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Effect of localized lesson plans to the interest and performance of pupils in mathematics

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ABSTRACT

This study aimed to determine the effect of localized lesson plans to the interest and performance in mathematics. The respondents were grade 6 pupils of Odiong Elementary School, Philippines in the school year 2019-2020. The experimental grouped was exposed to instruction using localized lesson plans while the control grouped was exposed to ready-made lesson plans. The results showed that the pupils' level of interests before and after using localized and ready-made lesson are both highly interested; level of performance before using localized was fairly satisfactory, and after using it show it was very satisfactory. Moreover, there is a significant difference between the pupils' interest and academic performance after using localized lesson plans. It indicates that pupils' performance in mathematics under localized lesson plans instruction is much higher than pupils' under ready-made lesson plans instruction. Thus, it is recommended to use localized lesson plans in teaching any subject.

Keywords: lesson plans, K-12, Philippine education, grade 6, grade 6 mathematics, academic performance in mathematics

INTRODUCTION

Background of the Study

The Philippine education uses K to 12 enhanced basic education as its curriculum. It highlights some key features which are geared in addressing students' differences. One of the key features of this curriculum is the localization of instruction (DepEd Order No.35, 2016).

The localization of the curriculum allows learning to become more meaningful and relevant (Blanchfield & Browne, 2013). The teacher's guide and learners' materials may be modified to accommodate the unique contexts of a particular locality. Department of Education Undersecretary of the Philippines Dina Ocampo (Ocampo & Buenviaje, 2022) states that the curriculum is alive, it changes depending on who is implementing it, where and when it is implemented. According to her, in order to localize the curriculum, you have to think of where you are so that you can make the curriculum relevant to you. This means that different areas in the country will also use different materials and instruments so that they can deliver the standards of the curriculum.

On the implementation of K-12 curriculum, localized lesson plans have been introduced. The Department of Education issued DepEd Order No.35 series of 2016, the paragraph 15.5 of which states that student diversity requires that teachers should always consider individual differences in lesson planning and implementation. Teachers identify and respond to opportunities to link teaching and learning in the classroom to the experiences, interests, and aspirations of the wider school community and other key stakeholders. By linking new content to the local experiences that are familiar to students, learning will be more efficient for and relevant to them.

In Odiong Elementary School, the grade 6's first and second quarter grade in mathematics for school year 2019-2020 showed that majority have difficulty in getting passing score in mathematics which affects their academic performance. This result motivated the researchers to conduct this study to find out if localized lesson plans have its effect on the interest and performance of pupils in mathematics and to finally answer the research gap whether localized lesson plans are indeed effective.

Theoretical Framework

This study is based on two theories of learning mathematics namely the constructivism and socio-cultural theory.

Piaget's (1936) theory of constructivism impacts learning curriculum because teachers have to make a curriculum plan, which enhances their students' logical and conceptual growth. Teacher must put emphasis on the significant role that experiences or

connections with the adjoining atmosphere play in student education. His theory of constructivism argues that people produce knowledge and form meaning based upon their experiences. Piaget's (1936) theory covered learning theories, teaching methods, and education reform. Two of the key components which create the construction of an individual's new knowledge are accommodation and assimilation.

The socio-cultural theory of Vygotsky (1978) has gained recognition in the mathematics education community. This theory speaks that students' intelligence is a result of social interaction in the world (Sutherland, 1993). Over which the students have conscious control to language to build up a cognitive tool (Reyes et al., 2019).

This framework description' results will come up into understanding concept as students create mental constructions. This mental construction was further described by Sfard (1991) into two ways namely, operationally (process) or structurally (objects).

On the other hand, the way a student interacts with their family and friends influence the way they think, behave, and speak, which is transferred to other context including school and work (Gauvain, 2001). Classroom setting seems to be a complex context because it is a part of a larger world where common experiences of the students are associated yet individually, students have unique experiences that define them as person (Coyne et al., 2009).

Teachers' knowledge is also important on how to make mathematics meaningful for the students. They must have enough idea to show the use of the lesson into real life situation where students may understand and appreciate the topic. That is why it is very important that the teachers should have the same cultural background with the students in order for them to understand the lesson and see what's in the world in a similar way (Paris, 2012).

Statement of the Problem

This study aimed to find out the effects of localized lesson plans to the interest and performance of grade 6 pupils of Odiong Elementary School in mathematics for school year 2019-2020.

