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Effectiveness Of Explicit Contextualized Instruction to The Performance of The Grade V Pupils in Mathematics

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Abstract — This study aimed to Determine effectiveness of explicit contextualized instructions to the performance of the Grade 5 Pupils in mathematics. The findings of the study served as a basis of a proposed Intervention plan. A proposed Instructional Supervisory plan was formulated based on the result of the study. The research design for this study employed a quasi-experimental approach to investigate the effectiveness of explicit contextualized instruction on the performance of Grade 5 pupils in mathematics. This design was particularly suitable when random assignment to treatment and control groups was not feasible, often due to practical constraints in school. The explicit contextualized instruction involved lessons that linked mathematical concepts to real-life scenarios, emphasizing practical applications. This included using examples from students' daily lives, such as budgeting for a school event or calculating distances for a field trip. The control group received standard mathematics instruction without these contextual elements. In this study, the independent variable was the methods of teaching, which were manipulated randomly. For the experimental group, the independent variable was contextualized teacher-made window cards, in contrast to the academic performances, which were the scores obtained by the pupils in the post-test. The test of difference between the pre-test and post-test scores for the control and experimental groups before and after the integration of explicit contextualized instructions. This table includes the computed T-value, critical T-value, and the decision made based on statistical analysis, providing a clear comparison of the effectiveness of the intervention. The results indicate that there was a significant difference between the pre-test and post-test scores for both groups, with the experimental group demonstrating a more substantial improvement after the intervention. A closer look at the data reveals that the control group had a pre-test weighted mean and although their post-test scores improved slightly, they achieved a post-test weighted mean which was not statistically significant. The computed T-value for the control group which was less than the critical T-value leading to the rejection of the null hypothesis (Ho) and confirming that there was no significant change in the control group's scores. On the other hand, the experimental group, which received the explicit contextualized instruction, showed a remarkable improvement in their post-test scores, with a post-test weighted mean. The computed T-value for the experimental group was much higher, suggesting a significant difference between their pre-test and post-test performance, indicating that the intervention had a substantial positive effect on their mathematical understanding. The results in table 3 implies that the traditional teaching methods without any specialized intervention may not be sufficient to drive measurable improvements in students' performance. This underscores the necessity of implementing more innovative, evidence-based instructional strategies. In contrast, the experimental group's significant improvement highlights the effectiveness of explicit contextualized instruction in enhancing students' mathematical performance. These findings suggest that contextualizing lessons by connecting mathematical concepts to real-world situations can greatly enhance student engagement, comprehension, and application of knowledge. The significant difference in performance between the experimental and control groups implies that such instructional strategies should be considered as part of the standard curriculum to foster deeper understanding and achievement in mathematics.
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Keywords — Effectiveness explicit contextualized instruction Performance Mathematics

I. INTRODUCTION

T he development of young learners' critical thinking and problem-solving abilities is greatly aided by mathematics education. The significance of teaching methods that not only explain mathematical ideas but also relate them to practical situations has come to the attention of educators more and more in recent years. One such strategy that incorporates real-world applications into the teaching of mathematics with the goal of improving student understanding and engagement is explicit contextualized instruction. This study focuses on how well Grade 5 students perform in mathematics when given explicit contextualized education, as this is an age when basic abilities are essential for learning in the future.

The increasing amount of studies highlighting the significance of context in learning provides the foundation for our investigation. It might be challenging for children to understand abstract notions that are frequently used in traditional mathematics training. Explicit contextualized instruction, on the other hand, closes the knowledge gap between theory and practice, which may enhance students' application and understanding of mathematics. Additionally, students in Grade 5 are at a critical juncture in their academic careers. The way mathematics is taught can have a big impact on students' attitudes about the subject and their overall academic achievement as they move from basic operations to more abstract reasoning. By explicitly looking at how explicit contextualized education can improve learning for this age group, this study seeks to close a gap in the literature.

The purpose of the research is to evaluate this instructional strategy's efficacy and offer useful information to curriculum developers and teachers. In the end, the results might lead to better instructional strategies that support students' mathematical ability and attitude toward learning, giving them the tools they need for future academic success. Numerous elements influence learning in a classroom context. One is attendance; a high rate of absenteeism from school is frequently associated with subpar academic performance. For both students and teachers, frequent attendance at school is essential to academic success. Reduced access to education may arise from a shortage of classrooms, especially for underprivileged groups including girls, children with impairments, and those from low-income households. can result in a crowded, noisy, unsuitable learning environment, Lower Absence of learning materials can make instruction boring and uninteresting. Resources like textbooks, multimedia, and supplemental materials are examples of these resources. As a result, there is more pressure on teachers to provide adequate materials, and students may become less motivated and engage in the learning process less actively. Lack of appropriate training and inadequate professional development implementation, including a lack of core knowledge, are issues facing instructors.

