00, Always; 3.41-4.20, Often; 2.61-3.40, Sometimes; 1.81-2.60, Rarely; 1.00-1.80, Never

The table 6 shows the ratings of the students on the teaching skills as "often" with an over-all ( $\bar{x}=3.6$ ;  $SD=0.8$ ). This implies that Mathematics teachers performed their tasks in teaching the subject. Most notable statements with "often" ratings were as follows: (a) item no. 2 – "has mastery of the subject matter." with ( $\bar{x}=3.8$ ;  $SD=0.83$ ). This implies that Mathematics teachers knew the lesson/topics very well. This is crucial since mastery of the lesson means the teacher is able to present the topic correctly. Thus, the teacher can appropriately guide the students in their learning; (b) item no. 1 – "explain the objectives of the lesson clearly at the start of each period.", with ( $\bar{x}=3.7$ ;  $SD=0.86$ ).

This means that teachers discuss the objectives of the lesson to the students. Allowing the students to understand the objective before the discussion is important in order for them to be aware on what must be learned; (c) item no. 3 – "is organized in presenting subject matters by systematically following the course outline.", rated as "often" ( $\bar{x}=3.7$ ;  $SD=0.85$ ). This means that students appreciate their teachers' good strategy in presenting the topics; and finally, item no. – 4 "is updated with present trends, relevant to the subject matter.", with ( $\bar{x}=3.7$ ;  $SD=0.82$ ). This means teachers integrate new trends on the lesson.

Teaching skills were only matter in the performance of the teacher while teaching a lesson because there are many strategies that may be used by the teacher depends on the subject matter. Teachers always serve what is best for the learners, that is why knowing your students is necessary. For instance, knowing the background of your students like their profile (see table no. 1), the interest of students in learning the subject (table no. 3) and the study habits of the student (table no. 4). With those, teachers were able to know and understand what is the suited strategy to that particular learner.

A previous study presents the relationship between teaching and learning. It reveals that the greatest student gains on a performance assessment consisting of tasks that require high levels of mathematical thinking and reasoning were related to the use of instructional tasks that engaged students in the “doing of mathematics” or the use of procedures with connections to meaning. In addition, student performance gains were greater for those sites whose tasks were both set up and implemented to the use of multiple solutions strategies, multiple representations and explanations (Stein & Lane, 2006).

### Students’ Ratings on Instructional Materials

Table 7. *Students’ Ratings on Instructional Materials*

<i>Statement</i>	<i>Mean</i>	<i>SD</i>	<i>Description</i>
<i>My mathematics teacher used...</i>			
1. chalk and board in explaining the lessons.	3.4	0.83	Sometimes
2. workbooks/textbooks.	3.4	0.87	Sometimes
3. PowerPoint presentations (visual aids).	3.4	0.97	Sometimes
4. articles.	3.4	0.98	Sometimes
5. materials for project development.	3.3	1.06	Sometimes
6. supplement books/resources.	3.2	1.07	Sometimes
7. materials for math games/activities.	3.3	1.08	Sometimes
<b>Overall</b>	<b>3.3</b>	<b>0.98</b>	<b>Sometimes</b>

Legend: 4.21-5.00, Always; 3.41-4.20, Often; 2.61-3.40, Sometimes; 1.81-2.60, Rarely; 1.00-1.80, Never

The table 7 shows the ratings of the students on instructional materials used by the teacher in teaching Mathematics. It shows an overall ( $\bar{x}=3.3$ ;  $SD=0.98$ ) which is described as “sometimes”. This implies that those instructional materials were presented in teaching the subject. Teachers occasionally used these instructional materials in demonstrating a lesson in order to achieve the learning competences. Furthermore, all of the instructional materials used were described as “sometimes” such as chalk and chalkboard in explaining the lesson ( $\bar{x}=3.4$ ;  $SD=0.84$ ), workbook/textbooks ( $\bar{x}=3.4$ ;  $SD=0.87$ ), power point presentation/visual aids ( $\bar{x}=3.4$ ;  $SD=0.97$ ), materials for project developments ( $\bar{x}=3.3$ ;  $SD=1.06$ ), supplement books/resources ( $\bar{x}=3.2$ ;  $SD=1.07$ ) and materials for game/learning activities ( $\bar{x}=3.3$ ;  $SD=1.08$ ).

