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21ST CENTURY INSTRUCTION: ACCELERATING STUDENTS OUTCOME IN MATHEMATICS

Roberto L. Suson
Doctor in Development Education Student

ABSTRACT: *Research reveals that how teachers instruct and these interactions with students are the cornerstone around which to build effective learning. The integration of ICT is becoming more global trend in the 21st century education. The study assessed the improvement of Mathematics instruction in the context of basic education. The very important aimed of the study was to determine the Mathematics performance of the learners in the six skills as per see by the Department of Education using varied strategies, as part of core competencies used in the 21st century skills. Based on the findings and thorough analysis of the study, it can be concluded then that the learners' performance in Mathematics as to the skills of remembering, understanding, applying, analyzing, evaluating and creating is very satisfactory. Thus, the outcome has shown a high impact on the learning outcomes of the learners with regards to mathematical comprehension.*

KEYWORDS: Mathematics Performance, ICT integration, 21st Century Learning, Instruction

INTRODUCTION

Teaching mathematics can be an exciting and rewarding experience for both teachers and the students. Many innovative practices are emerging that are both making the learning of mathematics more enjoyable for students and making what students are learning more meaningful. In today's educational environment, many countries have and continue to undergo reforms; however the pendulum of educational reform movements keeps swinging in different directions (Chung, 2005; Lambdin & Walcott, 2007; Sfard, 2003). Its significance is profoundly recognized wherever on the planet as it is a piece of our day by day living. Capability in Mathematics is viewed as a basic antecedent to accomplishment in our general public. Arithmetic is used all through our consistent lives.

The National Mathematics Advisory Panel (2008) announced that arithmetic is the imperceptible culture of our age and stresses that science is inserted in our lives from various perspectives Arithmetic is a moving subject to ace by understudies, from grade school to college (Shafie,Shahdanb and Liew,2010). Experts in Mathematics agree that achieving Mathematics calculated understanding and procedural abilities includes different intellectual procedure (Watson and Gable,2012). This includes constructing representations, making arguments, reasoning about mathematical objects, explaining their thinking, constructing proof, among others (Schoenfeld,2002, cited by Esmonde,2009). These learning processes are conceived as casual pathways to successful outcomes that are later linked to achievement outcomes (Geary et al., 2008, cited by Lobato,2008).

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Instruction that emphasizes the development of mathematics computation and problem solving skills through the use of concrete level instruction positively impacts their development of these skills (Miller & Kit-hung, 1998). Moreover, continuing concrete level instruction through representational/semi-concrete and abstract level instruction helps students to transfer their concrete understandings to the abstract level (Miller, Butler & Kit-hung Lee, 1998; Miller & Mercer, 1993; Miller, Mercer & Dillon, 1992; Miller & Mercer, 1997).

In the Philippines, the K-12 Basic Education Program aims to provide every Filipino child with the education he/she needs to compete in a global context. "K-12 program will pave the way for an ever brighter future for young Filipinos by equipping them with basic education up to international standards" this is according to the President Benigno Aquino III on May 2013. The president signed into law a basic education curriculum that will see a mandatory kindergarten year and two additional senior high school years added to what was a 10-year education curriculum to make basic education 12 years. The goal of the new curriculum is to give Filipino students enough time to master skills and concepts so that they are ready for tertiary education when the time comes.

Background of the Study

This research is anchored on some theories such as Connectionism Theory and the Theory of Constructivism. According to Thordnike (1949) Learning is the result of associations forming between stimuli and responses. Such associations or "habits" become strengthened or weakened by the nature and frequency of the S-R pairings. The paradigm for S-R theory was trial and error learning in which certain responses come to dominate others due to rewards.The hallmark of connections (like all behavioral theory) was that learning could be adequately explained without referring to any unobservable internal states. And according to Bruner, the author, is the theory of Constructivism. Jerome Bruner puts forward a theory of cognitive growth, which looked to the influence of environmental and experiential factors in a child's education, and which suggested that each child's intellectual ability develops in stages through changes in how the mind is used. Bruner's position was that young children need to learn the underlying principals of different concepts – the structure of ideas – rather than to simply memorize their related facts and data. This concept is called as spiral curriculum that predicate on the cognitive theory advance by Jerome Brunner (2012).

Objective of the Study

The objective of this research was to increase student learning in mathematics. The goal of increasing the student outcome in mathematics was to develop their full potential in engaging mathematics in their everyday lives. Through this study, the researchers would highly give greater contribution to the improvement of the overall instruction using varied strategies with regards to learning mathematics, because the researcher believes that proper instruction would lead to proper learning and enthusiastic mind. This study utilized the descriptive-normative method of research.. The study of the instrument is the researcher-made questionnaire and was validated by the help of the statistician.

