The Effect of Using Window Card Technique in Improving the Performance of Grade 8 Students

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Abstract. The study was deemed further that the research would determine the effectiveness of using the window card technique in improving the performance of Grade 8 students on the essential Mathematics on integers. This study was done in 2016 in Grade 8 Students in Mathematics at Sto. Domingo Integrated School. This study was conducted to all enrolled Grade 8 students who had Mathematics classes, mainly taking up the application on integers. A pre-test was given to both a control group (n=10) and an experimental group (n=183). Both groups were given regular instruction. The control group was instructed using the whole group instruction model with the teacher-proponent as the facilitator. A post-test was given to both groups. The post test has yielded a remarkable difference on the result for the experimental group which proved the much effect of the introduction of instructional strategy in the use of window card technique. Further research was warranted to evaluate the long-term impact on mathematics achievement among students in the use of new approaches to improving the performance of the students. Initially, the study noted that the level of Mathematical performance of Grade 8 students was below average.

1. Introduction

Present records show that most students are getting very low scores in Math. It was deemed that it may have been due to their lack of knowledge and mastery of the fundamental skills in Mathematics
that keep them from catching up with the lessons. As per K-12 Curriculum (2011), the students must have to move up to advance teachings with the expectation that their Mathematics fundamentals are generally within the average level [1]. However, many Math teachers can attest that some students find it hard to cope with the lessons, based on their recent performance in quizzes and examinations. The 50-minute per period of Math lesson per day is not enough for the students to grasp lessons as they still have to painstakingly recall past experiences and understand the basics, especially on integers to get the pace of the present teaching [2]. Students who lag behind fast learners can be at par with their classmates when teachers introduce them new teaching strategies. There are some who are often misquoted as not intelligent, but when the proper strategy is introduced to them, they prove to be learning better. Indeed, blogger Johnson commented that mathematicians need to submit designs into math-backed facts to teach others to be good at Math [3].

The researcher cited the work of Alexander (2003), in which she researched to evaluate the effect of math clubs on the mathematics achievement and attitudes toward mathematics of eighth-grade females. Her findings showed that participating in a math club can be a viable approach to improving mathematics achievement and attitudes toward mathematics for women. In this sense, correlating this to the study, the introduction of a strategy like the math club was able to improve the performance of the students in mathematics[4].

Also, Parker (2001) examined the effects of teaching method differences on sixth-grade learning disabled mathematics students. The study sought to determine which method was more effective in allowing students to retain information. The result of her research revealed that the CPC method is more effective than the traditional recall method in improving the achievement of learning disabled students. To relate parker's study with this research, it can be surmised that introduction of strategies will give researchers a clear empirical answer to a phenomenon which needs an academic process to ascertain[5].

Generally, Mathematics teachers regard the topic on integers as one rudiment foundation in the learning about the numbers. It lays the foundation for learning algebra and other higher mathematical concepts. Mathematics teachers can relate to the notion that students have difficulties in understanding the concepts of either negative or signed numbers. Steiner (2009) said that teachers should know that an essential knowledge of integers involves more than just the use of procedures for addition and subtraction. In fact, as per the Department of Education (DepEd) mandate on curriculum, the topic on Numbers and Number Sense leads as equally famous among the five content areas in the mathematics curriculum. However, teaching on the issue on integers tends to bring about the more significant challenge than any other topics in the list. That is why teachers are given leeway on
choosing instructional strategies among the variety of instructional models, in this sense, on the cognitive abilities of students.

The advent of information technology in addition to the enormous effect of the tri-media, have posted some disadvantage effects on students. It is observed that since everything is now accessible online or through data saved in computers or mobile devices, students are likely to develop poor studying habits and a lazy attitude towards education. Some of them may even think they can skip school because they can find answers and lessons online. This picture is one challenge to a Mathematics teacher, trying to get their attention given the typical classroom atmosphere that is generally not conducive to learning compared to that of an air-conditioned internet cafe.

