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Improving Mathematics Achievement in the New Normal Education System Using Genyo E-Learning

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Abstract

Mathematics as a discipline effectively learned when teacher-assisted instruction is present has now aided with computer-assisted learning. This study assessed the effectiveness of Genyo-E-Learning in Online Distance Learning through a quasi-experimental pretest-posttest control group design. Pupils have matched accordingly with their Mathematics grades in the third-grading period. Pretest underwent KR20 and Levene's Test of Homogeneity of Variance to see if the covariate is reliable and groups are at the same level. As shown in the Schema of Classes, the researcher designed two lesson outlines with different structures for the intact groups covering the topic: Circumference of a Circle. The lesson for the Control Group was delivered through the Conventional Virtual Lecture Method, while the Experimental Group had Genyo E-Learning as an aid for transmission. The post-test scores were the basis as to what group the significant difference favors. Post-tests were treated with ANCOVA at a 0.05 significance level. The researcher used the National Achievement Test Descriptive Equivalence Table to determine groups' mastery level and used the Evaluation Form on the Excerpts of Online Classes to evaluate the degree of pupils' interactivity toward the lesson. Mathematics Achievement of pupils taught with Genyo E-Learning is greater than that of Conventional Virtual Lecture Method teaching and rated Very Satisfactorily and Satisfactorily respectively based on Interactivity Evaluation. More pupils from the Experimental Group achieved Mastered Level based on the Achievement Level Scale. Genyo E-Learning Systems could improve Mathematics Achievement in the New Normal Education System.

Keywords: *Genyo E-Learning; Convention Virtual Lecture Method; Online Distance Learning*

INTRODUCTION

Undoubtedly, Mathematics is considered one of the essential components in the curriculum of every elementary school. The subject refines an individual's analogy, problem-solving, estimation, and reasoning. Mastery of the subject comes into a progressive process since subject matters intensify as the attainment level increases. This means that mastery of mathematical skills at the elementary level is a key towards proficiency in problem-solving in a more complex stage.

As a learner entails oneself in problem-solving, it could not be avoided to experience difficulties in associating learned formulas in an actual problem, such as in solving for the circumference of a circle depending on what line segment is present, either radius or diameter, or the rules in multiplying decimals particularly the movement of decimal points, or even comprehending mathematical sentences. Moreover, this calls for Guided Learning.

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One of the many facets that had gone through sudden modification in this New Normal is the Educational System. Teacher-assisted instruction became computer-assisted instruction in institutions offering Online Distance Learning Modality. We could not avoid catechizing the quality of learning, particularly the mastery of content in Mathematics. Thus, there should be a feasible teaching and learning approach that promotes quality despite the absence of face-to-face interaction. With the involvement of Learning Management Systems, we can develop electronic learning materials to supplicate the demand for distance learning. Genyo E-Learning as an online platform that supports the teaching and learning process is what the researcher wanted to explore.

Problem of Research

Due to the sudden shift of modality, the Conventional Virtual Lecture Method has been considered a mechanism to ensure continuity of learning (Capacio, 2021). The method is the same as the traditional lecture way of delivering instruction using pen and board but with a channel. The exposition of a home-based attitude of a learner towards Mathematics may be transparent since there is a lack of direct supervision. Given the situation today where feedbacking and assisting are at a minimum state, how far could learning mathematical skills go? The only way for learners to achieve the desired outcomes from the established competencies of the curriculum is to make learning Mathematics an enjoyable memory. The integration of computer application in teaching Mathematics to leverage capacity is one of the aspects that the researcher wanted to investigate, primarily with the use of Genyo E-Learning. It is one of the products brought by the emergence of Information Communication Technology within the scope of Education. The platform offers vast enjoyable educational services such as interactive discussion and analogies through pictures, videos, learning strategies, games, diaries, and computer-generated tests. Higher learning happens when the method of learning meets the pupils' learning preferences (Motschnig-Pitrik, 2005).

Research Focus

Increased learner exposure to educational technologies through curriculum integration could significantly positively impact student achievement (Ciroma, 2014). Several published researches tackle electronic learning, but none of those focused on what Genyo E-Learning could offer when used appropriately to promote online distance learning, holistic and enjoyable schooling. Other unpublished cases are done talking about how the software could help in a laboratory setting, but since attending to the same premise with many people is prohibited today, the learning environment has changed; thus, this experiment was able to advance. This research was conducted to arrive at a sound inference about how the software could promote enjoyable collaborative and independent learning using Mathematics subject as a course. The researcher also thinks that this study could be a source of information for public schools regarding the commencement of online delivery of instruction associated with Genyo E-Learning Services.