However, the used of instructional materials (IMs) such as power point presentation (PPT), projectors, supplement books etc. depends on its availability in the school. There’s an instance that the teacher only used these instructional materials when available in the school specifically those in remote area. The other schools still used the previous books due to unavailability of the K-12 prescribed books.

It is a common practiced that some of the instructional materials will be used when necessary to the particular lesson. There are lessons that require the teacher to use an equipment to make the lesson understandable. This will also help the teacher and students in actual learning. In teaching Mathematics, there are materials intended for learning activities/ math games such as ruler, protractors and other equipment that are needed for actual measurements. These instructional materials help the students to learn the concept of the lesson into the real-life situation. Eventually, teachers are responsible in making the learning and teaching process as meaningful and progressive in achieving the learning competencies expected from the subject.

The study revealed that students taught with instructional materials performed significantly better than those taught without instructional materials and that the use of instructional materials generally improve students’ understanding of concepts and led to high academic achievement (Adalikwu & Iorkpilgh, 2013).

### Students’ Ratings on Parent’s Support

Table 8. *Students’ Ratings on Parent’s Support*

<i>Statement</i>	<i>Mean</i>	<i>SD</i>	<i>Description</i>
<i>My parents/guardian...</i>			
1. do monitor my learning progress in the school.	3.7	0.98	Often
2. do encouragement and nurture me to be creative and be responsible in my study	3.1	1.04	Sometimes
3. provide my personal needs and school’s necessities.	3.2	1.13	Sometimes
4. show extreme support in my extra-curricular activities.	2.7	0.79	Sometimes
5. do high expectations from me.	2.5	0.78	Rarely
6. do constant check up on my school activities such as exams, homework and classroom activities.	2.2	1.18	Rarely
7. always do attend to the school meetings such as parents-teachers meeting etc.	2.1	0.79	Rarely
<b>Overall Mean</b>	<b>2.8</b>	<b>0.96</b>	<b>Sometimes</b>

Legend: 4.21-5.00, Always; 3.41-4.20, Often; 2.61-3.40, Sometimes; 1.81-2.60, Rarely; 1.00-1.80, Never

The table 8 shows the ratings of the students on parents’ supports with an overall mean of 2.8, SD of 0.96) and described as “sometimes”. Parents only at times support the schooling of their children. Some of the parents’ support did not satisfy the students’ perspective which is indicated by the students rating as “rarely”. Specifically, on the following items; (a) item no. 5 “do high

expectations from me” ( $\bar{x}=2.5$ ;  $SD=0.78$ ). This means that the parents do not expect more ability from their children; (b) item no. 6 “do constant check up on my school activities such as exams, homework and classroom activities.” ( $\bar{x}=2.2$ ;  $SD=1.18$ ). This means that parents hardly check the specific learning activities of the students such as exams, homework and classroom activities; and (c) item no. 7 “always do attend to the school meetings such as parents-teacher meeting etc.” ( $\bar{x}=2.1$ ;  $SD=0.79$ ). This implies that parents almost do not attend school meetings such as Parents-Teachers-Community Association etc.

Attendance to these kinds of meetings/activities would help in many ways such as these: (a) give updates on activities of the school & payments of school fees. (b) make students feel their importance and care; and most importantly (c) a follow through on students’ performances. Parents’ role is vital in every child’s education. This can be through involvement in several areas including parenting, learning at home, communication, volunteering, decision-making, and community collaboration.

In other studies, parental involvement was recognized as being of significance in the education of children. There remains great diversity concerning parental involvement. Some factors exist over which schools have little control and these factors have become of great interest to educational decision makers (Feurstein, et al. 2017). Another study indicated that great schools have effective partnership with parents, therefore, school, family, and community partnerships are critical component in educating the students. Parental involvement provides an opportunity for schools to enrich current programs by bringing parents into the educational process (Durisic & Bunijevac, 2017).