Specifically, this study sought to answer the following questions:

1. What is the level of interests of grade 6 pupils in mathematics before and after using the localized and ready-made lesson plans?
2. What is the level of performance of the grade 6 pupils in mathematics before and after using the localized lesson plans?
3. What is the level of performance of the grade 6 pupils in mathematics before and after using the ready-made lesson plans?
4. Is there a significant difference between the level of interests of grade 6 pupils in mathematics before and after using the localized lesson plans?
5. Is there a significant difference between the level of interests of pupils in mathematics after using the localized and ready-made lesson plans?
6. Is there a significant difference between the performance of grade 6 pupils in mathematics before and after using the localized lesson plans?
7. Is there a significant difference between the post-test performance of pupils in mathematics using the localized and ready-made lesson plans?

Hypotheses of the Study

Based on the problems presented, the following null hypothesis were tested:

1. There is no significant difference between the level of interests of grade 6 pupils in mathematics before and after using the localized lesson plans.
2. There is no significant difference between the level of interests of pupils in mathematics after using the localized and ready-made lesson plans.
3. There is no significant difference between the performance of grade 6 pupils in mathematics before and after using the localized lesson plans.
4. There is no significant difference between the post-test performance of pupils in mathematics using the localized and ready-made lesson plans.

METHODOLOGY

This section discusses the research design, subject and respondents of the study, population and sample size, sampling techniques, data gathering instrument, validity and reliability of the research instrument, data gathering procedures, and data analyses.

Research Design

This research aimed to determine the effect of using localized lesson plans to the interest and performance of grade 6 pupils in mathematics. Hence, the pre- and post-test control group design was used. A pre- and post-test control group design was conducted to investigate the effects of localized lesson plan on grade 6 pupils' mathematics performance and Interest.

Table 1. Distribution of participants on their 3rd grading performance & sex

No	Experimental group (localized lesson plan)		Controlled group (ready-made lesson plan)	
	Sex	3rd grading performance	Sex	3rd grading performance
1	Female	95	Female	95
2	Male	94	Male	94
3	Male	92	Male	92
4	Female	92	Female	92
5	Female	92	Female	92
6	Male	91	Male	91
7	Female	91	Female	91
8	Female	91	Female	91
9	Female	90	Female	90
10	Female	90	Female	90
11	Male	89	Male	89
12	Female	89	Female	89
13	Female	88	Female	88
14	Female	88	Female	88
15	Male	87	Male	87
16	Male	87	Male	87
17	Male	86	Male	86
18	Male	86	Male	86
19	Female	86	Female	86
20	Male	85	Male	85
21	Male	85	Male	85
22	Female	85	Female	85
23	Female	85	Female	85
24	Male	84	Male	84
25	Female	84	Female	84
26	Female	84	Female	84
27	Female	84	Female	84
28	Male	83	Male	83
29	Female	83	Female	83
30	Female	80	Female	80
31	Male	79	Male	79
32	Male	78	Male	78

Respondents

The grade 6 pupils, composed of three sections, who were officially enrolled during the school year 2019-2020 at Odiong Elementary School were the subject and respondents of the study. The grade 6 pupils were divided into two groups, of which the sex and third grading performance were matched. The experimental and controlled group were composed of 32 pupils who were exposed to localized and ready-made lesson plans, respectively.

Distribution of Participants

Table 1 presents the distribution of the participants based on their 3rd grading performance in mathematics & sex.

Instruments

To gather data on the effect of localized lesson plans to grade 6 pupils' interest and performance in mathematics, the researcher utilized the standardized summative test from the Philippine Department of Education to determine the performance of pupils in mathematics, which already went item analysis.

The ready-made lesson plans from the Department of Education were used to the discussion of control group and then they were modified as localized lesson plans that were used to the discussion of experimental group. It is done by relating learning content to local information and materials from learner's community. Localized lesson plans were checked and approved by the school head and master teachers in mathematics of the District of Moises Padilla, Negros Occidental, Philippines.

The questionnaire on interest in mathematics was adopted from the study of Sharma (2014) titled, "*Mathematical Interest of VIII standards students: A comparative study*." The questionnaire is composed of 40-item inventory that is estimated to take between 15 to 20 minutes to complete.

The items of the interest in mathematics questionnaire are shown in **Table 2**.

Validity and Reliability

The research instruments did not undergo the validation and reliability testing as they are standardized questionnaires adopted from reliable and valid sources. The validity and reliability of the standardized questionnaire had been tested and proven by panel of experts and recommended for test assessments.

