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ASSESSING THE MATHEMATICS PERFORMANCE OF GRADE 5 PUPILS IN JOSE T. UNSON MEMORIAL ELEMENTARY SCHOOL

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ABSTRACT

This study aimed assessed the Mathematics performance of pupils in Jose T. Unson Memorial Elementary School Balayan, Batangas. This study was composed of fifty (50) grade 5 pupils utilizing descriptive quantitative method such as descriptive evaluative and descriptive comparative. The following finding were drawn from the study. The respondents moderately agreed to the extent that they perceived Mathematics as a subject. They professed that Mathematics was primarily a formal way of representing the real world. Pupils have fair performance in board work activities. They found it hard to solve problems or equations independently. Meanwhile, the respondents have good performance in group dynamics. They showed willingness to learn new things with the group members and they participated well in the group they belong. There is a significant relationship between the assessment of the respondents on Mathematics as a Subject and their performance in the subject. The action plan was made by the researcher.

Keywords: *mathematics, performance, board work, group dynamics*

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CONTEXT AND RATIONALE

Mathematical abilities can be found in the ability of a person to recall facts, concepts or principles, (Bloom's Taxonomy as cited by Morton, 2020). Likewise, it is also something that defines someone's comprehension ability to translate previously learned information, or to grasp meaning, intent, or relationships. Moreover, it involves application ability to apply previously acquired knowledge or information to a new situation and analysis ability to break material down into its components so that organizational structure may be understood. Similarly, it also pertains to the synthesis ability to analyze the parts and put them together to form a whole. Finally it also refers to evaluation ability to make judgments based on evidence and determine the value of material based on definite criteria.

It is generally agreed that Mathematics must be taught during basic education but this does not mean that Mathematics education itself is not a subject of debate. Both national and international evaluations show that on completion of basic education, many pupils' mathematics knowledge and competencies fall short of the expected level. (UNESCO, 2022).

It is also considered that Mathematics is the mother of all learning in both arts and sciences. Mathematics is not just a computation, but a tool for understanding structures, relationships, and patterns to produce solutions for complex real – life problems. It is a necessity for people of all ages to be successful in life. (Researchers World, 2023).

Truly, in the Philippine context, education remains a top priority. However, in implementing academic curricular changes specifically in Mathematics, many factors need to be considered. For

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one, there is a need for carefully planned programs of exchange in the curriculum. Also, there must be an examination of the place of formative process and summative evaluation of curriculum programs and of the practical materials for the actual process of installing new curricula in schools. (Capate and Lapinid, 2022).

The expected outcome of quality mathematics education for all is not self- evident and is the subject of continuing debate. To consider this situation, the approaches to mathematics and teaching methods this matter that often make quality mathematics education for all problematic. The challenge to be taken up first is that access to basic education. Millennium Development Goal Number 3, namely access to education for all young people by 2022, is far for being achieved. Today 75 million children are still not enrolled in primary school. It has been an acknowledged fact that mathematics is a difficult subject for the pupils to understand and learn. The result of National Achievement Test of Grade 6 pupils that was taken year 2014 was reviewed. The result showed that the pupils got low percentage in Mathematics next to Science. Not only in this national evaluation that Jose T. Unson Memorial Elementary School got low performance. It can be also seen in the results of the annual MTAP Competition as far as the intermediate pupils are concerned. Teacher–coaches find it hard to analyze the problem in understanding mathematics though rigid training were being implemented.

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This raised problem regarding the performances of the pupils in Mathematics led the researcher to conduct a research survey about the perceived attitudes, some study habits, board work and group dynamics of the pupils regarding their performances in mathematics.

INNOVATION, INTERVENTION AND STRATEGY

The proposed innovation is in the form of an "Action Plan" containing the ways on how to enhance the mathematical skills of the pupils.

LITERATURE REVIEW

Muray (2021) in her article mentioned a learning strategy for the teacher to follow in teaching Mathematics. According to her, since problems are inevitable the teacher must share these with pupils. She should teach pupils to distinguish relevant from irrelevant information within the problem.