### Correlates of Students’ Arithmetic Proficiency Level and the Students’ Profile

Table 9. *Correlates of Students’ Arithmetic Proficiency Level and the Students’ Profile*

<i>Dependent Variable</i>	<i>Independent Variable</i>	<i>r value</i>	<i>p value</i>	<i>Interpretation</i>
Arithmetic Proficiency Level	Sex	-0.044	0.492	Not Significant
	Type	-0.103	0.110	Not Significant
	Family Income	-0.035	0.590	Not Significant
	Age	-0.011	0.869	Not Significant

\* Significant for p values with less than .05

Table 9 shows the relationship between students’ arithmetic proficiency level and their profile. Further, it reveals that there is no significant relationship between the arithmetic proficiency level of the students and their profile in terms of their age, sex, type of school and family income as reflected in the r and p values of 0.044 and 0.492, -0.103 and 0.110, -0.035 and 0.590, -0.011 and 0.869, respectively. These relationships are not significant since the p values are greater than 0.05. It implies that these variables are not predictive of students’ performance in arithmetic proficiency.

A study examined the demographic profiles of the students in terms of gender, ethnicity and parent income level associated with academic performance of the students. It reveals that the gender does not relate to the students’ performance while the parent’s income level is significantly related to the academic performance of the students (Slaughter, 2007).

### Correlates of Students’ Arithmetic Proficiency Level and the Related Variables in Learning Mathematics

Table 10 . *Correlates of Students’ Arithmetic Proficiency Level and the Related Variables in Learning Mathematics*

<i>Independent Variable</i>	<i>Dependent Variable</i>	<i>r</i>	<i>p</i>	<i>Interpretation</i>
Arithmetic Proficiency Level	Interest	0.071	0.991	Not Significant
	Study Habits	0.182	0.336	Not Significant
	Teacher's Personality Traits	0.239	0.052	Not Significant
	Teaching Skills	0.191	0.271	Not Significant
	Instructional Materials	0.201	0.201	Not Significant
	Parents' support	0.501	0.000	Significant

\* Significant for p values with less than .05

The table 10 shows the relationship between the students’ arithmetic proficiency level and the variables in learning Mathematics such as the students’ interest, study habits, teacher’s personality traits, teaching skills, instructional materials, and the parents’ support. It reveals that there is no significant relationship between the arithmetic proficiency level and the student’s interest, study habits, teacher’s personality traits, teaching skills and instructional materials as reflected in the r and p values of 0.071 and 0.991, 0.182 and 0.336, 0.239 and 0.052, 0.191 and 0.271, 0.201 and 0.201, respectively.

However, the study revealed that there is significant relationship between the arithmetic proficiency level and the parents’ support ( $r = .501$ ,  $p = .000$ ). It implies that parents’ support was identified as one of the factors that affect the arithmetic proficiency level of the students specifically, on the item no. 1 “Do monitor my learning progress in the school” and the item no. 4 “Show extreme support in my extra-curricular activities”. In other words, parents’ support contributes to the students’ performance. The more the parents’ support, the better the students perform in the school. Parents’ support is also an important role in the academic performance of the students. Students need more attention from the parents.

Generally, the students' interest, study habits, teacher's personality traits, teaching skills and instructional materials (IMs) have no significant relationship with the arithmetic proficiency level of the students. However, there is a significant relationship between parents' support and the arithmetic proficiency level of the students.

Findings from the previous study demonstrated that increased parent involvement, defined as the teacher's perception of the positive attitude parents have toward their child's education, teacher, and school was significantly related to increased academic performance (Topor, et al. 2011).

## Conclusions

Based on the result of the survey, the researcher came up with this conclusion:

The students of Wao, Lanao del Sur have poor arithmetic proficiency and lack basic foundation of Mathematics principles. Their positive attitude and enthusiasm on Mathematics were, unfortunately, not translated to learning. Finally, parent's role can significantly contribute to student's learning.

In the light of findings and conclusion, the following are recommended:

Curriculum planners are encouraged to do away with the ages and the gender stereotype in considering students' mathematical competence.

Teachers should ensure that students must be given equal chance of proving themselves according to their output such as considering students' family background in assessing the student's capability. The teacher may adjust in requiring the students to submit a project with cost when it is not necessary.

Teachers are encouraged to perform diagnostic test on students' Mathematics proficiency and give feedback to the students every beginning and ending of the school year.

The schools should conduct trainings for teachers.

The schools should develop a program where parents will be encouraged to be involved in their children's education.

Further researchers may conduct a case study on how proper parenting or proper parents' involvement affect the academic success of the students.

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