Research Questions

This study explored the central question: How effective Genyo E-Learning is in teaching Mathematics to Grade 6 pupils compared to the use of Conventional Virtual Lecture Method. This was conducted in Saint Columban College Elementary Department, Pagadian City, in the school year 2020 – 2021. Specifically, this study utilized the following sub-questions:

1. Is there a significant difference in pupils' Achievement Scores in the Experimental Group using Genyo E-Learning compared to the Control Group using the Conventional Lecture Method during the Post-test?

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2. Is there a difference in the Mastery Level of the Experimental Group compared to that of the Control Group?
3. Is there a difference in the degree of teacher-learner interactivity during the conduct of Online classes in both Experimental and Control groups?

LITERATURE REVIEW

Educational Change

Since Change is Inevitable, people involved could not withstand its existence. Acceptance is most challenging at the beginning, complex in the middle, but best at the end. Contemporary evolution in Information and Communication Technologies (ICT) area has brought noteworthy developments in the field of Education, same case in some other facets of our daily lives. ICT as a technological tool has touched many sectors, especially in the Educational Aspect, particularly the sustainability of learning in this New Normal since its role in today's era brings a far-reaching change in schools' instructional phase (Sutrisno, 2021). These changes have impacted schools and their curriculum, teachers, and pupils scoping the teaching and learning process. Moreover, countries that had been integrating ICT in Education even in its early emergence had profoundly exhibited prominent leverages as to their achievement of educational transformation and improvement of the quality of instruction (Aydin, 2017). However, efficient and effective use of ICT in teaching and learning somehow requires notable School Level Condition, flourished and complex skill of teachers, and 21st Century-Oriented minds of pupils (Cetinkaya, 2017).

Online Distance Learning

Beginning from the spring of the COVID-19 outbreak, the closure of schools or prohibition of physical interaction all over the globe had commenced. Since this state of affairs happened for the first time, this opened the door for unprepared schools, teachers, and pupils to the possibility of having emergency remote teaching, certainly Online Distance Learning (Ploj Virtic, 2021). Online Education has become an essential long-term strategy for many schools in the present situation. The response of most institutions in the world to the Pandemic outbreak was the transition to purely Online Environments for curricularists and the teaching industry. This could become an excellent alternative to the traditional setup since there is still teacher-student interaction but with a channel. For people who cannot afford to increase the number of COVID positive cases, their plight is to take maximum safety measures as the top priority while having a secure and comfortable transmission of learning (Usak, 2020). In an Online Setting, both learners and teachers are separated, and learning is held Synchronously where there is a real-time interaction or asynchronously where the Online Platform is used to assign activities and submit outputs (Moorhouse, 2021). Since teachers and learners are the main characters in the emergence of Online Teaching and Learning Modality, it should rightfully consider teachers' abilities to teach online and learners' styles in online learning and their level of engagement during the process as the prerequisites teaching industry must look upon.

Classroom Management in an Online Setting

Classroom management strategies are essential skills that teachers should possess to gain learners' attention and redirect pupils' focus to the subject matter regardless of the type of environment, whether Face-to-Face or Online Setting, and to attract meaningful learning interactivity (Mafikasari, 2021) consistently. Strong classroom management increases learners' engagement or participation, but apparently, many teachers perceive classroom management as one of the problematic aspects to maintain in a Face-to-Face setup. Given that idea, classroom management maybe even more complicated in an

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online setting since there is an absence of direct supervision (Kwok, 2021). Also, in the online environment, learners are prone to visual and auditory distractors, making it harder for them to engage themselves, resulting in an exposition of home-based attitude directly, and sometimes, a myriad of technical matters open the possibility for teachers to have difficulty in terms of rendering feedback or assistance (Aldiab, 2019). Since classroom management is solely a hard practice to integrate into a virtual situation, the online teacher must strive to give immediate feedback to students and, at the same time, foster a community-like environment in the online setting. Here comes now the integration of Learning Management Systems in the teaching and learning process as a contingency plan to make learning more interactive during this striving time brought by the New Normal Education System.

