STUDENTS' ACADEMIC PERFORMANCE AND SELF-EFFICACY BELIEFS IN A CONTEXTUALIZED INSTRUCTION

Jellyhpene D. Cainoy-Facunla[1] and Denis A. Tan[2]
Science Education Department, Central Mindanao University [1, 2]
University Town, Musuan, Bukidnon, 8710 Philippines
Correspondence Tel.: +639177103100, Email: denistan@cmu.edu.ph

ABSTRACT: *Teachers need to provide instruction to students within their context. This study investigated the effectiveness of the Contextualized Instruction in teaching Mathematics on the academic performance and self-efficacy beliefs of the Grade 8 students in Malinao High School. Specifically, it aimed to: (a) determine the Mathematics academic performance of the students when exposed to Contextualized Instruction and those exposed non-Contextualized Instruction before and after the experimentation and few days after the experimentation; (b) on the self-efficacy beliefs of the students towards Mathematics when exposed to Contextualized Instruction and those exposed to Non-Contextualized Instruction before and after the experimentation; (c) on the difference in Mathematics academic performance of the students when exposed to Contextualized Instruction and those exposed to Non-Contextualized Instruction before and after the experimentation and few days after the experimentation as either significant or not; and (d) on the difference in self-efficacy beliefs of the students towards Mathematics when exposed to Contextualized Instruction and those exposed to Non-Contextualized Instruction before and after the experimentation as either significant or not. The study made use of the quasi-experimental research design. Results showed that Mathematics academic performance of the students under the Contextualized Instruction environment during the pretest did not meet expectations, and satisfactory in the posttest and retention test while in non-Contextualized Instruction environment was did not meet expectations, fairly satisfactory, and satisfactory during the pretest, posttest, and retention test, respectively. In the level of self-efficacy beliefs of students towards Mathematics, students in Contextualized Instruction group found out to have moderate self-efficacy beliefs before the intervention and high self-efficacy beliefs after the intervention. In contrast, in non-Contextualized Instruction have moderate and high self-efficacy beliefs before and after intervention, respectively. Furthermore, it also found that Mathematics academic performance of the students when exposed to Contextualized Instruction and non- Contextualized Instruction has a significant difference before and after the intervention. Lastly, students' self-efficacy beliefs of students towards Mathematics when exposed to Contextualized Instruction and non-Contextualized Instruction found out that there is a significant difference before and after the intervention.*

Keywords: *academic performance, self-efficacy beliefs, mathematics, contextualized instruction*

1. INTRODUCTION

Teaching and learning Mathematics can be exciting and challenging, both on the part of the teacher and the student. Mathematics is regularly seen as a troublesome subject, and it could be an extraordinary challenge for teachers to change students' perceptions towards this subject. It is because very few students have genuinely learned Mathematics, and many have struggled through the courses.

Nowadays, Filipino students performed poorly in Mathematics. Moreover, results revealed that the Filipino students achieved an average of 353 points in Mathematical Literacy. This is significantly lower than the OECD average (489 points) and classified as below Level 1 proficiency [1]. Furthermore, its findings are anticipated due to lack of solid foundation of the concepts. Consequently, no matter how well the teacher presents a new lesson, the problem is not comprehending the new lesson at hand due to deficiency of prior knowledge. On the other hand, most of the students, despite a great understanding of mathematical concepts, are ruined by straightforward calculations.

Numerous studies have undertaken in order to improve academic performance and achievement of students in Mathematics [2, 3, 4, 5, 6]. Filipino researchers utilized teaching methods and approaches like flipped classroom [7, 8], differentiated and rich assessments [9, 10], and instructional models [11, 12] to possibly enhance students' understanding of mathematics. Other researchers, however, studied on factors that may influence performance and achievement of students [13, 14, 15].

This study is about the effectiveness of Contextualized Instruction (CI) because it is focusing on the actual application of those skills and that knowledge in a context. Students can only acquire this kind of understanding through the application of their knowledge in practice. It is this potential for application in practice that makes contextualized instruction so effective; plus, much important incidental learning can take place when students are encouraged to develop knowledge and skills within a social context. Learners nowadays explore modern and challenging educating pedagogies that will catch their consideration and interest.

