



FLIPPED CLASSROOM-BASED ACTIVITIES FOR BASIC NUMERACY SKILLS ACHIEVEMENT

MARICAR BRIZ VENCE, MAED¹ | MA. LUZ V. DEGORO, MAED² | REY C. ENRIQUEZ, MAED³ | SIXTO B. VENCE⁴ | ATTY. JURIS RENIER C. MENDOZA⁵ | SWEDEN V. CANALES^{6*}

¹ DEPARTMENT OF EDUCATION, DIVISION OF MASBATE, MASBATE, PHILIPPINES.

² DEPARTMENT OF EDUCATION, CEBU PROVINCE DIVISION, CEBU, PHILIPPINES.

³ DEPARTMENT OF EDUCATION, DANAOCITY DIVISION, DANAOCITY, CEBU, PHILIPPINES.

⁴ DEPARTMENT OF EDUCATION, DIVISION OF MASBATE, MASBATE, PHILIPPINES.

⁵ CEBU TECHNOLOGICAL UNIVERSITY, CEBU CITY, PHILIPPINES.

⁶ DEPARTMENT OF EDUCATION, PROVINCE OF MASBATE, MASBATE PHILIPPINES.

***CORRESPONDING AUTHOR:**

SWEDEN V. CANALES: DEPARTMENT OF EDUCATION, PROVINCE OF MASBATE, MASBATE PHILIPPINES.

ABSTRACT:

As is well known the COVID-19 outbreak had catastrophic consequences on our country's economy and the death toll, upsetting schools and campuses across the nation at the same time. It caused the world incalculable disruption. It is clear that one of the most affected industries was education when we reflect on the past two years and the severe pandemic effects that persist to this day. When the globe quickly shifted to using online and modular platforms, neither society nor educational institutions were ready to accept it. Thus, learners and educational community faces a problem on how to attain a maximum learning in Mathematical Concepts while adhering the needs of the pandemic. With the integration of the current trends in education, Flipped Classroom, learners will have a support in learning Mathematics despite the restriction of face to face classes. This research assessed the level of effectiveness using Flipped Classroom-Based Approach in Mathematics in relation to the academic performance of Grade 4 to 6 learners as basis for Enhanced Numeracy Learning Activities. Based on the findings, enhanced numeracy learning activities are therefore recommended to improve the learners' performance in Mathematics.

KEYWORDS:

FLIPPED CLASSROOM-BASED ACTIVITIES, BASIC NUMERACY SKILLS ACHIEVEMENT, ENHANCED NUMERACY LEARNING ACTIVITIES.

I. INTRODUCTION

The COVID-19 Pandemic broke out near the end of the School Year 2019-2020, leaving nations surprised and unprepared for the ramifications. Schools were closed for security reasons. The following school year, schools implemented a modality that will maintain and support learners' learning while conforming to the pandemic's needs. Many schools adopted the modular and online learning. Learners in Modular Learning are given self-taught modules that they must finish at home with the help of home facilitators such as parents and relatives, rather than a physical teacher. Teachers continue to act as facilitators, but from afar, thanks to frequent feedback from home facilitators. Learners must adapt to these changes and put up additional effort in their studies. It is evident that achieving the learning competencies demanded, particularly in mathematics, poses a significant challenge for schools.

According to studies, many learners lacked the essential mastery of earlier mathematics applications, methods, and information to begin learning their current grade level

Coursework (Wriston, Jasmine M. 2015). This is alarming since, higher concepts in Math needs mastering of pre-requisite skills. Learners must have a strong grasp of numbers before they can solve algebra, geometry, fractions, or computing issues (Reid, Kate 2016). Also, it has been observed that learners find answering the Math modules difficult because they can't understand instructions on their own and they prefer having a physical teacher explaining them the process. Similarly, most home facilitators have a hard time facilitating math discussions because they lack understanding of concepts due to their educational background. It is really a struggle teaching Mathematics in this time of pandemic due to deficiency of teaching aids and materials, textbooks, time for learners, and issues of mathematical contents and pedagogy. There is a tendency that the Math performance of the learners will be affected by this inadequacy.

The Flipped Classroom Approach was one of the current trends in teaching prior to the pandemic. A flipped classroom is an instructional method and a sort of blended learning that tries to improve student engagement and learning by having learners complete readings at home

and work on real-time problem-solving in class. It is based on the premise that traditional education is reversed, with what is traditionally done in the classroom being flipped with what is typically done by learners outside of the classroom. As a result, instead of participating in class discussions and completing homework projects at home, learners read hand-outs and watch pre-recorded classes.

With the integration of flipped classroom approach in modular learning, learners can answer their math modules with the support of pre-recorded videos. As educators, by integrating Flipped Classroom Approach, support is being offered for the needs of individual learners, thus arousing the learners' interest in Mathematics subject. Hence, this research was conducted.