Learning Management Systems

Learning Management System (LMS) is a type of application software used to assist teachers and pupils in the E-learning process. Its basic description is that it is software that automates the administration, monitoring, or tracking of progress and reporting results or training events (Simanullang, 2020). An essential component of online classroom learning is a good LMS that promotes social and communicative interactions between pupils-teachers and pupils-pupils. Pupils' ability to ask a question, share an opinion, or disagree with a point of view is a fundamental learning activity. Through conversation, discourse, discussion, individual learning through asynchronous engagement, a new concept is clarified, an old assumption is challenged, a skill is practiced, an original idea is formed and encouraged, and ultimately, a learning objective is achieved (Chakraborty, 2017). The concept of E-Learning inside virtual classrooms and with the aid of Learning Management Systems is to promote a learning environment that provides quality education and challenging but enjoyable exchanging of ideas despite the absence of direct supervision. The urgency factors that should be taken seriously are the lack of direct teaching and learning, the limited interactions resulting in non-real-time feedback, boredom learning, and the exposition of a home-based attitude (Rabiman, 2020). Since feedbacking is considered to be one of the essential components in both synchronous and asynchronous learning, LMS is a good counterpart since its features involve easy access to assigned and submitted pupils' activities, provision of fast and continuous feedback, facilitates and improves timely communication, tracking of pupils' progress, allows computer skills development to both teachers and pupils, and serves right the 21st Century Learners (Alshorman, 2018). In totality, LMS provides a very authentic and structured virtual experience. Without the help of LMS, it would be most difficult to planning, implementing, and delivering instruction, and training may become difficult on the part of schools who chose to have a pure online setup just for continuity of learning to happen. Partly, LMS is a web-based system, but its usefulness is not only limited to real-time meetings but also asynchronous learning (Findik-Coşkunçay, 2018). One of the perfect examples of an LMS that facilitates interaction improves computer operation skills of both teachers and pupils, enhances pupils' learning abilities, and supports higher-order learning, including critical thinking, problem-solving, and collaboration skills is Genyo E-Learning.

Genyo E-Learning Overview. Genyo E-Learning is a technology-based instructional material that could be used in classroom instruction. It refers to a web-based application that gives learners and teachers a private massive online subscription to a large display of multi-media, teaching, and learning curriculum-based resources on different subjects. The Application is exploited to construct, access and transfer content, track record, monitor, assess, and access students' performance. E-learning tools involve electronic media that exploits ICT to assist, enrich, enhance, and extend the whole experience of learning (Santiago, 2017). The learning system allows teachers to create a Lesson Package that is comprehensive enough to cater to learners' needs exhibiting the 5Es of Learning; Engage, Explore, Explain, Extend, and

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Evaluate. These characteristics will allow teachers to partially teach a concept of the topic, update them with their learning tasks through announcements, and let the learners have independent learning as they enjoy series of exciting videos and share blogs that will serve as discussion, games that will serve as a way of enriching what has been learned or also known as formative assessment, and electronic testing with the aid of test-feature of Genyo E-Learning that will serve as unit or chapter quiz (Hortal, 2021). The multiple e-learning functions allow teachers to address pupils' diverse learning styles as they negotiate, collaborate, and share thoughts with the class through the LMS and traverse to some other unexplored features (Waluyo, 2020).

Mathematics in Education

Mathematical ability is a significant skill that needs to be acquired to learn other complex disciplines concerning Science and computation. Due to Mathematics' wide range of scope, we can observe its apparency in all levels of education because every school curriculum has valued its contribution. The presence in the curriculum intends to provide pupils more than literacy, but with equally essential knowledge and skill that will surely be useful in the variety of workplaces (Mazana, 2019). In the Philippines, Mathematics is one of the significant subjects in Basic Education together with English and Science and is perceived to be one of the challenging courses in Tertiary Education. To be particular, other countries viewed Mathematics as the most difficult subject evidently because it causes high failure rates (Ngusa & Mbuti, 2017). The ABC Model of Attitude by Ajzen in 1993 will explain why learning Mathematics becomes favorable and unfavorable regardless of the modality. First is Affect, where Self-confidence, Anxiety, and Enjoyment of the subject are the areas that could positively or negatively influence learning. Then Behavior and Cognition that talks about the degree of desire, motivation, perception of its usefulness that a learner has in its mind (Syyeda, 2016). In a traditional mathematics class setup, much of the learning comes from reading a textbook, listening to lectures, and taking notes. In effect, learners become more lenient on visual features on the board, such as the fact that two or more Circles with their radius and diameter are being compared and look the same even if they are not measured using appropriate units. This context gives out a dull impression to learners. Simultaneously, the fast and interactive trend of computer technology advances in learners' interest, making it a desirable teaching tool that could be used in teaching Mathematics (Sebial, 2017).

Learnings are not only done in the classroom, but it goes beyond imagination. It is acquired in a way that is most remembered and valued through their experience that they learn more (Naparan, 2020). In connection, children today can learn Mathematics more interactively as ICT usage is highly encouraged. Moreover, learning Mathematics and mastery of fundamental concepts is very beneficial to the learner because the subject is present in different grade levels; thus, every subject matter that is available within the course is considered a stepping-stone towards higher learning. The teacher's mechanism for learners to achieve the desired outcomes is to make learning Mathematics an enjoyable memory. The children will never forget for a lifetime since Mathematics is not just a one-time subject that could be learned in a single discourse, semester, or school year; it is a continuous leveling or progressive type, to be specific. It will undoubtedly continue even when these learners have already transitioned from primary education to a more complex one. Hence, it is a critical move to help these children understand the importance of mastering basic concepts in Mathematics even in this New Normal Education System with the aid of an interactive, challenging, and fun LMS, particularly Genyo E-Learning.