In every teaching strategy and method employed, due consideration is always given to the fact that the academic performances, behaviors, and attitudes of students vary in accordance with their interests, abilities, strengths, and weaknesses [16]. Teachers' knowledge may be an issue since not all teachers have their capacity to contextualize their lessons and to make meaningful learning in teaching Mathematics [17]. In this way, it a massive obligation of the teachers to win a couple of arrangements in adapting these issues within the classroom. One of these, the teacher must incorporate Contextualized Instruction in the class. Thus, it is necessary for teachers to be sensitive to students' understanding and misinterpretations and determine their learning gaps in Mathematics.

Therefore, the conduct of this study is equipped to evaluate and measure the effectiveness of Contextualized Instruction in improving the achievement of Grade 8 students in learning Mathematics.

2. MATERIALS AND METHODS

The study assessed the students' academic performance and self-efficacy beliefs in a Contextualized Instruction at Malinao High School students. These students are enrolled in Grade 8 who were taking Mathematics subject. The study made use of a quasi-experimental research design with two sections, which were both heterogeneous. The one section was set as the experimental group while the other class was the control group. The two groups of students were instructed with the same lessons. Students in experimental group were exposed to CI environment while the control group was exposed to Non- CI environment.

There were two (2) instruments used to gather the data, namely, the mathematics self-efficacy belief questionnaire and the validated teacher-made test. The questionnaire used was pilot tested with the Cronbach's alpha coefficient of 0.80 [9]. The questionnaire consisted twenty-nine (29) questions with scaling rating that ranges from 5 to 1. The reverse scoring procedure was done for negative statement. A validated teacher-made test was used to measure academic performance of the students with 50-item multiple choice

test covering the topics in the fourth grading period. Items were scored 1 for every correct response, and 0 if otherwise.

The participants of the study were the Grade 8 students of the Malinao High School with 35 in CI group and 35 in non-CI group.

Before the start of the experiment, pretest on academic performance and self-efficacy beliefs of students towards Mathematics was administered to the students. After the intervention the students took again the same tests which served as the posttest. The researchers administered the retention test of the students three days after with the reason of the threat of COVID-19 Pandemic. The results of these tests were utilized to seek answers to the problems which were put forward in this investigation.

The data collected were tabulated and analyzed using appropriate statistical tools using a statistical software. Descriptive statistics like mean, standard deviation, frequency and percentage were used to answer the questions on the descriptive levels. Analysis of Covariance (ANCOVA) was used to investigate the significant difference on the academic performance and self-efficacy beliefs of students towards mathematics between the two groups.

The following rating scale was used to better understand the data:

Rating	Scale	Qualitative Description	Qualitative Interpretation
5	4.51 – 5.0	Strongly agree	Very High (VH)
4	3.51 – 4.50	Agree	High (H)
3	2.51 – 3.50	Undecided	Moderate (M)
2	1.51 – 2.50	Disagree	Low (L)
1	1.00 – 1.51	Strongly disagree	Very Low (VL)

Score	Percentage score	Descriptive rating	Interpretation
40 – 50	90% and Above	Outstanding	Very High
35 – 39	85% - 89%	Very Satisfactory	High
30 – 34	80% - 84%	Satisfactory	Moderate
25 – 29	75% - 79%	Fairly Satisfactory	Low
0 – 24	74% and below	Did Meet Expectations	Very Low

3. RESULTS AND DISCUSSIONS

This section presents the analysis and interpretation of data gathered from the students' scores relevant for testing the hypothesis of the study. The order of presentation follows the arrangement of the problems identified and presented for this research.

3.1 Students' Academic Performance towards Mathematics in CI and Non-CI Group

The students' academic performance towards Mathematics exposed to CI and those exposed to Non-CI in terms of pretest is presented in Table 1. As shown in table 27 (77.14%) students in the CI had very low performance, and 8 (22.86%) had a low performance in the pretest. On the other hand, in the Non-CI group, there are 30 (85.72%) of the students had very low performance and 5 (14.28%) have low performance.

In the pretest out of 50 items, the group which was exposed to CI had a mean score of 16.31 with MPS of 66.31, which indicates that scores of the students did not meet expectations signifying a very low performance. The Non-CI group had a mean score of 16.06 with MPS of 66.06, which indicate that scores of the students did meet expectations which means a very low performance, too.

Table 1. Level of the Performance of Students in the Pretest.