II. OBJECTIVES

This study evaluates the efficacy of adopting mathematics instruction based on flipped classrooms as the foundation for improved numeracy learning activities. This study aims to achieve the following objectives:

1. To identify the efficacy of flipped classroom-based activities instruction in teaching Mathematics;
2. To provide an alternative way on how to alleviate the numeracy skills of the learner;
3. To enhance numeracy learning activities through flipped classroom approach; and
4. To serve as a reference data in conducting related research that gives future researchers a background.

III. METHODOLOGY

This study used a descriptive-quantitative research design. It is intended to precisely and methodically characterize a population, circumstance, or phenomena. The researcher modified questionnaires from recent studies to collect data. The Pearson r and T tests will be used in this study to measure relationships and independence. The Systems Model Approach (SMA) was used in the research as a communication tool for thorough planning and execution as well as for the discussion of numerous potentials. Online interviews, informal interviews, and questionnaires are among the tools employed.

PRESENTATION OF DATA AND ANALYSIS

A. ISSUES AND CONCERNS THAT AFFECT THE LEARNERS' LEVEL OF ACADEMIC PERFORMANCE IN MATHEMATICS

INTERNET CONNECTIVITY

Teacher averred that the internet connectivity affects greatly the academic performance of the learners. Internet offers another venue for teachers and learners to interact. Learner-respondents stressed that online resources can be of great help when they don't understand their modules. Learners may seek more information and examples online thus without access to these resources, it might affect their academic performance.

HOME TUTOR'S KNOWLEDGE ON HOW TO EXPLAIN MATHEMATICAL CONCEPT

Since the shift of face to face class to modular learning, parents have been an active part in the learning process. The data implies that some parents don't have enough knowledge on how to expound Mathematical concepts to their learners thus resulting to poor academic performance. Parents highlighted that most of them were not able to neither enter nor finish their college degree thus it is quite hard on them and for the teachers to explain mathematical concepts.

DIFFICULTY REMEMBERING MATH FACTS, CONCEPTS, RULES AND FORMULAS

Teacher-respondents believed that Mathematical concepts were better retained if there is constant practice through drills. Learner-respondents accentuated that because of the pandemic and closure of schools they forgot some of their lessons. As a result, the learner respondents were having a hard time remembering mathematical concepts hence, affecting their performance. However, the issue was considered moderate as teachers and parents work together to assist the learner in doing their assignments.

LEARNER'S INTEREST TOWARDS ANSWERING MATH MODULES

In teaching, teachers must use varied teaching strategies to maintain the interest of the learners at the same time achieved the specific goal for each lessons. Since the use of modular learning approach relies more on printed instruction, this might be tedious for the learners especially in Math lessons. Losing interest towards answering the math modules means losing the will to learn and understand the lessons as a result, the academic performance will be poor.

MEDIUM USED IN MATH MODULES

According to the learners, they really have a hard time understanding English but because the language used was simple and since it used illustrations they were able to understand it well. Teachers also claimed that they have to modify some of the modules and review the videos well to make it easier for the learners to understand. This means that the language used in the videos and modules which is English, is helpful to the learners to fully understand their lessons

LEARNER'S KNOWLEDGE ON HOW TO GRASP MATHEMATICAL CONCEPT THROUGH WRITTEN INSTRUCTION LIKE MODULE

Teacher-respondents found that learners were adjusting to self-learned modules though they were used to written instructions but this time without a physical teacher explaining them. This implies that the use of printed instruction as substitute for face to face learning is somewhat a problem for the learners, somehow affecting their academic performance

HOME LEARNING ENVIRONMENT

Learners' home is something that they are quite familiar with so learning would be comfortable. However environmental factors such as noise, availability of electricity, or space may affect the conduciveness of their homes for learning thus may still affect their academic performance.

HOME FACILITATOR'S AVAILABILITY TO TEACH THEIR LEARNERS IN ANSWERING MATH MODULES

It signifies that parents allot time for their children yet because of their other chores and work, the availability to teach them in answering Math Modules is lessened thus affecting the performance of the learners.

The issues raised can be very well addressed through enhanced numeracy learning activities and with the collective efforts of teachers, parents, school officials, community, and local government. Enhanced numeracy learning activities pave the way in improving the needed skills of the learners in Mathematics thus, resulting to a very good or excellent academic performance.

B. THE STATUS OF FLIPPED CLASSROOM BASED MATHEMATICS INSTRUCTIONS.

DELIVERY

It relates to the method of instruction employed. This refers to how the flipped classroom method is delivered to the learners. This comprises the teacher's class grouping, the watching schedule for the videos, the use of laptops for viewing, and the method of delivering the modules. Teacher-respondents believed that the delivery of the lessons matters a lot, since the success of the whole program will also depend how it is done. While learners stressed out that since the delivery was well done, they were able maximize learning mathematical concepts.

CONTENT

It is a term that refers to the curriculum that was employed. It comprises the topic as well as how it is presented and organized with the learners in mind. The content of learning resources should be presented with great care and thought, as well as meticulous and thorough planning. Finding reveals that the content should be comprehensively done as it may vary the result of using the approach. This indicates that if the teachers planned the content well, the learners can achieve the desired goals in each lesson.