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RESEARCH METHOD

General Background of Research

This study utilized a quasi-experimental pretest-posttest control group design to investigate the effects of treatment in the academic achievement scores of pupils in Mathematics. Two sections were used for this study as research participants. Both groups were given the same set of lessons in Mathematics 6 but different teaching and learning procedures. The Experimental Group was taught with the aid of Genyo E-Learning during the virtual class, and the Control Group was taught only with the Conventional Virtual Lecture Method.

Sample of Research

The participants of this study were Grade 6 pupils from sections St. Charles Borromeo and St. Michael of Saint Columban College Elementary Department in School Year 2020 - 2021. For the second source of data, the researcher decided to include the principal and two teachers to observe during the class for the Experimental and Control Group.

Table 1. The Research Participants for the Experiment

Sections	Pupils' Population
Grade 6 St. Charles Borromeo	25
Grade 6 St. Michael	25
Total	50

As shown in Table 1, St. Charles Borromeo and St. Michael had 25 pupils each. It is assumed that they have similar intellectual capacity since the researcher based purposively on the third-period grades for the matching. To further prove the uniformity of the intact groups, Levene's Test of Homogeneity of Variance was conducted basing on the scores during the pretest. The pupils from St. Charles Borromeo belonged to the Experimental Group, and those from St. Michael are the Control Group.

Table 2. The Observers who conducted the Evaluation

Observers	Classes to be observed
Principal Teacher A Teacher B	St. Charles Borromeo (Experimental Group) and St. Michael (Control Group)

Table 2 shows that the principal, including two teachers, observed the class of the researcher in both the Experimental and Control Group. The observers are handed in the revised Observation Evaluation Form on the excerpts of Online Class, based on the 2019 model of DIWA Learning Systems Incorporated, Innovation in Education, to be used as a tool to determine a descriptive analysis as to the degree of pupils' immersion to Online Class.