Range	CI			Non-CI		
	f	%	Interpretation	f	%	Interpretation
90% &Above	0	0	Very High	0	0	Very High
85% - 89%	0	0	High	0	0	High
80% - 84%	0	0	Moderate	0	0	Moderate
75% - 79%	8	22.86	Low	5	14.28	Low
74% &Below	27	77.14	Very Low	35	85.72	Very Low
		Mean =16.31			Mean = 16.06	
		MPS = 66.31 (Very Low)			MPS = 66.06 (Very Low)	

Based on the results, all students of both groups are performing in Mathematics poorly with non-passing scores. It shows that students do not read in advance about the topic. They always wait for the teacher to introduce the topic to them. It can be seen in the table that most of the students in the both groups have very performance. A study found out that the Mathematics performance of students is also very low [8, 12].

Table 2 shows the Mathematics academic performance of the students exposed to CI and Non-CI in terms of the posttest. As illustrated in the table, the CI group had the following performance on the posttest: 5 (14.28%) students had a low performance, 19 (54.29%) had moderate performance, 10 (28.57%) had high performance, and 1 (2.86%) had achieved very high performance. In contrast, in the Non-CI group, 3 (8.57%) had a very low performance, 10 (28.57%) had a low performance, 17 (48.58%) had moderate performance, and 5 (14.28%) had achieved high performance in the posttest.

Furthermore, out of 50 items, the CI group attained a mean score of 32.60 with MPS of 82.60, indicating a moderate performance result, while the Non-CI group had a mean score of 29.97 with MPS of 79.97, which indicate a low-performance result.

Table 2. Level of the Performance of Students in the Posttest.

Range	CI			Non-CI		
	f	%	Interpretation	f	%	Interpretation
90% &Above	1	2.86	Very High	0	0	Very High
85% - 89%	10	28.57	High	5	14.28	High
80% - 84%	19	54.29	Moderate	17	48.58	Moderate
75% - 79%	5	14.28	Low	10	28.57	Low
74% &Below	0	0	Very Low	3	8.27	Very Low
		Mean =32.61			Mean = 29.97	
		MPS = 82.61 (Moderate)			MPS = 79.97 (Low)	

Results show that in the posttest, there is evidence of improvement in students' academic performance. This implies that they learned in the topics discussed. Reflected in the table that CI group performed better that non-CI group. In study revealed that experimental group performed better or have a high performance than the control group [10, 18].

The students' academic performance towards Mathematics exposed to CI and non-CI in terms of retention test. As given in Table 3, the CI group had the following achievement in the retention test: 1 (2.86%) student had a low performance, 15 (42.86%) had reached a moderate performance, 16 (45.71%) had high performance, and 3 (8.57%) had achieved very high performance. Moreover, in the Non-CI group, there were 8 (22.86%) had a low performance, 16 (45.71%) had moderate performance, 9 (25.71%) had high performance, and 2 (5.72%) had garnered a very high performance in Mathematics.

It is also displayed in the table the mean scores of the retention test of students' mathematics performance. In the group who were exposed to CI, out of 50 items had a mean score of 34.83 with MPS of 84.83, which indicates a moderate performance result, and the Non-CI group obtained a mean score of 32.49 with MPS of 82.49, which also indicate a moderate performance results in the test.

Results shown that students have maintained their performance wherein CI group have a higher mean that non-CI group. There are findings that students in experimental group have higher retention than the students in the control group [18]. It was found also that the level of Mathematics academic performance of students exposed to treatment in terms of retention scores in higher than those who do not exposed to treatment [19].

Table 3. Level of the Performance of Students in the Retention Test.

Range	CI			Non-CI		
	f	%	Interpretation	f	%	Interpretation
90% &Above	3	8.57	Very High	2	5.72	Very High
85% - 89%	16	45.71	High	9	25.71	High
80% - 84%	15	42.86	Moderate	16	45.71	Moderate
75% - 79%	1	2.86	Low	8	22.86	Low
74% &Below	0	0	Very Low	0	0	Very Low
		Mean = 34.86 (Moderate)			Mean = 32.49 (Moderate)	