Table 2. Items in interest in mathematics questionnaire

Positive items	Negative items	Frequency	
		Positive items	Negative items
1, 2, 4, 6, 9, 11, 15, 16, 21, 23, 24, 25, 26, 28, 29, 31, 33, 34, 36, & 38	3, 5, 7, 8, 10, 12, 13, 14, 17, 18, 19, 20, 22, 27, 30, 32, 35, 37, 39, & 40	20	20

The questionnaire on interest in mathematics was adopted from the study of Sharma (2014) entitled, "*Mathematical interest of VIII standards students: A comparative study*". The reliability coefficient of the mathematical interest inventory was found to be 0.89 by using rational equivalence method and 0.91 by using split-half method. The questionnaire was valid as ensured by its content validity and as validated by experts in the field.

The standardized summative test was adopted from the Philippine Department of Education which is undergone validity and reliability procedures by the Department before handling the standardized summative tests to the schools then teachers, therefore it is valid and reliable.

Data Gathering Procedures

To gather data, the researcher sought the approval of the Public Schools District supervisor to administer the study.

After being approved, the researcher requested for the approval of the School Principal of Odiong Elementary School to administer the study to grade 6 pupils.

The researcher used the Third Grading performance in mathematics of all grade 6 pupils and distributed it in two groups wherein the performance and sex of the learners were matched.

The researcher used the same classroom for both groups wherein the time frame is consecutive. The group A, which is the experimental group, was engaged first. After 50 minutes, the group B, which is the controlled group was next.

The pre-test was conducted before discussing the topic to each group. Then, the group A was exposed to instruction using localized lesson plans while the group B was exposed to instruction using ready-made lesson plans. At the end of the experiment, a post-test was administered to each group.

Experimental Procedures

The experimental procedure was carried out into three phases. The pre-intervention phase, intervention phase and post-intervention phase.

Pre-intervention phase

Before conducting the pre-test, participants were distributed in two groups, wherein their third grading performance in mathematics and sex were matched. The researcher used the same classroom for the two groups, wherein it is well-lighted and ventilated, free from noise, and conducive for learning. The time frame used for two groups were consecutive. The experimental group went first from 10:00-10:50 in the morning, they were followed by the controlled group, from 10:50-11:40 in the morning.

Intervention phase

The researcher met the two groups every day on the time mentioned earlier. The same teacher taught the same topic to both groups. The experimental group was exposed to instruction using localized lesson plans while the controlled group was exposed to instruction using ready-made lesson plans. **Table 3** shows the topics discussed in the whole research period. Topics were aligned to the budget course outlay of the Department of Education.

Table 3. Activity log showing topics discussed in research period

Topics	AND	DD	Day
Reads and interprets electric and water meter readings	1	Jan. 30	1st
Solves routine problems involving electric and water consumption	1	Jan. 31	2nd
Solves non-routine problems involving electric and water consumption	1	Feb. 3	3rd
Creates problems involving electric consumption with reasonable answer	1	Feb. 4	4th
Creates problems involving water consumption, with reasonable answer	1	Feb. 5	5th
Summative test	1	Feb. 6	6th
Collects data on one or two variables using any source	1	Feb. 7	7th
Construct pie graph based on a given set	1	Feb. 10	8th
Interprets data presented in a pie graph	1	Feb. 11	9th
Solves routine problem using data presented in a pie graph	1	Feb. 12	10th
Solves non-routine problem using data presented in a pie graph	1	Feb. 13	11th
Creates problems that can be answered using information presented in a pie graph	2	Feb. 14 & Feb. 17	12th & 13th
Summative test	1	Feb. 18	14th
Describes the meaning of probability such as 50% chance of rain and one in a million chance of winning	1	Feb. 19	15th
Quantifies the phrases "most likely to happen" and unlikely to happen	1	Feb. 20	16th
Performs experiments and records outcomes	1	Feb. 21	17th day
Makes listings & diagrams of outcomes & tells number of favorable outcomes & chances using these diagrams	1	Feb. 24	18th day
Makes simple prediction of events based on the results of experiments	2	Feb. 26-27	19th & 20th

Table 3 (Continued).