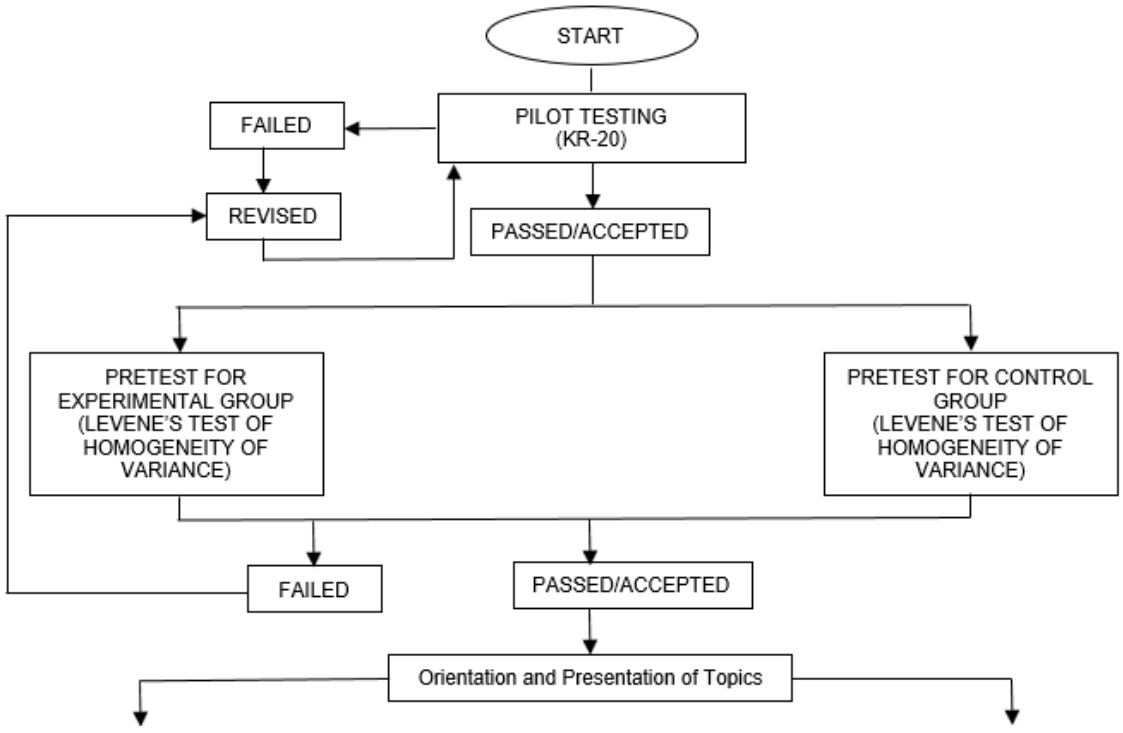
Instrument and Procedures

The researcher designed a Grade 6 Lesson plan with the topic *Circumference of a Circle.* For the Experimental Group, a lesson plan following the template of DIWA Learning Systems consisting of 5Es was made. For the Control Group, a typical lesson plan for classroom teachers was made. The lesson plans were presented to several Master Teachers for their expert opinion on the plan's validity. Pilot testing was done before administering the test to the entire group. The test was administered first to a different set of pupils

ISSN 2684-7167 (online)

from another school with the same grade level as the study's research participants through Google Docs. Using Kuder-Richardson 20 (KR20), the researcher was able to test the item reliability with a Cronbach's Alpha of *0.75* interpreted as *Acceptable*.

The researcher requested authorization from the School Principal to run the study. Upon approval, the researcher informed the principal and teachers who will serve as observers. Two data sources became the basis of this study to make sure the results were well supported. First, a researcher-made pretest was administered to the two groups to measure their prior knowledge about the topic and test if both groups were homogeneous. The answers of the pupils were electronically checked and recorded as the covariate of the study. After the pretest, the same set of lessons were taught to both groups. The Experimental Group was taught virtually with the aid of Genyo E-Learning, and the Control Group was taught only with a Conventional Virtual Lecture Method. The post-test assessed what pupils were learning from the discussion with the given treatment. Right after the class, the researcher computed the mean from the observers' evaluation using the revised Observation Evaluation Form on the excerpts of Online Class, based on the 2019 model of DIWA Learning Systems Incorporated, Innovation in Education. The result followed the hypothetical mean ranges of; *1:00 – 1.75 – Good, 1.76 – 2.50 – Very Good, 2.51 – 3.25 – Satisfactory, and 3.26 – 4.00 – Very Satisfactory*. The evaluation form provided a descriptive analysis as to the degree of pupils' interactivity in Online classes. The second part of the evaluation form states the suggestions of the observers to further enhance learning interactivity in an online setting.



ISSN 2684-7167 (online)