3.2 Students' Self-Efficacy Beliefs towards Mathematics Before and After Intervention

Table 4 shows the Self-Efficacy Beliefs of Students towards Mathematics Before and After Intervention period. In the pretest, among the 29 items of the Mathematics self-efficacy belief scale, students in the CI group rated "agree" on the six items and "undecided" on the 23 items. On the other hand, the students in the Non-CI group rated "agree" on the four items and "undecided" on the 25 items. These results reveal that students in the CI group grasped that without a good knowledge of Mathematics, they will found it hard to enroll in the college they wish for (3.66; highest mean), they enjoyed solving mathematical problems (3.57), and sometimes, even after class, they think about mathematical problem that they could not solve in it (3.54). On the other hand, students in the other group grasped also that without a good knowledge of Mathematics, they will find it hard to enroll in the college they wish for (3.63), they believed that their success in Mathematics can only be achieved by regular study and practice (3.60) and they enjoy solving mathematical problems (3.57), got the first three highest means. Even if students in both groups agree in their ways of thinking in a mathematics class, still, both groups showed they have a moderate level self-efficacy beliefs towards mathematics.

It can also be seen in Table 4 the three (3) items with lower means in the CI and non-CI group. Students in CI group perceived that no matter how much they try, they cannot essentially influence their success in Mathematics (2.43), their success in Mathematics depends on good or bad luck to a great extent (2.46), and they were always ready to solve mathematical problems (2.60) are three indicators with lowest means. While in the Non-CI group, they think that they are more successful than most students at their age at solving mathematical problems (2.46), they are made for Mathematics (2.63), and when they begin solving a mathematical problem, they suspect in advance that they will not finish it successfully (2.66) had the lowest means.

This shows a moderate level of self-efficacy beliefs of students towards Mathematics as a subject. The results indicate that both groups have a moderate level of self-efficacy beliefs, which indicate that they need a motivation to learn Mathematics and to understand the importance of Mathematics in their daily lives.

A study found out that students that have higher self-efficacy do not easily give up when challenged by difficulties, and they are persistent in obstacles until they find success. On the other hand, students who are doubtful with their capabilities are easily discouraged by failures and struggles [20, 21, 22]. There are findings of the study found out that both groups exposed to experimental group and control group have a moderate level of self-efficacy beliefs towards Mathematics before the intervention [12]. However, study showed that both groups exposed to experimental group and control group have high self-efficacy beliefs towards Mathematics before the intervention [9].

Table 4. Students' Self-Efficacy Beliefs towards Mathematics Before and After Intervention

SELF-EFFICACY BELIEFS TOWARDS MATHEMATICS	CI				Non-CI			
	Before		After		Before		After	
	Mean	QD	Mean	QD	Mean	QD	Mean	QD
I enjoy solving mathematical problems.	3.57	A	3.83	A	3.57	A	3.66	A
When I meet an interesting mathematical problem, I cannot come down until I solve it.	3.40	U	3.97	A	3.54	A	3.54	A
I am not at all interested in Mathematics. *	3.20	A	3.20	A	2.77	U	2.77	U
I am always ready to solve mathematical problems.	2.60	U	3.60	A	2.89	U	3.43	U
Solving mathematical problems can be pleasant and interesting.	3.51	A	3.77	A	3.20	U	3.60	A
I do not usually give up solving mathematical problems until I have found its solution.	3.40	U	3.57	A	3.31	U	3.57	A
I am made for Mathematics	2.71	U	3.54	A	2.63	U	3.57	A
These days, learning Mathematics is a complete waste of time. *	2.91	U	3.31	U	2.74	U	3.54	A
I simply cannot do Mathematics. *	3.03	U	3.20	U	2.80	U	3.40	U
Sometimes, it seems I can spend all my life solving mathematical problems.	3.20	U	3.71	A	2.97	U	3.69	A
Without a good knowledge of Mathematics, I will find it hard to enrol in the college I wish.	3.66	A	3.74	A	3.63	A	3.77	A
A knowledge of Mathematics gives a base of sound thinking in everyday life.	3.31	U	3.77	A	3.26	U	3.97	A
A solid mathematical knowledge opens more possibilities when selecting a future profession.	3.37	FE	4.46	A	3.34	FE	3.74	A
I am more successful than most students of my age at solving mathematical problems.	3.09	U	3.74	A	2.46	U	3.63	A
A mathematical way of thinking degrades human life. *	2.74	U	3.43	U	2.74	U	3.54	A
Sometimes, even after class, I think about mathematical problem that I could not solve in it.	3.54	A	3.77	A	3.03	U	3.69	A
I do not try to solve a task if it appears too difficult. *	2.69	U	3.11	U	2.86	U	3.54	A
When I begin solving a mathematical problem, I suspect in advance that I will not finish it successfully.*	2.97	U	3.09	U	2.66	U	2.97	U
You cannot deal with anything seriously today without good mathematical knowledge.	2.97	U	3.86	A	3.00	U	3.60	A
No matter how much I try, I cannot essentially influence my success in Mathematics.*	2.43	U	3.23	U	3.37	U	3.09	U
I get upset when I cannot solve a mathematical problem.	3.51	A	4.03	A	3.26	U	3.80	A
If I cannot solve a mathematical problem in 10 – 15 minutes, I cannot solve it all.	3.34	U	2.89	U	2.89	U	3.00	U
I admire people who know Mathematics well.	3.31	U	4.43	A	3.14	U	3.69	A
Success in Mathematics depends on good or bad luck to a great extent.	2.46	U	3.91	A	2.69	U	3.03	U
Good mathematicians are highly esteemed in society.	3.37	U	3.77	A	3.20	U	3.97	A
I feel proud when I solve a harder mathematical problem.	3.26	U	4.11	A	3.14	U	3.80	A
Success in Mathematics can only be achieved by regular study and practice.	3.31	U	4.00	A	3.60	A	3.74	A
The mark in Mathematics mostly depends on the teacher's good or bad mood.	3.40	U	3.97	A	3.11	U	3.46	U
For success in life today, it is sufficient to know four basic arithmetic operation.*	3.03	U	2.89	U	2.71	U	2.83	U
Overall Mean Interpretation	3.15 (Moderate)		3.67 (High)		3.05 (Moderate)		3.52 (High)	