Topics	AND	DD	Day
Solves routine and non-routine problems involving experimental and theoretical probability	1	Feb. 28	21st day
Solves routine and non-routine problems involving experimental and theoretical probability	1	March 2	22nd day
Creates problems involving experimental probability	1	March 3	23rd day
Creates problems involving theoretical probability	1	March 4	24th day
Summative test	1	March 5	25th day

Note. AND: Allotted number of days & DD: Date discussed

Table 4. Descriptive interpretation of mean score indicated levels of interests in mathematics

Mean score range	Description	Interpratation
4.21-5.00	Strongly agree	Very highly
3.41-4.20	Interested agree	Highly interested
2.61-3.40	Neither agree nor disagree	Interested
1.81-2.60	Disagree	Merely interested
1.00-1.80	Strongly disagree	Not interested

Table 5. Descriptive interpretation of mean score indicated level of performance of grade 6 pupils in mathematics

Mean score range	Interpratation
49-60	Outstanding
37-48	Very satisfactory
25-36	Satisfactory
13-24	Fairly satisfactory
00-12	Poor

Post-intervention phase

After a five-week period, 25 days to be exact, a post-test was conducted using similar test and survey questionnaires given in the pre-test. The result of the test was used to get the mean scores of the experimental and controlled group.

Statistical Treatment

After the collection of data, the researcher tallied, tabulated, and analyzed the data gathered. In the analysis of the data gathered, different statistical tools were used.

To answer problem 1, which determined the level of interests of grade 6 pupils in mathematics before and after using the localized and ready-made lesson plan, mean and standard deviation were used.

The descriptive interpretation of the mean score indicated the levels of interests in mathematics and was distributed and presented in **Table 4**.

To answer problem 2, which determined the level of performance of grade 6 pupils in mathematics before and after using the localized lesson plan, mean and standard deviation were used.

The descriptive interpretation of the mean score indicated the level of performance of grade 6 pupils in mathematics was distributed and presented in **Table 5**.

To answer problem 3, which determined the level of performance of grade 6 pupils in mathematics before and after using the ready-made lesson plan, mean and standard deviation were used.

To answer problem 4, which determined the difference between the level of interests of grade 6 pupils in mathematics before and after using the localized lesson plan, paired t-test was used.

To answer problem 5, which determined the difference between the level of interests of pupils in mathematics after using the localized and ready-made lesson plan, t-test of independent samples was used.

To answer problem 6, which determined the difference between the performance of grade 6 pupils in mathematics before and after using the localized lesson plan, paired t-test was used.

To answer problem 7, which determined the difference between the post-test performance of pupils in mathematics using the localized and ready-made lesson plan, t-test of independent samples was used.

RESULTS AND DISCUSSION

This section deals with the results and the discussion of the data gathered. The data were arranged comprehensively to answer the statement of the problem using different statistical tools.

Level of Interests of Grade 6 Pupils in Mathematics Before and After Using the Localized and Ready-Made Lesson Plans

Table 6 illustrates the level of interests of grade 6 pupils in mathematics before and after using the localized and ready-made lesson plans.

Table 6. Level of interests of grade 6 pupils in mathematics before and after using localized and ready-made lesson plans

Pupil number	Interests of pupils towards mathematics			
	Group A (localized lesson plan)		Group B (ready-made lesson plan)	
	Pre-test	Post-test	Pre-test	Post-test
1	3.5	4.2	3.38	3.70
2	3.7	4.3	3.53	3.28
3	3.9	3.9	3.85	3.88
4	3.8	4.3	3.40	3.75
5	3.6	4.4	3.70	3.70
6	3.7	4.0	3.95	3.80
7	4.2	4.5	4.03	4.05
8	3.6	4.0	3.53	3.60
9	3.1	3.9	3.60	3.75
10	3.5	3.7	2.98	3.48
11	3.4	3.8	3.03	3.95
12	3.5	4.1	3.13	3.50
13	3.2	4.1	2.95	3.38
14	3.2	4.2	2.80	3.00
15	3.7	4.4	3.73	4.00
16	3.5	4.3	4.05	4.25
17	3.5	3.9	3.68	4.00
18	3.4	4.0	3.20	3.75
19	3.7	4.2	3.73	4.05
20	3.7	4.1	3.23	3.48
21	3.7	4.2	4.10	3.60
22	3.7	4.2	3.43	3.68
23	3.7	4.1	3.83	3.65
24	3.7	4.4	3.50	3.55
25	3.8	4.3	3.73	3.63
26	3.2	3.9	3.48	3.73
27	3.5	4.0	3.03	3.75
28	3.3	4.1	3.28	3.85
29	3.5	4.2	3.40	3.93
30	3.2	4.2	4.13	3.88
31	3.4	4.1	3.50	3.45
32	3.7	3.9	3.40	3.00
Mean	3.56	4.12	3.51	3.69
Standard deviation	0.24	0.19	0.36	0.28
Interpretation	Highly interested	Highly interested	Highly interested	Highly interested

