

***2C-2I-1R Approaches: Way to Reduce Math Anxiety
Among Senior High School Learners***

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Abstract

This paper aimed at determining the possible solution to the Math anxiety of Senior High School (SHS) learners of Talangan Integrated National High School (TINHS). Alongside with teaching, the teacher-researcher explored different activities which promote the 2C-2I-1R approaches that the Department of Education mandated to be used for 21st century learners. These activities are TDAR (Think-Discuss-Act-Reflect) which is a collaborative approach, RMFD (Recall-Model-Familiarize-Decide) which is a constructivist approach, 4A's (Activity-Analysis-Abstraction-Application) which is an integrative approach, AICDR (Ask-Investigate-Create-Discuss-Reflect) which is an inquiry-based approach, and TTRA (Think-Talk-Read-Ask) which is a reflective approach. A survey on Math anxiety level among 100 SHS learners of TINHS was conducted and it was found out that they have a moderate level of Math anxiety (mean of 2.96). Different teaching approaches in teaching Mathematics, specifically Statistics and Probability, which is a core subject offered this 2nd semester of school year 2016-2017, are applied in classroom teaching. After exploring the different approaches in teaching and learning for a period of one month, the Math anxiety level was again measured using the survey question. Learners' Math anxiety level was computed to be at low level (mean of 2.26). The difference between the level of Math anxiety before the application of different approaches in teaching (2.96) and the level of Math anxiety after the application (2.26) was deemed significant using t-test. At the end of the study, recommendations were given to master teachers, school heads, district heads and officials, and to future researchers.

Keywords: mathematics, anxiety, performance

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Introduction

“Do not worry about your difficulties in mathematics;
I assure you that mine are greater.”
-Albert Einstein

Over the century, researchers, educators and mathematicians alike dealt on the issue of Math anxiety. It's a concept that originated from Eastern countries and is being studied thoroughly even by Western countries in the past decade.

Factors affecting Math anxiety can be attributed to many aspects. One is the Math teacher, either the present one or the past ones. Learners may have experienced a humiliating moment with a teacher, have clearly remembered the pain of body infliction caused by an instructor, or may have developed an intimidation on the teachers' style of teaching.

Another factor that can be considered is the world of numbers and symbols itself. There are those who just tremble with the sight of numbers and figures even when the teaching process has not yet started. They assume or tend to think that these figures will swallow or enshroud them totally.

And even the classmates and the environment can cause Math anxiety to learners. When some excel or seem to know more things than others do, pressure is created in the mind and heart of learners. They conclude that they cannot cope up with the subject even when they haven't tried with themselves how things in Math work.

With these factors associated with Math anxiety, many solutions have been proposed in many books and researches. There are those that focused on the strategy of studying to reduce Math anxiety. There are those that focus on mental and psychological aspect to try to minimize this problem. But none so far has tried teaching approach in giving solution to the present problem. Can different teaching approaches be the solution to reduce Math anxiety?

The Philippine government, through the leadership of former President Benigno Aquino III, has signed Republic Act 10533, otherwise known as the Enhanced Basic Education Act of 2013. Stipulated in one the sections of that law is that the education should make use of the following approaches: collaborative, constructivist, integrative, interrogative, and reflective. Talangan National High School has lived up with the standard of DepEd in executing these approaches in their different course offerings, namely, General Academic Strand, Caregiving, and Automotive.

Talangan Integrated National High School is located near the town proper of Nagcarlan, Laguna, just a kilometer before the busy market. It has existed for already 46 years, and its present head is Arturo R. Moreno, Principal II. As of this second semester, the enrollees of Senior High School in Talangan add up to 120 from four sections (GAS, Care, and 2 Automotive classes). Their subjects this second semester includes Practical Research, Pysical Science, Pagbasa at Pagsusuri ng Teksto, MAPEH, Biology, Automotive, Caregiving, and Statistics and Probability.

The Mathematics teacher (the researcher) noticed a very low performance in Mathematics, especially the automotive class, last semester. Many readings cite that low math achievement can be traced in Math anxiety. This is the reason why the researcher would like to investigate on this issue, and propose a solution which the teacher can implement within the bounds of learning-teaching process.

Conclusion

After a month of exploring different activities that highlights the different approaches in teaching, the 2C-2I-1R, the Math anxiety level of 100 SHS learners of Talangan NHS decreased significantly. The specific aspect of the studies that have been dealt with are the following:

- a.) Math anxiety of learners before the application of 2C-2I-1R approaches;
- b.) Mean level of perception of learners on the TDAR, RMFD, 4A's, AICDR and TTRA activities;
- c.) Math anxiety of learners after the application of 2C-2I-1R approaches; and
- d.) Significant difference level of Math anxiety before and after the 2C-2I-1R.

The findings that have been noted in this study are the following:

- 1.) The math anxiety level of learners before the application of 2C-2I-1R approaches is 2.96 which is interpreted as moderate level.
- 2.) All of the five different activities in were rated by the learners as very highly satisfactory.
 - a.) TDAR Activity (Collaborative approach) has a mean level of 4.39
 - b.) RMFD Activity (Collaborative approach) has a mean level of 4.61
 - c.) 4A's Activity (Collaborative approach) has a mean level of 4.38
 - d.) AICDR Activity (Collaborative approach) has a mean level of 4.29
 - e.) TTRA Activity (Collaborative approach) has a mean level of 4.37
- 3.) The math anxiety level of learners after the application of 2C-2I-1R approaches is 2.26 which is interpreted as low level.
- 4.) Using the t-test (paired sample means), the t_{comp} is 7.08 while the t_{crit} is 1.98. Since is $t_{\text{comp}} > t_{\text{crit}}$, the hypothesis that there is no significant difference in the math anxiety level of the learners before and after the application of 2C-2I-1R approaches is not sustained.

Based on the findings on this study, it is revealed that there is a significant difference on the math anxiety level of learners before and after the application of 2C-2I-1R approaches. Teaching approach help learners reduce their Math anxiety. The result of this study is supported by the meta-analysis of Hembree when he looked at the different studies done in Mathematics. He said that Math anxiety is related to negative attitudes toward Math. Since the learners in this study have a positive attitude regarding the activities they have undergone, as shown by their very high satisfaction rating, their Math anxiety is reduced.

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