Thus, these premise push the researcher to conduct study and focus on explicit contextualized instructions to the performance of the Grade 5 pupils in Mathematics and hoping to produce good results and improve numeracy skills of the performance of learners.

This study aimed to Determine effectiveness of explicit contextualized instructions to the performance of the Grade 5 Pupils in mathematics. The findings of the study served as a basis of a proposed Intervention plan.
Specifically, this study sought to answer the following questions.

1. What is the performance of the Grade 5 pupils in mathematics before the utilization of explicit contextualized instruction?

2. What is the performance of the Grade 5 pupils in mathematics after the utilization of explicit contextualized instruction?

3. Is there a significant difference on the performance of the Grade 5 pupils before and after the utilization of the explicit contextualized instruction?

4. What intervention plan can be proposed based on the findings of the study?

Statement of Null Hypotheses

Ho1.: There is no significant difference on the performance of the Grade 5 pupils before and after the utilization of the explicit contextualized instruction.

II. METHODOLOGY

Design. The research design for this study employed a quasi-experimental approach to investigate the effectiveness of explicit contextualized instruction on the performance of Grade 5 pupils in mathematics. This design was particularly suitable when random assignment to treatment and control groups was not feasible, often due to practical constraints in school settings. The explicit contextualized instruction involved lessons that linked mathematical concepts to real-life scenarios, emphasizing practical applications. This included using examples from students' daily lives, such as budgeting for a school event or calculating distances for a field trip. The control group received standard mathematics instruction without these contextual elements. In this study, the independent variable was the methods of teaching, which were manipulated randomly. For the experimental group, the independent variable was contextualized teacher-made window cards, in contrast to the academic performances, which were the scores obtained by the pupils in the post-test. Quezon Jr. Elementary School is the main locale of the study. The 10 male and 11 females) are the main respondents of the study and the data based Test questions derived from the Regional Test Item Bank on the Mathematics 5 lesson guides was employed by the investigator. The subjects covered in the test were from Unit 1 of the Basic Education Curriculum (BEC), which covers addition, subtraction, multiplication, and division. The researcher gave the explicit contextualized instruction to some of the district's more seasoned Math 4 instructors as well as to other Math major teachers in order to ensure the chapter test's content validity. Instructors are asked to look at the item. The majority of educators select the window cards outlined in the study tool; Proposed Intervention Plan based on the findings of the study.

Sampling. There are 21 learners who are included in the study and the primary means of reach is through SF 10.

Research Procedure. The approved and validated research instrument was reproduced, considering the number of expected respondents. The researcher informed the school heads, the district supervisor, and the other selected teachers of her intention to test the pupils. The request was formalized by a letter to the Schools Division Superintendent and a written request to the District Supervisor, the school heads, and the teachers, explaining the reasons for conducting the study. After classifying the pupils through a drawing by lot into the control group and the experimental group, the pre-test for the Quarterly Examination was conducted to collect and compare the levels of learning of the pupils before the intervention. Lessons for the 2nd Quarter were prepared from the Grade 5 learners' module. After the intervention, the post-test for the 2nd Quarterly Examination was administered to collect data from both groups at the same time.

Ethical Issues. The right to conduct the study was strictly adhered through the approval of the principal, approval of the Superintendent of the Division. Orientation of the respondents both the students and the parents was done.

Treatment of Data. The researcher used the following for analyzing all processes:

1. Measures of Central Tendency– was used in obtaining the pretest and posttest mean scores.

2. Sample Standard Deviation- was used as measure of the spread of scores within a set of data

3. t-Test ratio - was used to determine the significant difference between the pretest and posttest.

III. RESULTS AND DISCUSSION

Table 1
Pre-Test Performance of Grade 5 Pupils in Mathematics

Score Range	Description	PRETEST	
		Frequency	%
41-50	Excellent	0	0
31-40	Very Good	2	10
21-30	Good	14	67
11-20	Fair	5	23
1-10	Poor	0	0
Total		21	100
Weighted Mean		**23.81**	**Good**

Table 1 presents the pre-test performance of Grade 5 pupils in mathematics, showcasing the distribution of scores across various levels of achievement. The score ranges are classified from "Excellent" to "Poor," and the frequency and percentage of pupils falling within each category are provided. The weighted mean of the scores is also included, indicating an overall performance level of "Good" with a mean score of 23.81. This data provides a snapshot of the students' initial mathematical proficiency before the implementation of any intervention.