Table 6 reveals that the level of interest of grade 6 pupils in mathematics before and after using localized lesson plans have means of 3.5 and 4.1, respectively, and are interpreted as both highly interested. While the level of interest of grade 6 pupils in mathematics before and after using ready-made lesson plans have means of 3.5 and 3.7, respectively, and are interpreted as both highly interested.

This implies that pupils under localized lesson plans have a higher mean value in the level of interest than the ready-made lesson plans. This can be attributed to the examples, problems and materials used which are present in the community that are relevant to them. Seeing the localize materials they can visualize, remember, and appreciate the application of it in their daily lives which adds to their interest and curiosity to listen and participate in the discussion.

The result of this study is in conformity with the study of Bringas (2014) which underscores that localization motivates the learners to know, understand, and appreciate cultural heritage. In addition, this conforms to the study of Tomlinson (2003) that teachers who conduct localized instructions will address students' readiness, interest and learning on a wide range classroom.

Level of Performance of the Grade 6 Pupils in Mathematics Before and After Using the Localized Lesson Plans

Table 7 illustrates the level of performance of grade 6 pupils in mathematics before and after using the localized lesson plans. **Table 7** reveals that the level of performance of grade 6 pupils in mathematics before using localized lesson plans has a mean of 14.4 and is interpreted as fairly satisfactory. After 25 days of discussion under the localized lesson plans, pupils garnered a mean of 45.4 and is interpreted as very satisfactory.

This implies that grade 6 pupils under the localized lesson plans yields a very satisfactory result. This is because the problems, examples, situations and localize materials help them master the lesson that leads to the attainment of the goals and objectives. It also implies that using localized lesson plans is effective in increasing the learning of pupils and it addresses the diversity of this group.

This result conforms to the study of Witzel et al. (2003) that students who learned how to solve algebra transformation equations through localized lesson scored higher on post instruction and follow-up tests. Moreover, it conforms to the study of Wiseley (2011) that students who completed pre-algebra with instruction that involved Localize teaching and learning passed at much higher rates than did students in the standard classes.

Table 7. Level of performance of grade 6 pupils in mathematics before and after using localized lesson plans

Pupil number	Test results of pupils under localized lesson plan	
	Pre-test	Post-test
1	24	53
2	18	58
3	12	47
4	15	47
5	11	52
6	20	49
7	13	43
8	17	39
9	11	30
10	10	33
11	16	45
12	9	43
13	7	26
14	10	30
15	31	58
16	17	53
17	11	56
18	13	52
19	13	38
20	11	36
21	10	52
22	15	44
23	20	54
24	20	57
25	15	54
26	13	53
27	9	34
28	10	46
29	20	39
30	9	55
31	14	37
32	17	39
Mean	14.41	45.37
Standard deviation	5.11	9.18
Interpretation	Fairly satisfactory	Very satisfactory

Level of Performance of the Grade 6 Pupils in Mathematics Before and After Using the Ready-Made Lesson Plans

Table 8 illustrates the level of performance of grade 6 pupils in mathematics before and after using the ready-made lesson plans.

Table 8 reveals that the level of performance of grade 6 pupils in mathematics before using ready-made lesson plans is fairly satisfactory with a mean of 15.2. After the 5th week period of discussion under ready-made lesson plans, result shows that pupils earned a mean score of 39.0 and is interpreted as very satisfactory. This implies that grade 6 pupils under ready-made lesson plans yields a good result.

The result is contrast to the study of National Research Center for Career and Technical Education (2005) that localize teaching and learning had positive effects for mathematics instruction at the elementary and secondary levels.

Difference Between the Level of Interests of Grade 6 Pupils in Mathematics Before and After Using the Localized Lesson Plans

Table 9 reveals the difference between the level of interests of grade 6 pupils in mathematics before and after using the localized lesson plans using paired t-test at 0.05 level of significance. We used the paired t-test since there were no violation in the assumption of normality with Shapiro-Wilk test of normality p-value of 0.64.