*-negative statements

Legend:

Rating	Scale	Qualitative Description (QD)	Qualitative Interpretation (QI)
5	4.51-5.00	Strongly Agree (SA)	Very High (VH)
4	3.51-4.50	Agree (A)	High (H)
3	2.51-3.50	Undecided (U)	Moderate (M)
2	1.51-2.50	Disagree (D)	Low (L)
1	1.00-1.50	Strongly Disagree (SD)	Very Low (VL)

After the intervention, among the 29 items, the students in the CI group rated "agree" on the 21 items, and "undecided" on the eight items. On the other hand, students in the Non-CI group rated "agree" on the 20 items and "undecided" on nine items.

Students in CI group believed that a solid mathematical knowledge opens more possibilities when selecting their future profession (4.46), they admire people who know Mathematics well (4.43), and they feel proud when they solve a harder mathematical problem" (4.11), these three indicators have a highest mean. While students in non-CI group perceived that good mathematicians are highly esteemed in society (3.97), a knowledge of Mathematics gives a base of sound thinking in everyday life (3.97), and they get upset when they cannot solve a mathematical problem (3.80), have the highest mean.

The overall mean score of students' self-efficacy beliefs after the intervention is 3.67 and 3.52 in the CI and Non-CI group, respectively. This shows that the students in both groups have a high level of self-efficacy beliefs towards Mathematics as a subject. Moreover, students in the CI have higher mean compared to those students in the Non-CI group. According to a study that students have demonstrated that self-efficacy affects motivation, persistence, efforts, action, behavior, and achievement [23]. This study supported by the statement that students have indicated that higher self-efficacy is predictive of higher performance [24].

3.3 Analysis of Covariance (ANCOVA) of Posttest Results between Treatments

Table 5 shows the Analysis of Covariance (ANCOVA) of Posttest result between treatments. As can be observed in the table, the pretest was used as a covariate to statistically equate different prognostic variables, which may affect the analysis. The F-value between groups is 12.178 with a probability of 0.001 ($p>0.05$) indicating there is a significant difference; thus the null hypothesis that there is no significant difference in students' performance in terms of posttest is rejected.

This implies that the CI group with the mean of 32.54 performed statistically not equal to the Non-CI group with a mean of 29.80. Thus, the results conclude that there is a significant difference found in their performance.

The results affirmed that teaching the lesson in the real-life context significantly increases the learning of students [25]. Likewise, contextualization motivates the learners to know, understand, and appreciate cultural heritage [26].

Table 5. Comparison of students' performance on the posttest.