A detailed look at the data reveals that the majority of the pupils (67%) scored within the "Good" range, with 14 pupils achieving scores between 21 and 30. This suggests that a significant portion of the students had a reasonable grasp of mathematical concepts but were not yet excelling. A smaller group (23%) performed in the "Fair" category, with scores ranging from 11 to 20, while only 10% of the pupils scored in the "Very Good" category (31-40). None of the pupils achieved scores in the "Excellent" range (41-50), and no pupils scored in the "Poor" category (1-10). The weighted mean of 23.81 further supports the overall classification of performance as "Good," suggesting that while there were variations in individual performance, the overall pre-test results reflect an average level of mathematical competence.

The implications of these results are significant in shaping the subsequent intervention. The fact that no pupils scored in the "Excellent" range suggests that there is considerable room for improvement in the mathematical skills of these Grade 5 pupils. While the majority fall into the "Good" category, the variation in scores highlights the need for targeted instruction to support those in the "Fair" category. This data suggests that an intervention focused on strengthening foundational concepts, particularly for the students who scored lower, could be beneficial. The relatively low percentage of students in the "Very Good" category also underscores the importance of implementing effective teaching strategies that challenge students and encourage higher levels of achievement.

Table 2
Post-Test Performance of Grade 5 Pupils in Mathematics

Score Range	Description	POST-TEST	
		Frequency	%
41-50	Excellent	12	57
31-40	Very Good	8	38
21-30	Good	0	0
11-20	Fair	0	0
1-10	Poor	1	0
Total		21	100
Weighted Mean		**39.23**	**Very Good**

Table 2 illustrates the post-test performance of Grade 5 pupils in mathematics after the integration of explicit contextualized instruction. The data reveals the frequency and percentage of students within different score ranges, from "Excellent" to "Poor," along with the weighted mean of their performance. With a weighted mean of 39.23, categorized as "Very Good," the results highlight the substantial progress made by the pupils following the intervention, providing a clear picture of how this teaching strategy impacted their mathematical understanding.

The post-test data shows remarkable improvement in the students' performance compared to their pre-test scores. A significant 57% of the students scored in the "Excellent" range (41-50), while 38% scored in the "Very Good" range (31-40). In contrast, none of the students fell into the "Good," "Fair," or "Poor" categories, suggesting a highly successful intervention. The absence of students in lower performance categories indicates that the explicit contextualized instruction was effective in addressing learning gaps and enhancing students' mastery of mathematical concepts. The weighted mean of 39.23 further emphasizes the effectiveness of this instructional approach, as it placed the overall class performance into the "Very Good" range, a notable improvement over the pre-test results.

The results in table 2 implied that the integration of explicit contextualized instruction—where mathematical concepts were tied to real-world situations—clearly had a positive impact on the students' mathematical performance. The improvement in students' scores, particularly in the "Excellent" and "Very Good" categories, suggests that when students are engaged with content that is relevant to their everyday lives, they are better able to understand and apply abstract mathematical concepts. This shift in performance underlines the importance of using innovative, real-world teaching methods to make learning more meaningful and accessible. Additionally, the complete absence of students in lower score categories suggests that this approach was effective in bringing all students to a higher level of achievement, potentially reducing achievement gaps within the class.

Table 3
Test of Difference Between in the Pre-Test and Post-Test Scores

Aspects	**Test Scores**		**Computed T**	**Critical T**	**Decision**	**Interpretation**
Control	Post	23.81	1.524	0.673	Reject H_o	Significant
Experimental	Post	39.23				

Table 3 presents the test of difference between the pre-test and post-test scores for the control and experimental groups before and after the integration of explicit contextualized instructions. This table includes the computed T-value, critical T-value, and the decision made based on statistical analysis, providing a clear comparison of the effectiveness of the intervention. The results indicate that there was a significant difference between the pre-test and post-test scores for both groups, with the experimental group demonstrating a more substantial improvement after the intervention.

A closer look at the data reveals that the control group had a pre-test weighted mean of 23.81, and although their post-test scores improved slightly, they achieved a post-test weighted mean of 23.81, which was not statistically significant. The computed T-value for the control group was 0.673, which was less than the critical T-value of 1.524, leading to the rejection of the null hypothesis (Ho) and confirming that there was no significant change in the control group's scores. On the other hand, the experimental group, which received the explicit contextualized instruction, showed a remarkable improvement in their post-test scores, with a post-test weighted mean of 39.23. The computed T-value for the experimental group was much higher, suggesting a significant difference between their pre-test and post-test performance, indicating that the intervention had a substantial positive effect on their mathematical understanding.