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Specifically, the study answers the following:
Using varied strategies, what is the performance of the learners in Mathematics as to the following skills: remembering,understanding, applying, analyzing, evaluating, and creating?

What are the issues and concern related to teaching-learning Mathematics?

RESULTS AND DISCUSSION

Performance of the Learners in the Six Skills

The performance of the learners is determined through the six skills as to remembering, understanding, applying, analyzing, evaluating and creating. As per identified by the Department of Education as to the skills in Mathematics to be measured, the performance of the learners.

Figure 1.

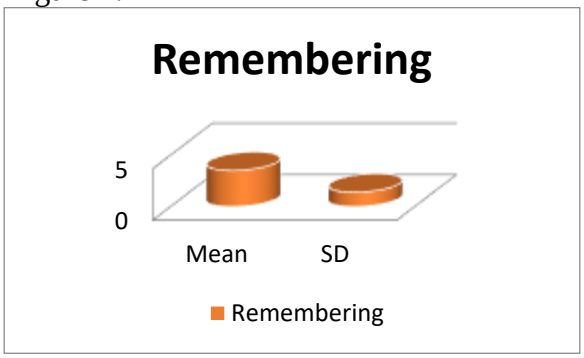


Figure 2.

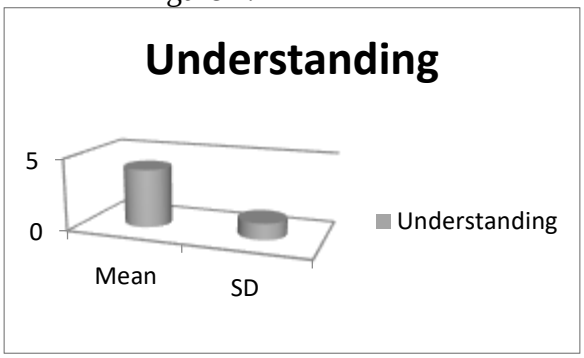
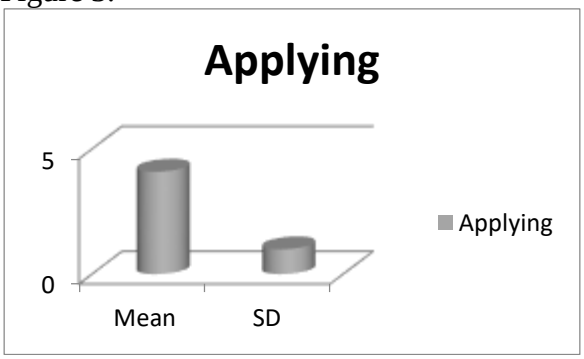


Figure 3.



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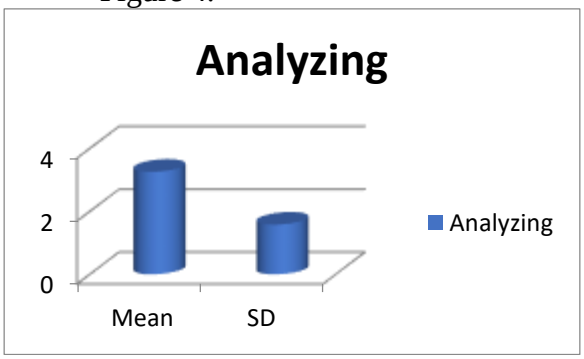

Figure 5

Figure 6.

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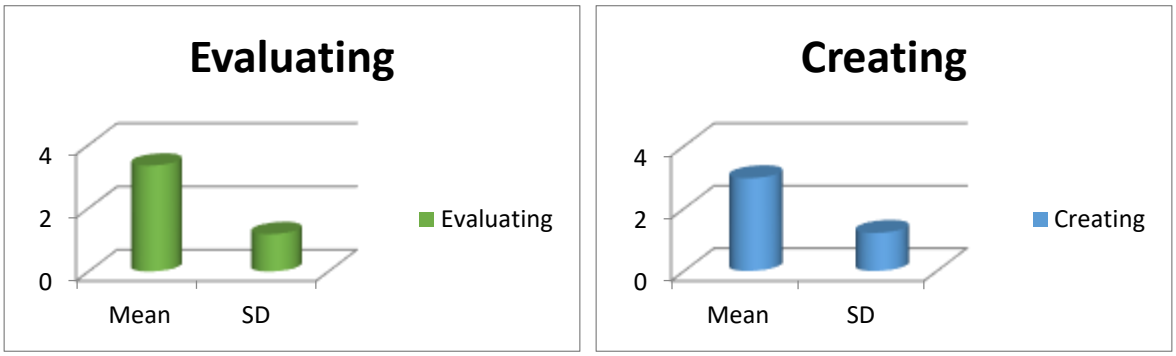
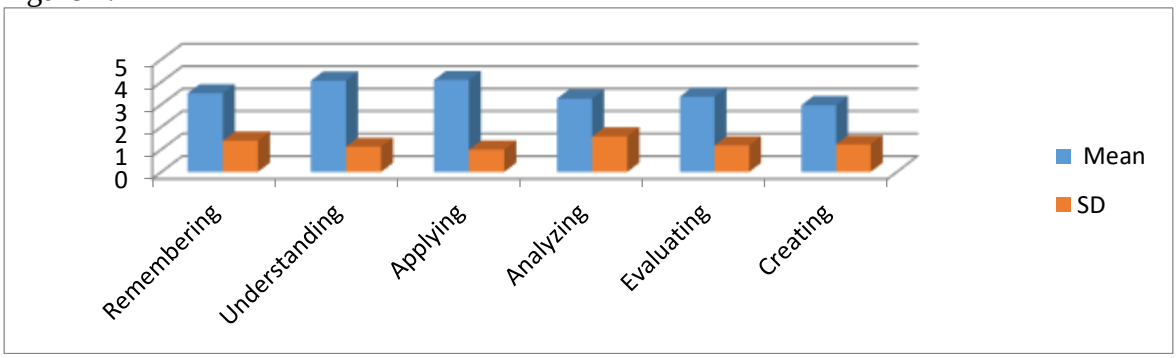