GROUP		N	MEAN	SD	
CI		35	32.54	3.80	
Non-CI		35	29.80	4.81	
TOTAL		70	31.17	4.52	
Source	SS	df	MS	F-value	Sig.
Group	119.444	1	119.444	12.178	0.001
Pre-test	621.118	1	621.118	63.325	0.000
Error	657.167	67	9.808		
Total	6946.000	70			

Moreover, on teaching approaches and pedagogies, it has to be noted that modification of teaching approaches should be improved once it was found that many learners cannot follow the lessons [27]. Also, suggested to the teachers to conduct contextualized instructions that will address students' readiness, interest and learning on a wide range classroom [28].

3.4 Analysis of Covariance (ANCOVA) of Retention Test Result between Treatments

Table 6 shows the analysis of covariance (ANCOVA) of retention test results between treatments. As shown in the table, the F-value between groups is equal to 10.022 with a probability value of 0.002 ($p>0.05$) which indicates a significant difference; thus the null hypothesis that there is no significant difference in students' performance in terms of retention test is rejected. This finding implies that students exposed to CI environment with mean 34.83 performed statistically not comparable to the students exposed to the Non-CI environment with mean 32.40. Thus, the results conclude that there is a significant difference found in their performance.

Table 6. Comparison of students' performance on the retention test.

GROUP		N	MEAN	SD	
CI		35	34.83	3.95	
Non-CI		35	32.40	4.77	
TOTAL		70	33.61	4.51	
Source	SS	df	MS	F-value	Sig.
Group	91.885	1	91.885	10.022	0.002
Pre-test	689.118	1	689.118	75.166	0.000
Error	614.254	67	9.168		
Total	80501.000	70			

The result conformed the study that concluded that there is a significant difference on the performance of students in retention test of using alternative assessments in Mathematics [9]. Also, as stated by the role of the teacher is very vital in the teaching and learning process because students' performance in Mathematics will depend on how the teacher makes the instruction meaningful and interesting. No matter how abstract and complicated Mathematics is, making the instruction dynamic and open for communication will make it simpler. Mathematics academic performance, as claimed, is influenced by how the students have seen the classroom instruction [29, 30].

3.5 Analysis of Covariance (ANCOVA) of Students' Engagement in Mathematics between Two Groups

Table 7 presents the comparison of engagement of students who were exposed to two varied interventions. As seen in the table, students' self-efficacy beliefs when exposed to the CI environment had a mean score of 3.66 with a standard deviation of 0.20, while students exposed to a Non-CI environment had a mean score of 3.52 with a standard deviation of 0.25. Moreover, the table shows an F-value of 5.641 and a probability of 0.020, indicating a significant difference in the self-efficacy beliefs of two groups; thus the null hypothesis is rejected. This implies that students in the CI group have high self-efficacy beliefs compared to the Non-CI group.

Table 7. Comparison of Students' Self-Efficacy Beliefs between Groups

GROUP		N	MEAN	SD	
CI		35	3.66	0.20	
Non-CI		35	3.52	0.25	
TOTAL		70	3.59	0.24	
Source	SS	df	MS	F-value	Sig.
Group	0.294	1	0.294	5.641	0.020
Pre-test	0.050	1	0.050	0.968	0.329
Error	3.488	67	0.052		
Total	906.379	70			

The result found out that there is a significant difference in the self-efficacy of students exposed to an experimental group than to those exposed to control group [31]. On the contrary, the result of the study found out that there is no significant difference in the self-efficacy of students exposed to an experimental group as compared to those exposed to control group [8] and the use of performance tasks and assessment had no significant difference on students' Mathematics self-efficacy beliefs [32].

4. CONCLUSIONS AND RECOMMENDATIONS

The findings of the study led to the following conclusions:

The student's performance in Mathematics in the CI group for the pretest is very low. They have moderate performance in both posttest and retention test. In the Non-CI group, the performance of the students is very low, low performance, and a moderate performance in the pretest, posttest, and retention test, respectively.

Students in both groups have moderate self-efficacy beliefs towards Mathematics as a subject before the intervention. Both the

CI and Non-CI groups have high self-efficacy beliefs in Mathematics after the intervention.

The academic performance of the students in Mathematics, when exposed to CI, is not statistically comparable to the performance of the students exposed to Non-CI. Students in the CI group perform better than the students in the Non-CI group.

Finally, the self-efficacy beliefs towards Mathematics of the students are not statistically different between those exposed to CI and those exposed to the Non-CI group. Thus, both groups have high self-efficacy beliefs towards the subject. However, students in the CI group have higher self-efficacy beliefs than students in the Non-CI group.