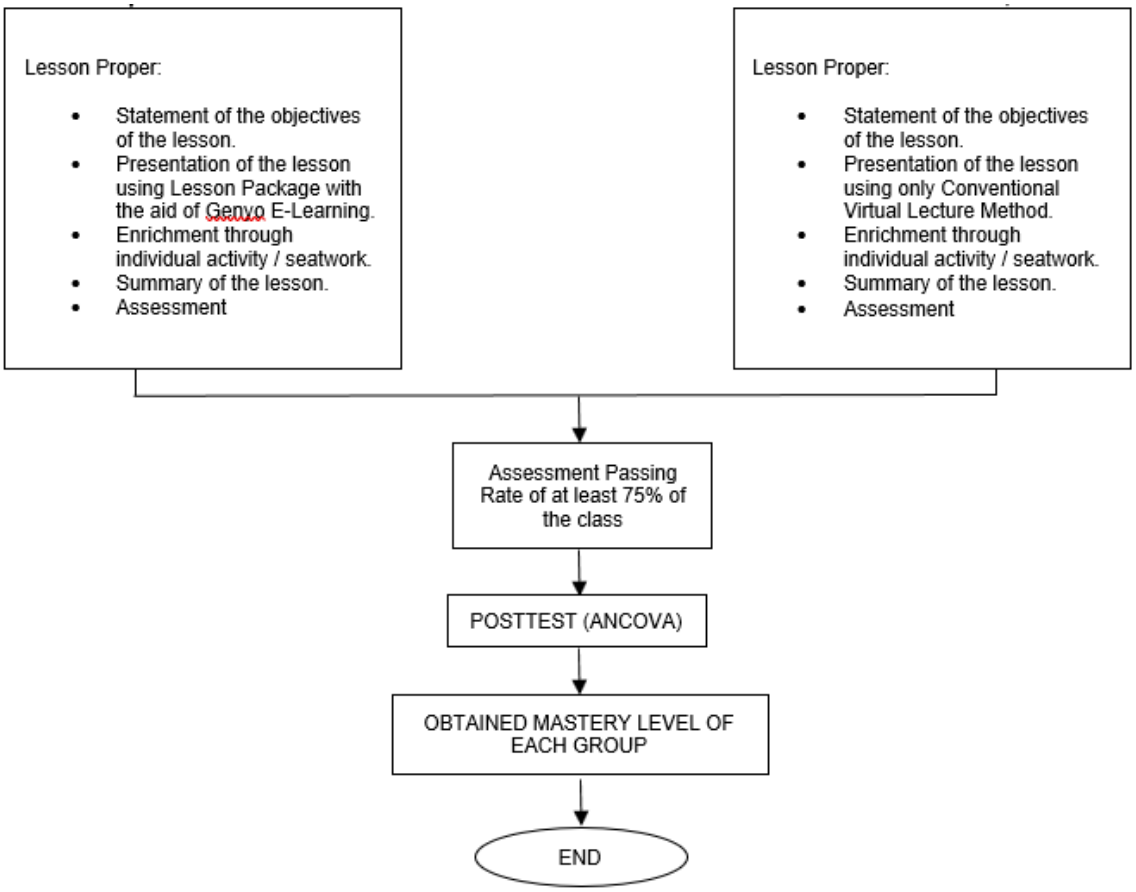


Figure 1: Schema of the Management of Classes

Data Analysis

For the statistical process, descriptive statistics and inferential statistics were employed. In descriptive statistics, frequency count, weighted mean, and standard deviation were used to determine the Mastery Level of both groups using the NAT Achievement Level Descriptive Equivalence. The same statistics were used as the researcher unveils results regarding the Excerpts of Online Class using the revised evaluation form. For the inferential statistics, the researcher used the Achievement Scores of the Experimental and Control Group during the post-test as the basis in testing the null hypothesis. The data were tested at a 0.05 level of significance using One-way Analysis of Covariance (ANCOVA) and t-test. To minimize the chance of committing mistakes during the data analysis, the researcher used Statistical Package for Social Sciences.

Results of Research

Below are the presentation, analysis, and interpretation of data gathered from the achievement scores of both Experimental and Control Groups during the pretest and post-test and the evaluation of online classes.

ISSN 2684-7167 (online)

Table 3. Dependent Variable: Pretest

Source	Type III Sum of Squares	Df	Mean Square	F-ratio	p-value
Corrected Model	.020[a]	1	.020	.014	.907
Intercept	1341.620	1	1341.620	928.457	.000
Treatment	.020	1	.020	.014	**.907**
Error	69.360	48	1.445		
Total	1411.000	50			
Corrected Total	69.380	49			

* significant at 0.05 level

Table 3 shows the test of between-subjects effects. This test is conducted to see whether the preliminaries violated the assumption of homogeneity of regression. In this case, the treatment's significance value is greater than the significance level 0.05. This means that the pretest did not violate the assumption since it tells that there is no significant difference between both Groups. Thus, both groups are similar in terms of intellectual capacity.

Table 4. Dependent Variable: Posttest

Treatment	Mean	Std. Deviation	N
Experimental	8.44	1.609	25
Control Group	7.52	1.661	25
Total	7.98	1.684	50

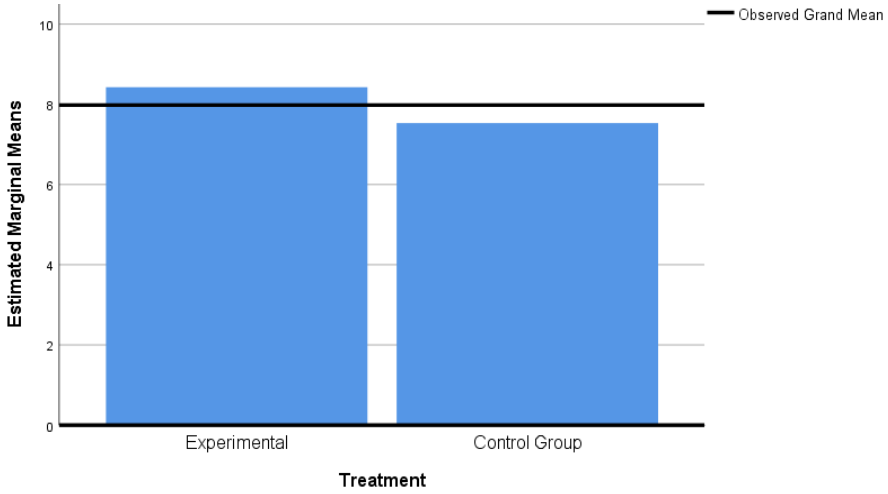


Figure 2. Estimated Marginal Means classified into Treatments

Table 4 and Figure 2 showed that the mean for the Experimental Group is higher compared to that of the Control Group, to be particular, a mean difference of 0.92 favoring the Experimental Group has been figured. This alludes that the pupils taught using Genyo E-Learning performed better than the pupils who were taught only with the Convention Virtual Lecture Method concerning their post-test achievement

ISSN 2684-7167 (online)

scores. The standard deviation indicates that the degree of dispersion of the scores of pupils from the Control Group is much farther comparing to that of the Experimental Group's scores.