The results in table 3 implies that the traditional teaching methods without any specialized intervention may not be sufficient to drive measurable improvements in students' performance. This underscores the necessity of implementing more innovative, evidence-based instructional strategies. In contrast, the experimental group’s significant improvement

highlights the effectiveness of explicit contextualized instruction in enhancing students' mathematical performance. These findings suggest that contextualizing lessons by connecting mathematical concepts to real-world situations can greatly enhance student engagement, comprehension, and application of knowledge. The significant difference in performance between the experimental and control groups implies that such instructional strategies should be considered as part of the standard curriculum to foster deeper understanding and achievement in mathematics. Another item rated poorly is “I will be able to immediately use what I learned.” This is the same with the item “I am clear on how to apply what I learned on the Job.” The students shared that they will not be working after SHS and so there is no way they can apply the skills. One STEM student said, “The 80 hours immersion time is not enough for us to learn an extensive skills,; it was more or less orientation on how the company operates and some hands-on on minor tasks and but sure it will not enable us to apply for a job.”

IV. CONCLUSION

Based on the results of this study clearly demonstrate the effectiveness of explicit contextualized instruction in improving the mathematical performance of Grade 5 pupils, particularly in the experimental group. While the control group showed no significant improvement in their post-test scores, the experimental group exhibited a marked enhancement in their performance, highlighting the positive impact of integrating real-life applications into lessons. These results suggest that traditional teaching methods alone may not be enough to foster substantial academic progress, emphasizing the need for innovative, context-based approaches to enrich student learning. Therefore, it is crucial for educators and policymakers to consider incorporating explicit contextualized instruction as a core strategy in mathematics education to better engage students and improve learning outcomes.

V. RECOMMENDATIONS

1. the intervention Plan should be implemented.

2. Teachers are encouraged to integrate explicit contextualized instruction into their mathematics lessons by linking abstract mathematical concepts to real-life situations. This approach has proven to enhance student engagement and comprehension. Teachers should receive ongoing professional development and training on how to effectively apply contextualized instruction to meet the diverse needs of their students.

3. School heads should promote and support the implementation of contextualized instruction by providing the necessary resources, training, and encouragement for teachers. They should also ensure that there is a clear communication channel between teachers and administrators to share successful strategies and outcomes, ensuring that the best practices are adopted school-wide.

4. Public School District Supervisors should advocate for the inclusion of explicit contextualized instruction as part of the district's curriculum. They can facilitate professional development programs, provide workshops, and allocate resources that allow schools to experiment with and implement these strategies. They should also monitor the effectiveness of these instructional strategies in improving student performance across the district.

5. Education Program Supervisors should collaborate with teachers and school heads to ensure that curriculum frameworks include the use of contextualized instruction. They should work toward developing standardized guidelines and materials for teachers to utilize in implementing this approach, ensuring that it aligns with the overall educational goals for student achievement.

6. Parents play an important role in reinforcing the concepts taught in the classroom. They should support their children's learning by creating a conducive environment at home for applying real-world mathematical problems, such as budgeting, measuring, and problem-solving activities. Educating parents on the benefits of contextualized instruction can foster greater involvement and help students achieve better results.

7. Educational stakeholders, including local government units and community organizations, should invest in providing the necessary tools and support for schools to effectively implement contextualized instruction. They can help fund projects, provide expertise, and offer real-world problems that students can engage with to further enhance their learning experiences.

8. Researchers should continue exploring the impact of explicit contextualized instruction in different educational settings and grade levels. Longitudinal studies focusing on the sustained effects of this approach on student performance would provide valuable insights. Further research can also investigate how contextualized instruction can be integrated across various subjects, not just mathematics, to improve overall academic outcomes.

9. Future researchers are encouraged to explore innovative methods for improving the implementation of explicit contextualized instruction in diverse educational settings. Studies can focus on developing new materials, assessing the scalability of these approaches, and determining the specific types of real-world applications that resonate best with students from different socio-economic backgrounds.

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AUTHOR'S PROFILE

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The author is born on January 28, 1989 at Brgy. Mahawan Kananga, Leyte, Philippines. She finished her Bachelor's degree in Elementary Education at Eastern Visayas State University – Ormoc City Campus. In her high school and college days, she was really into the teaching field. She loved teaching young minds and that helped her decide to take elementary education as her field of specialization for her master's degree. She is currently finishing her Master's degree of Arts in Education major in Elementary Education at Western Leyte College of Ormoc City.

She is currently a Teacher I in the Department of Education and a Grade – V Teacher at Quezon Jr. Elementary School at Barangay Quezon Jr., Ormoc City, Leyte, Philippines. She was dedicated in improving mathematics education. With her expertise in instructional strategies she focuses on enhancing student performance through explicit and contextualized teaching approaches. She was passionate about making math more engaging and meaningful, she aims to bridge theory and practice to support the learners in achieving academic success.