Based on the conclusions of the study, the following recommendations are given:

Mathematics teachers are encouraged to use varied techniques or approaches that may improve students' performance in Mathematics. Teachers may use the approaches that will allow students to explore their interests and take apart or be active in class like contextualized instruction.

Teachers, parents, and administrators might consider providing opportunities to the students to can foster and increase their self-efficacy beliefs towards Mathematics.

Teachers, administrators, and curriculum managers are suggested to include Contextualized Instruction in the curriculum to improve the performance of the students in the subject. It may also help them realize that Mathematics is not a difficult, cold, and abstract subject and help them to appreciate the significance and importance of Mathematics as a subject in their daily lives. Moreover, in outcomes-based education, this strategy might a great help to increase the interest of students in learning the subject.

Teachers, administrators, and curriculum makers may include Contextualized Instruction in the curriculum guide. Administrators encourage teacher training in strategies to increase students' self-efficacy belief levels and should offer training as a mode of professional development, which provides an indirect method to increase the self-efficacy belief levels of students.

Moreover, for future educational researchers, a study of the other types of teaching-learning strategy may be conducted. The duration of its implementation must be measured for the effectiveness and reliability of the methods used.

Acknowledgment: The researchers would like to extend its gratitude to Central Mindanao University headed by Dr. Jesus Antonio G. Derije, the University President.

5. REFERENCES:

[1] PISA 2018 Contractors. (2017). PISA Quality Monitor Manual.

[2] Antipuesto, J.L., & Tan, D.A. (2020). Enhancing Student Performance and Engagement in Mathematics Via Peeragogy, *Science International (Lahore)*, 32(2), 159-164.

[3] Asparin, A. A. & Tan, D. A. (2018). Students' Problem Solving Skills in Enhanced Gradual Release of Responsibility Instruction Model. Asian Academic Research Journal of Multidisciplinary, 5(3), 121-128.

[4] Segumpan, L., & Tan, D. (2018). Mathematics performance and anxiety of junior high school students in a flipped classroom, *European Journal of Education Studies*, Volume 4, Issue 12.

[5] Tan-Ucang, J. & Tan, D.A. (2013). Students' Beliefs and Mathematics Performance in a Process-Oriented Guided-Inquiry Learning (POGIL) Environment. *CMU Journal of Science.* 17 (2013), 141-157.

[6] Murillo, J. A. & Tan, D. A. (2019). Students' Mathematics Performance and Engagement in an Inquiry-Based Learning Approach, *International Journal of English and Education*, 8(3), 64-74, July 2019.

[7] Gumban, RJ. B. & Tan, D.A. (2019). Students' Mathematics Performance, Engagement and Information and Communication Technology Competencies in a Flipped Classroom Environment, ,*International Journal of English and Education*, 8(3), 186-200.

[8] Segumpan, L. L. & Tan, D. (2018). Mathematics Performance and Anxiety of Junior High School Students in a Flipped Classroom. European Journal of Education Studies, 4(12), 1-33.

[9] Pagtulon-an, E. & Tan D. (2018). Students' Mathematics Performance and Self-efficacy Beliefs in a Rich Assessment Tasks Environment. *Asian Academic Research Journal of Multidisciplinary*. 5(2), 54-64.

[10] Dagoc, D., Tan, D.A. (2018). Effects of Metacognitive Scaffolding on the Mathematics Performance of Grade 6 Pupils in a Cooperative Learning Environment, *International Journal of English and Education*, 7(4), 378-391.

[11] Asparin, A. A. & Tan, D. A. (2018). Students' Problem Solving Skills in Enhanced Gradual Release of Responsibility Instruction Model. Asian Academic Research Journal of Multidisciplinary, 5(3), 121-128.

[12] Saligumba, I.P. & Tan, D. (2018). Gradual Release of Responsibility Instructional Model: It's Effects on Students' Mathematics Performance and Self-Efficacy. International Journal of Scientific & Technology Research, 7(8), 276-291.

[13] Balasico, C.L., & Tan, D.A., (2020). Predictors of Performance of Central Mindanao University Laboratory High School Students, *PEOPLE: International Journal of Social Sciences,* 6(2). 1-21.