Table 5. NAT Achievement Level Descriptive Equivalence

Percentage Range (%)	Mastery Level
96 – 100	Mastered
86 – 95	Closely Approximating Mastery
66 – 85	Moving Towards Mastery
35 – 65	Average Mastery
15 – 34	Low Mastery
5 – 14	Very Low Mastery
0 – 4	Absolutely No Mastery

Table 5 shows the range of mastery levels. This table will serve as the basis of pupils' level of mastery with reference to their post-test achievement scores shown in table 6.

Table 6 Posttest Achievement Scores of Pupils in Mathematics According to their Mastery Level

Range (%)	Experimental Group			Control Group		
	F	%	Mastery Level	F	%	Mastery Level
96 – 100	10	40	Mastered	5	20	Mastered
86 – 95	3	12	Closely Approximating Mastery	3	12	Closely Approximating Mastery
66 – 85	8	32	Moving Towards Mastery	10	40	Moving Towards Mastery
35 – 65	4	16	Average Mastery	7	28	Average Mastery
15 – 34	0	0	Low Mastery	0	0	Low Mastery
5 – 14	0	0	Very Low Mastery	0	0	Very Low Mastery
0 – 4	0	0	Absolutely No Mastery	0	0	Absolutely No Mastery

Table 6 shows that more students from the Experimental Group Mastered the lesson during the post-test compared to that of the Control Group. Both groups have the same number of pupils in the Closely Approximating Mastery Level. The Experimental Group has two lesser pupils who are still Moving Towards Mastery Level and three lesser pupils in the Low Mastery level than the Control Group.

Table 7 One-Way ANCOVA to compare Mathematics Achievement Scores between the Experimental Group and Control Group

Source of Variation	Type III Sum of Squares	df	Mean Square	F-ratio	p-value
Corrected Mode	36.892[a]	2	18.446	8.492	.001
Intercept	56.383	1	56.383	25.958	.000
Covariate	26.312	1	26.312	12.114	.001
Main Effects	10.018	1	10.018	4.612	**.037**

ISSN 2684-7167 (online)

Error	102.088	47	2.172
Total	3323.000	50	
Corrected Total	138.980	49	

* significant at 0.05 level

Table 7 shows a significant difference in the post-test scores between the pupils in the Experimental Group and the Control Group. The null hypothesis stating that there is no significant difference in the Mathematics' Achievement Scores of pupils who are taught with the aid of Genyo E-Learning and those who were taught with only Conventional Virtual Lecture Method was tested at 0.05 level of significance. The row indicating main effects obtained a p-value of 0.037, which is lower than the significance level of 0.05. This only means that the null hypothesis is *rejected*.

Table 8. Evaluation on the Excerpts of Online Class

Group	Observers	Lesson Package	Technology Integration	Lesson Interactivity	Average with Remarks
Experimental	Principal	4	3.75	3.5	3.75
	Teacher A	4	3.25	3.625	3.625
	Teacher B	4	3.25	3.625	3.525
					3.67
					Very Satisfactory
Control	Principal	4	2	2.75	2.917
	Teacher A	4	2.25	2.625	2.958
	Teacher B	3.33	2.5	2.625	2.819
					2.9
					Satisfactory

Table 8 shows the result of the evaluation during the conduct of online classes by the researcher. The overall means in the areas Lesson Package, Technology Integration, and Lesson Interactivity were given remarks based on the established hypothetical mean ranges of; *1:00 – 1.75 – Good, 1.76 – 2.50 – Very Good, 2.51 – 3.25 – Satisfactory, and 3.26 – 4.00 – Very Satisfactory*. The online learning interactivity on the Experimental Group got a Very Satisfactory Rating while the Control Group got only a Satisfactory Rating. The ratings and the mean difference of 0.77 in favor of the Experimental Group determined that learning interaction is higher when an online class integrates Genyo E-Learning.

Table 9. Evaluators' Suggestions for Further Enhancement of Online Learning Interactivity

Have you observed some other things that could be essential in this study?
Learning could possibly become more interactive when multiple computer applications are used, but of course, those that could only be manipulated with ease since time also is a factor of efficient teaching [P].
Online teaching modality is really an excellent substitute for face-to-face learning but sad to say, other schools could not afford a learning management system package. However, hopefully, the result of this study could be an eyeopener for other schools under the government to pursue online learning for the sake of quality, enjoyable, and unique learning experience [TA & TB].