Similarly, this is related to the statement of Ball (2020) that learning strategy does not seek to conform to an 'official' view on the teaching of mathematics, whatever that may be. The power to learn rests with the learner. Teaching has a subordinate role. Teaching and learning are cooperative activities.

It is somewhat like with Florez and Mukherjee (2020) statement that learning strategy like sharing experiences about working with pupils on research projects yielded that instead of giving

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them problems from our own projects to work, open problems from journals were used. Using these resources in working with several undergraduate and some graduate pupils gave them a taste of their first research experience.

At different times and in different cultures and countries, mathematics education has attempted to achieve a variety of different objectives. It is in the concept of Sriraman (2021). states that It included the learning strategy of basic numeracy skills to all pupils; the teaching of practical mathematics such as arithmetic, elementary algebra, plane and solid geometry, trigonometry to most pupils, to equip them to follow a trade or craft; the teaching of abstract mathematical concepts such as set and function at an early age; the teaching of selected areas of mathematics such as Euclidean geometry as an example of an axiomatic system and a model of deductive reasoning; the teaching of selected areas of mathematics such as calculus as an example of the intellectual achievements of the modern world; the teaching of advanced mathematics to those pupils who wish to follow a career in Science, Technology, Engineering, and Mathematics (STEM) fields; and the teaching of heuristics and other problem-solving strategies to solve non-routine problems.

One of the strongest results in recent research is that the most important feature in effective teaching is giving pupils "opportunity to learn". Teachers can set expectations, time, and kind of tasks, questions, acceptable answers, and type of discussions that will influence pupils' opportunity to learn. This must involve both skill efficiency and conceptual understanding. Two of the most important features of teaching in the promotion of conceptual understanding are attending explicitly

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to concepts and allowing pupils to struggle with important mathematics. Both of these features have been confirmed through a wide variety of studies. Explicit attention to concepts involves making connections between facts, procedures and ideas. These connections can be made through explanation of the meaning of a procedure, questions comparing strategies and solutions of problems, noticing how one problem is a special case of another, reminding pupils of the main point, discussing how lessons connect, and so on. Deliberate, productive struggle with mathematical ideas refers to the fact that when pupils exert effort with important mathematical ideas, even if this struggle initially involves confusion and errors, the end result is greater learning. This has been shown to be true whether the struggle is due to challenging, well-implemented teaching, or due to faulty teaching the pupils based on the concepts of Hiebert and Grouws (2023).

Formative assessment is both the best and cheapest way to boost student achievement, student engagement, learning strategy and teacher professional satisfaction. Results surpass those of reducing class size or increasing teachers' content knowledge. Effective assessment is based on clarifying what pupils should know, creating appropriate activities to obtain the evidence needed, giving good feedback, encouraging pupils to take control of their learning and letting pupils be resources for one another. Homework which leads pupils to practice past lessons or prepare future lessons are more effective than those going over today's lesson. pupils benefit from feedback. pupils with learning disabilities or low motivation may profit from rewards. For younger children, homework

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helps simple skills, but not broader measures of achievement (Institute of Education Sciences, ed. (2022).

According to Raudenbush, (2022) pupils with genuine difficulties (unrelated to motivation or past instruction) struggle with basic facts, answer impulsively, struggle with mental representations, have poor number sense and have poor short-term memory. Learning strategy that have been found productive for helping such pupils include peer-assisted learning, explicit teaching with visual aids, instruction informed by formative assessment and encouraging pupils to think aloud.

RESEARCH QUESTIONS

This study would like to assess the mathematics performance of the intermediate pupils in Mathematics. The result could serve as input to a plan of action in strengthening the performance of grade 5 pupils in Mathematics.

Specifically, it seeks answer to the following questions:

1. What is the perceptions of the respondents on Mathematics as a subject?

2. How do pupils assess their performance in Mathematics in terms of:

2.1. board work;

2.2. group dynamics?

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3. Is there a significant relationship between the assessment of the respondents on Mathematics as a subject and on their Mathematics performance?