Figure 7.



Summary of Variety of Skills as shown in Figure 7, the performance of the learners as to the skill of remembering yielded a mean of 3.5 and 1.39 standard deviation, as to the skill of understanding yielded a mean of 4.06 and 1.12 standard deviation and as to the skill of applying yielded a mean of 4.09 and 0.99 standard deviation. All these skills were verbally described as very satisfactory. While in the performance of the learners as to the skill of analyzing yielded a mean of 3.26 and 1.58 standard deviation, as to the skill of evaluating yielded a mean of 3.35 and 1.18 standard deviation and as to the skill of creating yielded a mean of 2.97 and 1.22 standard deviation. All these skills were verbally described as satisfactory. With an overall mean of 3.54 an 1.31 standard deviation of which verbally described as Very Satisfactory. Moreover, the result implies that the varied strategies in teaching-learning are effective. Though very satisfying, this level of performance is still to be improved.

Table 8. Issues and Concerns Related to Teaching-Learning Mathematics

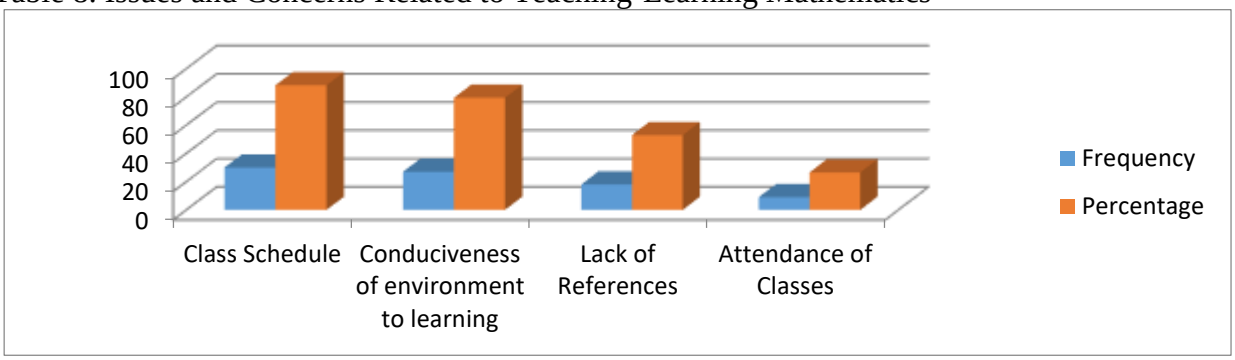


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Table 8, shows that class schedule, conduciveness of learning environment, lack of references and attendance of classes shows more frequency as the issues and concern by the learners. Class Schedule is the most prevalent issues and concern as perceived by the learners. 30 out of 34 learners or 88.23 percent perceived that this issue is a problem. Followed by conduciveness of learning environment to learning with 79.41 percent, next is the Lack of References with 52.94 percent and lastly the Attendance of Classes holding 26.47 percent. In this information gathered it implies that class schedule of having in the afternoon session affects the learners performance because between 12 noon to 2 in the afternoon is for nap time for children. It shows that the cooperation between the learners, teachers and administration in terms of improving learner's performance is vital. Parents, Teachers and other stakeholders will engaged in active participation in order to address this concerns, set the goals, face challenges and strive to overcome this concerns effective and satisfying approach.

This study accelerating the achievement outcomes in Mathematics Instruction to come up a design proposal. The study is focused on the exposure to multi-media; performance in Mathematics of the learners as to the skills of remembering, understanding, applying, analyzing, evaluating and creating; the relationship between the learners profile and their performance and the issue and concern.