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What improvements would you suggest in advancing future teaching and learning interaction in the online distance learning modality?

Teachers may undergo training related to online teaching pedagogy and may explore computer software or applications that could promote positive competition and interactive learning [P].

We hope for a change to happen in the future, especially the awarding of budget for schools as allocation for communication technologies. This will genuinely help learners reach a boundless learning region and for teachers to become advanced through active indulgence to computer-assisted teaching [TA & TB].

FINDINGS AND DISCUSSION

Point 1

With an obtained p-value of 0.037 lower than the significance level of 0.05, it only means that the null hypothesis is *rejected*. Thus, there is a significant difference in pupils' Achievement Scores in the Experimental Group using Genyo E-Learning compared to that of the Control Group using Conventional Lecture Method during the Post-test, in favor of the Experimental Group.

Aside from the fact, the ICT supports Mathematics in works like revising, composing, editing, calculating, making decisions based on numerical facts and visualizing data, it also contributes to simplifying mathematical facts and concepts, enrich skills, knowledge, and recover mathematical understanding even faster and more effectively for pupils (Joshi, 2017). The result and literature strongly suggest that teachers from schools that offer Online Learning Modality are encouraged to explore their interactive Learning Management Systems such as Genyo E-Learning to enhance learners' academic achievement in mathematics and all other subjects.

Point 2

Based on the identified Mastery Level using the NAT Achievement Level Descriptive Equivalence, the frequency of Mastered Level from Experimental Group is higher than Control Group, and the frequency of the rest of the levels from Experimental Group is lower than the Control Group. This means that there is a difference on the Mastery Level in favor of the pupils from the Experimental Group who were taught with the aid of Genyo E-Learning.

Learning is much gained if the students are given with environment such as computer simulations instruments that enable learners to make maximum use of their intelligence (Sebial, 2017). Teachers' may consistently create assessments that integrate the use of different computer applications suited for the level of understanding and interest of the clients.

Point 3

Given the mean of 3.67 equal to a Very Satisfactory rating and 2.9 equal to a Satisfactory rating for Experimental and Control Group respectively; thus, there is a difference in the degree of teacher-learner interactivity favoring the Experimental Group who were taught with the aid of Genyo E-Learning with a mean difference of 0.77.

Teachers, as the spearhead of the integration of online learning, must be capable of conditioning all components needed for instruction. These include their skills in using technology as a teaching aid and creating lesson packages that significantly affect pupils' emotional, intellectual and social factors and adds

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on their motivation to learn (Aliyyah, 2020). To create interactive lesson packages that unlock learners' interests, teachers may attend training concerning Online Instructional Design for skill enhancement.

CONCLUSION

The significant difference in the achievement scores between the pupils who are taught using Genyo E-Learning as the Experimental Group and pupils who are taught with the use only of Conventional Virtual Lecture Method as the Control Group in favor of the Experimental Group only signifies that Genyo E-Learning could be of use in improving Mathematics achievement in today's New Normal Education System. The greater number of pupils who reached Mastered level and the lesser number of pupils who accumulated only scores equivalent to a level lower than the highest level from the Experimental Group compared to that of the Control Group, only means that by using Genyo E-Learning during virtual classes, chances of getting a level closer to mastery is high. With the ratings from the evaluation form and a mean difference favoring the Experimental Group, pupils who were taught using Genyo E-Learning have more learning interactivity towards the lesson comparing to that of the Control Group who were taught with Conventional Virtual Lecture Method. Generation Z learners (Elementary Pupils) have seen the light of the world accompanied by the existence of advanced technologies. Their conventional setting is the comfortability of living with things that could directly capture their attention, for they may find it interesting or easy to get used to. If this generation of learners is being immersed in non-authoritarian or self-paced learning, they may find education an enjoyable part of life. In this New Normal Education System, Online Modality needs to be embraced for the sake of interactive learning between teachers and learners. A sense of interactivity in distant learning could possibly be catered by Computer-Assisted Systems in general, Genyo E-Learning in particular.

LIMITATION & FURTHER RESEARCH

This study was conducted to assess the effectiveness of integrating a Learning Management Systems in Online Education with the use of a quasi-experimental pretest-posttest control group design. The treatment positively affected the learning gains. Thus, suggestions redound to the use of Computer-assisted instructions for better learning in Mathematics. But the application of this study has restrictions in such as; a school must offer Online Distance Learning and acquisition of gadgets and access to a Learning Management System are prerequisites. Nevertheless, this could still be a source of information or reference for the future plans of Learning Avenues in terms of the commencement of Online Learning.

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