4. What plan of action may be crafted based on the results of the study?

SCOPE AND LIMITATION

The study aimed to assess the Mathematics performance of grade 5 pupils. In relation with this study, the researcher also determined the significant relationships of the performance in Mathematics and Mathematics as a subject in Jose T. Unson Memorial Elementary School during school year 2022-2023.

RESEARCH METHODOLOGY

A. Participants and Other Sources of Data and Information/ Sampling

Research Method Used

This study employed the descriptive method of research. A descriptive study describes and interprets what is concerned with the conditions or relationships that exist, opinions that are held, processes that are going on, effects that are evident or trends that are developing, as this focuses on bullying and personality and performance of the respondents.

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According to Gay, et al., (2016) descriptive research method is significant as surveys abound in educational research and are utilized by many researchers as an investigative tool to collect data in order to address educational questions. Also, this method applies prominently because the present study aimed to determine the relationship and differences between among the variables covered.

Respondents of the Study

In this study, fifty (50) grade 5 pupils of the locale of the study were the respondents. The research was conducted during the school year 2022-2023.

Research Instrument

To achieve the goal of this research study, a researcher-made questionnaire was used, the questionnaire was the main instrument used in the study. The researcher used the Likert Scale to assess the responses of the respondents.

DATA COLLECTION

To carry out the administration of the survey-questionnaire, the researcher selected the desired number of respondents and gathered the information and data regarding the research topic. Then, the letter of request was forwarded to the school head's office. Upon the approval, the researcher distributed the questionnaires to the respondents. The researcher as grade 5

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Mathematics teacher in the locale of the study explained well the questionnaire to the grade 5 pupils in Filipino for them to understand the statements written in the questionnaire The questionnaires were retrieved immediately after the pupils answer the questionnaires and the data gathered were tallied, organized, tabulated, analyzed and interpreted utilizing the appropriate statistical techniques. The retrieved questionnaires were one hundred percent (100%) of the total respondents used in this study.

Data Analysis

The data were analyzed based on the research questions provided by the researcher. The researcher consulted an statistician to check the computations made by the researcher.

Statistical Treatment of Data

The following statistical tools were utilized in this study:

1. To determine the perceptions of the respondents on Mathematics as a subject, weighted mean was utilized.
2. To determine the challenges on the mathematics performance of pupils, weighted mean was applied.

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3. To determine the significant relationship between the mathematics performance of pupils and the challenges encountered on it, Pearson r was used.

Ethical Issues

According to Jones (2014), ethical consideration abounds within the data collection process. The researcher considered any ethical issues affecting the respondents. All the pertinent information regarding the subject was treated with confidentiality. Authors and sources in the related literature and studies were carefully cited. Most importantly, the data presented were derived from the actual results of the survey personally conducted by the researcher.

DISCUSSION OF RESULTS AND RECOMMENDATION

1. Respondents' Perception in Mathematics as subject

Table 1
Perception in Mathematics as a subject

Items	Weighted Mean	Verbal Interpretation	Rank
1. Mathematics is primarily an abstract subject.	3.28	Moderately Agree	3
2. Mathematics is primarily a formal way of representing the real world.	4.27	Agree	1

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3. Mathematics is primarily a practical and structured guide for addressing real situations.	4.11	Agree	2
4. Mathematics helps me to understand and to solve complex problems.	2.16	Disagree	9
5. Mathematics must be taught using more than one representation.	2.13	Disagree	10
6. Mathematics should be learned as a set of algorithms or rules that cover all possibilities.	2.18	Disagree	8
7. Mathematics is important to everyone's life.	2.26	Disagree	6
8. Mathematical formulas express meaningful relationship among measurable things or amounts.	3.22	Moderately Agree	4
9. Mathematics challenges me to improve myself in problem-solving situation.	2.25	Disagree	7
10. Mathematics ability is mostly genetic.	2.27	Disagree	5
Composite Mean	**2.81**	**Moderately Agree**	

Legend: WM=Weighted Mean, VI=Verbal Interpretation,:1.00-1.49 Strongly Disagree, 1.50-2.49 Disagree, 2.50-3.49 Moderately Agree, 3.50- 4.00 , Agree , 4.01-500- Strongly Agree

Table 1 displays the perception of the Grade 5 pupils in Mathematics as subject. The respondents moderately agree to the perception in Mathematics as subject as evidenced by composite mean of 2.81. The table also showed that the pupils strongly agreed that Mathematics is primarily a formal way of representing the real world as revealed by the weighted mean of 4.27.