Summary of Findings

Findings of the study shown the performance of the learners in Mathematics revealed the following: as to the skill of remembering yielded mean of 3.5 and 1.39 standard deviation, as to the skill of understanding yielded mean of 4.06 and 1.12 standard deviation and as to the skill of applying yielded mean of 4.09 and 0.99 standard deviation. All these skills were verbally described as very satisfactory. While in the performance of the learners as to the skill of analyzing yielded 3.26 and 1.58 standard deviation, as to the skill of evaluating yielded 3.35 and 1.18 standard deviation and as to the skill of creating yielded 2.97 and 1.22 standard deviation. All these skills were verbally described as satisfactory. With an overall mean of 3.54 and 1.31 standard deviation of which verbally described as Very Satisfactory.

CONCLUSIONS

The findings shows that using varied strategies, can truly enhance the overall performance of the students, with the data gathered it was noted that it is very satisfactory with a mean of 3.54 and standard deviation of 1.31. Thus varied strategies in teaching-learning Mathematics can improved the students understanding in terms of dealing with numbers /arithmetic. As the data suggest when using varied strategies it can be manifested, that students' understanding improve.

References

Andaya, Olive Joy F.,2014. **"**Factors that affect Mathematics achievements of students of Philippine Normal University" Isabela Campus, University of North Luzon, Alicia, Isabela, Philippines. International Referred Research Journal http://www.researchersworld.com Vol. V, Issue – 4, Oct. 2014 [83]

Print ISSN: 2054-6297(Print), Online ISSN: 2054-6300(Online)

Bryan, B. (2000, May). Raising the Achievement of Low Performing Students. Mid Continent Research for Education and Learning. Retrieved February 2, 2008, from Academic Search Premier database.(Chung, 2005; Lambdin & Walcott, 2007; Sfard, 2003). What We Can Do About Achievement Disparities. Education Leadership, 65, 54-59. Retrieved June 10, 2007, from ASCD database.

Cardona, R.S. (2009). "Mathematics anxiety lrvrl and Mathematics Achievement of Prospective" Elementary Teachers, Philippine Normal University, Alicia, Isabela, Philippines

Chiu, M. M., & Xihua, Z. (2008). Familiy and motivation effects on mathematics achievement: Analyses of students in 41 countries [Abstract]. Learning & Instruction, 18, 321-336. Retrieved June 12, 2008, fromhttp://apps2.sxu.eud:2255/ehost/delivery

Dickson Nkafu Anumendem. 2015."Centre for Educational Effectiveness and Evaluation", KU Leuven,Belgium"Factors affecting Mathematics achievement of first-year secondary school students in Central Uganda" August 2015 South African Journal of Education Foster, C. (2007, May). Mathematical Behaviour. Mathematics Teaching Incorporating Micromath, 202, 12-13. Retrieved June 10, 2008, from Academic Search Premier database.

Horn, I. (2004, November). Why Do Students Drop Advanced Mathematics. Association

for supervision and curriculum development, 61-64. Retrieved June 10, 2008, from Academic Search Premier database

Hootenville, A., & Smith, K. (2008). Parental Effort, School Resources, and Student Achievement [Abstract]. Journal of Human Resources, 43, 437-453. Retrieved June 12, 2008, from

www.apps2.sxu.edu:2255/ehost/detail?

Leongson, Jaime A. 2013. Assessing the mathematics achievement of college freshmen using piagets logical operations Bataan Polytechnic State College, Bataan, Philippines Auxencia A. Limjap De La Salle University, Manila, Philippines

Panel (2008). Using Cooperative Learning 100% of the Time in Mathematics Classes

Establishes a Student-Centered Interactive Learning and Environment. 3-12.

Retrieved June 10, 2008, from Academic Search Premier database. Singh, Kusum et. al., 2010. Mathematics and Science Achievement: Effects of Motivation, interest and Academic Engagement". April 2010, Pages 323-332Attitudes towards Mathematics: Effects of Individual, Motivational, and Social Support FactorsMaria de Lourdes Mata, Vera Monteiro, and Francisco Peixoto

(Shafie,Shahdanb and Liew,2010). Patterns of Hispanic Students' Math Skill Proficiency in the Early Elementary Grades [Abstract]. Journal of Latinos &Education, 6, 229-251

Watson, S. M. R., & Gable, R. A.2012. Using knowledge of student cognition to differentiate instruction. Published online at http://www.learnnc.org/lp/editions/every-learner/6693 Schoenfeld, G.2002. Taking Up Opportunities to Learn: Constructing Dispositions in Mathematics Classrooms

Geary et.2008. How "focusing phenomena" in the instructional environment support individual students' generalizations. Mathematical Thinking and Learning, 5, 1-36

Print ISSN: 2054-6297(Print), Online ISSN: 2054-6300(Online)