ASSESSMENT

This refers to the process of evaluating learners after they have used the flipped classroom approach. This involves showing a video after an assessment, providing consistent examples of video courses and test items, using printed assessments, and providing comments after an assessment. This suggests that assessing is significant to see how the learner-respondents were doing. It is an integral part of an instruction as it determines whether the desired goals are being met.

Finding shows that as perceived by the respondent-groups Flipped Classroom-based instruction in teaching

Mathematics was Very Effective. It benefited some of the learners in achieving Attained Mastery and Near Mastery levels in Mathematics-Number and Number Sense. Teaching strategies, according to Ganal et al. (2020), are a predictor of academic progress. Aside from standard teaching methods, there are other teaching resources that may be used in the classroom to assist learners in swiftly learning and comprehending the lesson (Alshatri, S.H.H., Wakil, K., Jamal, K. & Bakhtyar, R. 2019). In the Flipped Classroom Approach, learners improved their academic performance in Mathematics by using pre-recorded videos.

IV. CONCLUSION

Based on the findings of this research, the effectiveness in using Flipped Classroom Approach in Mathematics-Number and Number Sense was perceived as very effective. It is therefore concluded that in order for the learners to attain mastery in Mathematics enhanced numeracy learning activities should be implemented.

V. RECOMMENDATION

Based on the conclusions reached in this research, it is highly recommended that enhanced numeracy learning activities in Mathematics with the corresponding methodologies and logistics be submitted to the concerned officials for consideration and implementation.

VI. ACKNOWLEDGEMENT

First and foremost, Praises and thanks to our Almighty God for His gift of knowledge and showered blessings throughout my research;

To Dr. Emily C. Rosal and Dr. Marilyn Miranda, our ever beloved advisers and mentors to whom we would like to offer our deepest gratitude for sharing their immense knowledge and plentiful experience. This research would not have been possible without your help, support and guidance;

To our loving family, for their motivational words, unending love, prayers and support; and

To our friends and colleagues for the advice and words of encouragement that helped us a lot to finish this research

REFERENCES

1. Allen, Mike 2017. Correlation, Pearson. The Sage Encyclopedia of Communication Research Methods. Retrieved from DOI: <https://dx.doi.org/10.4135/9781483381411.n99>
2. Bonnie Terry, Bonnie 2019. What is Number Sense? The Key to Improve Math Skills. Bonnie Terry Learning, March 20th, 2019. Retrieved from: <https://bonnieterrylearning.com/blog/number-sense/>
3. Depardieu, Michelle 2021. What is Geometry. Math

and Science. UPchieve, Inc. 2021. All rights reserved. EIN is 82-4456163. Retrieved from: <https://upchieve.org/blog/2019/7/22/what-is-geometry>

4. Hayes, Adam 2020. T-Test. Fundamental Analysis. Tools For Fundamental Analysis Reviewed by Peter Westfall. Updated March 22, 2020. Retrieved from: <https://www.investopedia.com/terms/t/t-test.asp>

5. McCombes, Shona 2019. Descriptive research. Published on May 15, 2019. Revised on September 3, 2020. Retrieved from: <https://www.scribbr.com/methodology/descriptive-research/>

6. N. Ramakrishnan, and Mrs. J. Johnsi Priya, 2016. –Effectiveness Of Flipped Classroom In Mathematics Teaching|| International Journal of Research. – Granthaalayah, Vol. 4, No. 10: SE (2016): 57-62. Retrieved from: [https://www.researchgate.net/publication/321170289_](https://www.researchgate.net/publication/321170289_Effectiveness_Of_Flipped_Classroom_In_Mathematics_Teaching)

[Effectiveness_Of_Flipped_Classroom_In_Mathematics_Teaching](https://www.researchgate.net/publication/321170289_Effectiveness_Of_Flipped_Classroom_In_Mathematics_Teaching)

7. Raising Children.net.au. Early numeracy skills: how to develop them. © 2006- 2021 Raising Children Network (Australia) Limited. All rights reserved. Retrieved from: <https://raisingchildren.net.au/babies/playlearning/learning-ideas/early-numeracy>.

8. Reid, K. (2016). Counting on it : Early numeracy development and the preschool child. Australian Council for Educational Research (ACER). Copyright Australian Council for Educational Research 2016, Melbourne Vic, Australian Council for Educational Research (ACER) ISBN 9781742864044

9. Wriston, Jasmine M. 2015. The Importance of a Strong Mathematical Foundation University of Akron Main Campus, jmw192@zips.uakron.edu Retrieved from: https://ideaexchange.uakron.edu/cgi/viewcontent.cgi?article=1182&context=honors_research_projects

10. Education.com (n.d.) Search 4th Grade Educational Resources. Retrieved from: <https://www.education.com/resources/fourthgrade/?gclid=Cj0KCQiAr5iQBhCsARIsAPcwRONdHBJWq4S>