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The respondents disagreed that Mathematics must be taught using more than one representation with a weighted mean of 2.13 and the least favored in rank.

2. Assesssment of the respondents on their Performance in Mathematics

Table 2
Board work Performance of Pupils in Mathematics

Items	Weighted Mean	Verbal Interpretation	Rank
1. Participates in the activity/class through board work	2.09	Fair	9
2. Gives attention to the activity	2.13	Fair	8
3.Observes progression of concepts and skills	2.17	Fair	5
4. Shows willingness to learn during board work	2.15	Fair	6
5. Expresses that this sort of activity is helpful	3.10	Good	1
6.Solves problems/equations independently	1.35	Poor	10
7. Enjoys every Mathematics activity.	2.21	Fair	4
8. Predicts what would be the reasonable answer in the problem	2.11	Fair	7
9. Studies the given activity very well.	2.27	Fair	3
10. Recalls some past activities to understand the present one.	2.35	Fair	2
Composite Mean	**2.19**	**Fair**	

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Legend: WM=Weighted Mean, VI=Verbal Interpretation,:1.00-1.49 Very Poor, 1.50-2.49 Poor, 2.50-3.49 Fair, 3.50- 4.00 Good, 4.01-500-Very Good

As disclosed in Table 2, the Grade 5 pupils have a Fair performance in board work as revealed in a composite mean of 2.19. The respondents also expressed that board work is a helpful activity with a weighted mean of 3.10 and interpreted as Good in performance and the most favored in rank. The respondents have Poor performance in solving problems/equations independently with a weighted mean of 1.35 and the least favored in rank.

Table 3
Group Dynamics Performance of Pupils in Mathematics

Items	Weighted Mean	Verbal Interpretation	Rank
1. Shows willingness to learn new things with the group members	4.27	Outstanding	1
2. Participates well in the group	4.25	Outstanding	2
3. Volunteers to become group leader	2.16	Fair	10
4. Manifests willingness to help others in the group	4.21	Outstanding	3
5. Makes sure that everybody is enjoined in the activity	3.11	Very Good	5
6. Explores ideas and shares to the group members	2.21	Fair	9
7. Analyzes the given activity carefully with group members.	2.27	Fair	8

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8. Solves problems using one way or another for better understanding.	2.34	Fair	6
9. Relates the present activity to the past activity to comprehend easily.	2.29	Fair	7
10. Avoids guessing the answer in the activity.	4.15	Very Good	4
Composite Mean	**3.13**	**Good**	

Legend: WM=Weighted Mean, VI=Verbal Interpretation,:1.00-1.49 Very Poor, 1.50-2.49 Poor, 2.50-3.49 Fair, 3.50- 4.00 Good, 4.01-500- Very Good

Table 3 reveals that Grade 5 pupils perform good in group dynamics as supported by the composite mean of 3.13. The respondents also show willingness to learn new things with group members as evidenced by a weighted mean of 4.27 and with a verbal interpretation of Outstanding and the most favored in rank. On the other side, the respondents have a Poor performance in volunteering themselves as to become group leader with a weighted mean of 2.16 and the least favored in rank.

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2. Significant Relationship Between the Assessment of the Respondents on Mathematics as a Subject and on Their Performance in Mathematics

Table 4: Test of Significant Relationship between the Assessment of the Respondents on Mathematics as a Subject and on Their Performance in Mathematics

	Vocabulary Learning Strategies	
Challenges	**Board work**	**Group Dynamics**
Correlation coefficient	0.855	0.861
Qualitative description	High relationship	high relationship
p-value	0.000	0.000
Remark	Significant	Significant
Decision on Ho	Reject Ho	Reject Ho

Legend:0.00 No Relationship, ±0.00-±0.20 Negligible Relationship, ±0.21-±0.40 Low Relationship, ±0.41-0.70 Moderate Relationship, ±0.71-±0.90 High Relationship, ±0.91-±0.99 Very High Relationship, ±1 Perfect Relationship, Significant at P<0.05

Table 4 manifest that there is a signification relationship between the assessment of the respondents on Mathematics as a subjects and their performance on the subject. The computed correlation coefficient of the computed p-value of 0.000 for board work and group dynamics are all lesser than 0.05 level of significance, therefore the null hypothesis is rejected. This implies that the respondents have the same assessment on their Mathematics performance and on Mathematics as a subject.