[14] Tan, D. A., & Balasico, C. L. (2018). Students' Academic Performance, Aptitude and Occupational Interest in the National Career Assessment Examination. *PUPIL: International Journal of Teaching, Education and Learning*, 2(3), 01-21.

[15] Cordova, C., & Tan, DA. (2018). Mathematics Proficiency, Attitude and Performance of Grade 9 Students in Private High School in Bukidnon, Philippines. *Asian Academic Research Journal of Social Sciences and Humanities*, vol. 5, issue 2, 103-116.

[16] Calfoforo, A. V. (2013). Multiple Representation-based instruction: Effects on the performance and attitudes of students in High school Algebra.

[17] Papaieronymou, I. (2009). Recommended Knowledge of Probability for Secondary Mathematics Teachers. Proceedings from Proceedings of CERME 6, Lyon, France.

[18] Ciubal-Fulgencio, NR. & Tan, D. (2018). Effects of Mathematics Communication Strategies on Attitude and Performance of Grade 8 Students. Asian Academic Research Journal of Multidisciplinary, Vol.5, Issue 2. 44-53

[19] Salingay, N. R. & Tan, D. (2018). Concrete-Pictorial-Abstract Approach on Students' Attitude and Performance in Mathematics. International Journal of Scientific and Technology Research, 7(5), 90-111.

[20] Ersanla, C. Y. (2015). The relationship between students' academic self-efficacy and language learning motivation: A study of 8th graders. Procedia - Social and Behavioral Sciences, 199, 472–478. Retrieved from http://ac.elscdn.com/S1877042815045450/1-s2.0-S1877042815045450-main.pdf?_tid=895a0412-506e-11e6-a0fb-00000aab0f6c&acdnat=1469234816_48121c2b457b3d0c3e0efb2266042223

[21] Wernersbach, B.M., Crowley, S.L., & Bates, S.C. (2014). Study skills course impact on academic self-efficacy. Journal of Educational Development, 37(3)

[22] Ferla, J., Valcke, M., Cai, Y. (2015). Academic self-efficacy and academic self-concept: Reconsidering structural relationships. Retrieved from: users.ugent.be/~mvalcke/CV/selfeffiacy_selfconcept.pdf

[23] Bandura, A. (2000). Self-efficacy. In A. E. Kazdin (Ed.), Encyclopedia of psychology (pp. 212-213) New York: Oxford University Press.

[24] Bong, M., & Skaalvik, E. M. (2003). Academic self-concept and self-efficacy: How different are they really? Educational Psychology Review, 15, 1-40.

[25] Center for Occupational Research and Development (2012). What is contextualize teaching? Retrieved February 5, 2016, from http://www.cord.org/contextual-learning-definition/

[26] Bringas, H. A. (2014). Localization -contextualization-slide share. Retrieved July 30, 2014, from www.slideshare.net/lenferndz/localization-contextualization

[27] Felder, R. M., & Spurlin, J. (2005). Applications, Reliability and Validity of the Index of Learning Styles. International Journal of Engineering Edition, 21(1), 103-112. Retrieved from https://wss.apan.org/jko/mls/Learning%20Content/ILS_Validation(IJEE).pdf

[28] Tomlinson, C. A., Brigthon, C., Hertberg, H., Moon, T., Brimijoin, K., Conover, L., & Reynolds, T. (2003,). Differentiating Instruction in Response to Students' Readiness, Interest and Learning Profile in Academically Diverse Classrooms: A Review of Literature. Journal for the Education of Gifted. Retrieved from http://journals.sagepub.com/doi/abs/10.1177/016235320302700203

[29] Generalao, V. (2012). Mathematics Journal Writing: It's Effectivity on Students' Learning Competences and Attitude in Advance Algebra. Unpublished Thesis, Central Mindanao University.

[30] Andamon, J. & Tan, D. (2018). Conceptual Understanding, Attitude and Performance in Mathematics of Grade 7 Students. International Journal of Scientific and Technology Research, 7(8). August 2018

[31] Jose, A. (2015). Students' Efficacy and Mathematics Performance in an Information and Communications Technology Guided-Discovery Learning Environment. Unpublished Master's Thesis. Central Mindanao University, Musuan, Bukidnon.

[32] Bonne, L. (2012). The effects of Primary Students' Mathematics Self-efficacy and Beliefs about Intelligence on Their Mathematics Achievement: A Mixed-Methods Intervention Study. Victoria University of Wellington.