Table 9 shows that the computed value of the paired t-test is -13.62 with p-value of 0.0000, it shows that that the p-value is less than α=0.05. Thus, the null hypothesis is rejected. This means that there is a significant difference between the level of interests of grade 6 pupils in mathematics before and after using the localized lesson plans. It is in the post-test, where the pupils registered higher mean score.

Result of this study reveals that interest of grade 6 pupils in mathematics has a significant difference before and after using the localized lesson plans. It implies that localized lesson plans affect the interest of pupils. It is because the modified lessons, examples, materials and situations are found locally which attracts the interest of pupils to listen and engage in the discussion.

Results conforms to the study of Mazzeo et al. (2008) as cited by Perin (2011) that localize teaching is an instructional strategy presenting the lesson directly on concrete applications in a specific context to appeal to the interest of the students.

Table 8. Level of performance of grade 6 pupils in mathematics before and after using ready-made lesson plans

Pupil number	Test results of pupils under localized lesson plan	
	Pre-test	Post-test
1	9	41
2	13	37
3	13	32
4	14	30
5	10	34
6	8	33
7	7	26
8	10	37
9	16	39
10	18	32
11	9	35
12	17	46
13	15	32
14	13	29
15	28	57
16	24	48
17	16	50
18	25	43
19	28	50
20	12	42
21	15	31
22	13	40
23	15	54
24	19	41
25	14	43
26	16	50
27	14	36
28	13	37
29	15	33
30	10	34
31	20	38
32	16	38
Mean	15.2	39.0
Standard deviation	5.29	7.65
Interpretation	Fairly satisfactory	Very satisfactory

Table 9. Difference between level of interests of grade 6 pupils in mathematics before and after using localized lesson plans

	t-value	p-value	Significance at α=0.05	Decision
Level of interest before and after using localized lesson plans	-13.62	0.0000	Significant	Reject $\mathbf{H_o}$

Table 10. Difference between level of interests of grade 6 pupils in mathematics after using localized and ready-made lesson plans

	t-value	p-value	Significance at α=0.05	Decision
Level of interest before and after using localized and ready-made lesson plans	-7.19	0.0000	Significant	Reject $\mathbf{H_o}$

Difference Between the Level of Interests of Grade 6 Pupils in Mathematics After Using the Localized and Ready-Made Lesson Plans

Table 10 reveals the difference between the level of interests of grade 6 pupils in mathematics after using the localized and ready-made lesson plans using independent samples t-test at 0.05 level of significance. We used the independent samples t-test since there were no violation in the assumption of normality with Shapiro-Wilk test of normality p-value of 0.14 and Levene's test of homogeneity p-value of 0.14.

Table 10 shows that the computed value of Independent samples t-test is -7.19 with p-value of 0.0000, which is less than α=0.05. Therefore, the null hypothesis is rejected. This means that there is a significant difference between the level of interests of grade 6 pupils in mathematics after using the localized and ready-made lesson plans.

Result of this study reveals that the interest of grade 6 pupils in mathematics has a significant difference after using the localized and ready-made lesson plans. This implies that pupils exposed to instruction using localized lesson plans have a higher interest than pupils exposed to instruction using ready-made lesson plans. This implies that localized lesson plans arouse the interest of the learner for a maximum participation in the discussion. It is because the instruction is locally present and applicable in the community and in the real world.

Results of this study conforms to the study of Hasselbring and Moore (2006) that instruction that involves the application of localize teaching and learning motivated students to learn and understand mathematics at the elementary-school level.

Table 11. Difference between performance of grade 6 pupils in mathematics before and after using localized lesson plans

	t-value	p-value	Significance at α=0.05	Decision
Level of performance before and after using localized lesson plans	-21.61	0.0000	Significant	Reject H_o

Table 12. Difference between level of performance of grade 6 pupils in mathematics after using localized and ready-made lesson plans

	t-value	p-value	Significance at α=0.05	Decision
Level of interest after using localized and ready-made lesson plans	-3.02	0.0037	Significant	Reject H_o

Difference Between the Performance of Grade 6 Pupils in Mathematics Before and After Using the Localized Lesson Plans

Table 11 reveals the difference between the performance of grade 6 pupils in mathematics before and after using the localized lesson plans using paired t-test at 0.05 level of significance. We used the paired t-test since there were no violation in the assumption of normality with Shapiro-Wilk test of normality p-value of 0.16.