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ACTION PLAN

Rationale: Based on the findings of the study and the problem posted. The researcher crafted the action plan to enhance the Mathematics performance of pupils.

Areas of Concern	Objectives	Strategies	Responsible Persons	Time Frame	Expected Outcomes
1. Board work	To orient the pupils on the importance of doing board works in Mathematics to enhance the skills more.	Provide the pupils with developmental activities that will improve and develop their skills in Mathematics	Pupils Teachers Parents Principal	June to March	Enhanced Mathematics skills of pupils through board work.
2.Group Dynamics	To stimulate pupils to use cooperative learning in doing mathematical activities and to participate well in the group.	Encourage the pupils to participate in the group activities by providing varied activities in order to improve their performance in Mathematics through group task.	Pupils Teachers Parents Principal	June-March	Developed Mathematics skills of pupils by well-developed group activities

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Conclusions

Based on the findings of the study, the following conclusions were drawn:

1. The respondents moderately agreed to the extent that they perceived Mathematics as a subject. They professed that Mathematics is primarily a formal way of representing the real world.

2. Pupils have fair performance in board work activities. They found it hard to solve problems or equations independently. Meanwhile, the respondents have good performance in group dynamics. They showed willingness to learn new things with the group members and they participated well in the group they belong.

3. There is a significant relationship between the assessment of the respondents on Mathematics as a Subject and their performance in the subject.

4. The action plan was made by the researcher.

Recommendations

From these findings and conclusions of the study, the following recommendations are hereby endorsed:

1. The researcher recommends that the teacher must teach Mathematics with much effort to achieve good performance in Mathematics.

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2. The teacher must see to it that Mathematics must be taught in such a way that it can be understood fully even in a simple way of teaching the concept.

3. Pupils should sustain or still improve their performance in-group dynamics through varied activities since they participate well and show willingness to learn.

4. Plan of Action for Mathematics must be executed carefully and be evaluated religiously to acquire valid and reliable results.

Gathering of Literature	2 weeks, January 2022
Formulating of Objectives	1 week , January 2022
Analyzing and drafting of literature	2 weeks, Feb. 2022
Drafting the context and rationale	1 week, Feb. 2022
Identifying research design and methodology	1 week, March, 2022
Drafting and peer validation of the questionnaire	1 week, March, 2022
Distribution and retrieval of the questionnaire	1 week, April, 2022
Tallying and interpretation of the responses	1 week, April, 2022
Drafting results and discussion	3 weeks, May, 2022

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Drawing conclusions and writing the recommendations	1 week, May, 2022
Finalizing the introduction, review of literature, results And discussion, bibliography	3 weeks June, 2022
Drafting the research output	2 weeks June 2022
Encoding and polishing the entire paper and peer Validation of the research output	Last weeks June, 2022
Submission of the research output to the division office And presentation to peers	1st week of July, 2022

Plan for Dissemination and Advocacy

The researcher communicates the results of the study to the school head of the School being studied. The action plan prepared by the researcher become a tool to use for the teachers to utilize social media in the learning productivity of the pupils , the researcher asks permission to the school head to include the sharing of insights in one of the School Learning Action Cells (SLAC) and symposium. These serve as the avenue for bench marking on enhancing the Mathematics performance of pupils.

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Financial Report / Cost Estimates

Budget Item	Budget Requirement
Xerox of the documents for analysis	Php 100
Xerox of documented research literature	Php 100
Xerox of questionnaires for respondents	Php 100
Transportation	Php 100
Printing of the research paper	Php 100
Total	**Php 500**

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