Table 11 shows that the computed value of the paired t-test value is -21.61. With the p-value of 0.0000, which shows that it is less than α=0.05. This means that there is a significant difference between the performance of grade 6 pupils in mathematics before and after using the localized lesson plans. The null hypothesis is rejected.

Result of this study reveals that the performance of grade 6 pupils in mathematics has a significant difference before and after using the localized lesson plans. So, it is true that there is a significant increase in the academic performance of pupils when localized lesson plans are used. This study was in conformity of Reyes et al. (2019) that due to localization, students better understand the concepts of Geometry, its meaning, relevance, and implications which result better learning. Moreover, the result is in the conformity with the study of Graham (2011) that the use of localize lesson in mathematics courses is positively related to student success.

Difference Between the Performance of Grade 6 Pupils in Mathematics After Using the Localized and Ready-Made Lesson Plans

Table 12 reveals the difference between the performance of grade 6 pupils in mathematics after using the localized and ready-made lesson plans using independent samples t-test at 0.05 level of significance. We used the independent samples t-test since there were no violation in the assumption of normality with Shapiro-Wilk test of normality p-value of 0.57 and Levene's test of homogeneity p-value of 0.15.

Using Independent samples t-test, the computed value is -3.02 and p-value is 0.0037, it shows that that the p-value is less than α=0.05, which means that there is a significant difference between the performance of grade 6 pupils in mathematics after using the localized and ready-made lesson plans and that the null hypothesis is rejected.

The result of this study reveals that the performance of grade 6 pupils in mathematics has significant difference after using the localized and ready-made lesson plans. So, it confirms that pupils under the discussion using localized lesson plans perform better than pupils under the discussion using ready-made lesson plans. It is because the lesson is being modified where the examples, problems and instructional materials used are present in local community and portrays the everyday life situations of the pupils. By modifying lesson plans into localized one, the discussion of the topic become more interesting and relevant that cause maximum mastery of topic which yields a higher performance in mathematics than the ready-made lesson plans. This result agrees to the study of Domantay and Rosals (2017) that group of students exposed to localized teaching performed better than the group of students exposed to non-localized teaching. Moreover, it conforms to the study of Hasselbring and Moore (1996) that students under the instruction which involves Localize Teaching and learning performs better than those students under instruction without localize teaching and learning.

CONCLUSIONS AND RECOMMENDATIONS

This section presents the summary of findings with its corresponding conclusions and recommendations.

Conclusions

Based on the results and discussion, the following conclusions were drawn:

1. Level of interest of grade 6 pupils under localized lesson plans has a higher mean compared to ready-made lesson plans.
2. The academic performance of grade 6 pupils under localized lesson plans improves three times from its pre-test.
3. The academic performance of grade 6 pupils under ready-made lesson plans improves from its pre-test.
4. Pupils under the localized lesson plans instruction performs better in mathematics than in ready-made lesson plans.
5. Pupils under localized lesson plans instruction becomes more interested in mathematics compared to pupils under ready-made lesson plans.
6. Academic performance of pupils in mathematics after localized lesson plans instruction became better.
7. Pupils' performance in mathematics under localized lesson plans instruction is much higher than pupils' under ready-made lesson plans instruction.

Recommendations

Based on the results, conclusions, and implications, the following recommendations are advanced:

1. School administrators may promote on the modification of ready-made lesson plans to localized one and provide learning action cell session to teachers in order to level up the academic performance of pupils in mathematics.
2. Mathematics teachers can modify their ready-made lesson plans into a localized one, wherein the examples, problems, and instructional materials to be used are present in the local community, to improve the pupils' interest and performance in mathematics. They must be creative, forward-looking, and adept in using available resources found inside the community and integrate real life experiences to the learners.
3. Educators in any field may try instruction using localized lesson plans in teaching any subject because it shows positive effect in the performance of the learners, and it is an effective means of imparting lifelong learning outcomes.
4. Parents can encourage and guide their children to engage in mathematical activities. They must be aware on the importance of their children's academic performance in mathematics.
5. Pupils are encouraged to give interest on learning mathematics for it has vital applications in the real world.
6. The researcher is encouraged to continue modifying lesson plans into localized one, to raise the interest and academic performance of pupils in mathematics.
7. For future researchers, further study in the instruction using localized lesson plans to any grade level and using bigger sample size to have more comprehensive result and to validate the findings of the study

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