The researcher chose Sto. Domingo Integrated School, which has a total of 741 students, 183 of which are Grade 8 students, as the school-beneficiary of her research. Looking into the curriculum and the class records in the first quarter reports, the researcher noted that some students are lagging behind their counterparts. The finding became so much of a concern that enabled the researcher to distinguish fast-learners from the slow-learners students. Stripp (2005) said about the existence of ‘mathematically weak' children who tend to be taught a reduced curriculum with ‘easier' work to do, and the ‘mathematically able' ones, who are given extension tasks. Accordingly, because mathematically weak students are missing out on some of the curricula, their access to the knowledge and understanding they need to make progress is restricted, so they get further and further behind, which reinforces their negative view of Math and their sense of exclusion. On the other hand, Stripp also said that mathematically able students are given extension tasks often result in superficial learning. Secure progress in learning Math is based on developing procedural fluency and a deep understanding of concepts in parallel, enabling connections to be made between mathematical ideas. In so doing, the study said that it is deep learning that develops the students since it is more sustainable [6].

Mastery in learning as a skill has deeply rooted to be the foundation of learning. It boils down to the fact that skill is honed through constant correct and repetitive actions. Mastery in education, like Dweck (2006) mindset, entails one to attain a growth mindset on a particular topic that enables one to be readily capable of solving and analyzing problems, stress-free. In mathematics, mastery on integers brings about the students' foundation to a better footing as they come up the ladder of learning [7].

This research aimed to determine the effect of the use of window card technique as an instructional strategy applied to the Grade 8 students of Sto. Domingo Integrated School. Specifically, this study sought to know the level of Mathematical performance of Grade 8 students. In so doing, she wanted to determine how do the Grade 8 students assess the use of window card technique as an
instructional strategy. Other than that, the study also looked into the levels of improvement of the performance of Grade 8 students on the topic of integers before the use of window card technique. As a conclusion, the study portrayed the significant improvement as caused by the said intervention to the performance of Grade 8 Mathematics students.

Table 1. Input-Process-Output Diagram of the Study

| Input                                                                 | Process                                                                 | Output                                                                 |
|-----------------------------------------------------------------------|-------------------------------------------------------------------------|------------------------------------------------------------------------|
| 1. The academic profiles of Grade 8 students of Sto. Domingo Integrated School, particularly on the topic about integers. | 1. The level of Mathematical performance of Grade 8 students.           | 1. Enhanced academic profiles of Grade 8 students of Sto. Domingo Integrated School, particularly on the topic about integers. |
| 2. The Grade 8 students' assessment of the window card system as an instructional strategy. | 2. The degree of evaluation of the grade 8 students on the use of window card technique as an instructional strategy. | 2. Recognized importance of the use of the window card system as an instructional strategy. |
| 3. The objectives of Mathematics teachers on teaching integers to Grade 8 students. | 3. The levels of improvement of the performance Grade 8 students on the topic about integers after the use of window card technique. | 3. Fully attained objectives of Mathematics teachers on teaching integers to Grade 8 students. |

2. Material and Methods

This action research is experimental. The researcher shall undergo certain controlling variables and manipulating others to observe if the results of the experiment reflect that the manipulations directly caused the particular outcome. The research was a survey-type of students' performance to obtain relevant data from the effect of Standardized Test conducted by the teacher of the Grade 8 students.

The research was aimed to be conducted to one hundred eighty-three (183) students of Grade 8 of Sto Domingo Integrated School SY 2016-2017.
This study primarily used the survey method and a questionnaire in obtaining relevant data from teacher adviser Mathematics Record Book for Grade 8 and the students’ assessment of the new instructional strategy. Basically, the poll and the survey in the form of Standardized Tests (2016) gathered information on a) profile of respondents; b) the level of Mathematical performance of Grade 8 students; and c) the levels of improvement of the performance Grade 8 students on the topic about integers after the use of window card technique in order to determine the level of performance of Grade 8 students in Mathematics, particularly on integers. The questionnaire included questions which decided how the Grade 8 students assess the use of window card technique as an instructional strategy.

The researcher used a questionnaire and a survey form as tools in gathering data. The questionnaire comprised of two (2) parts: profile of respondents, and students’ assessment of the instructional strategy. The survey utilized a Standardized Tests form to determine the level of performance of Grade 8 students in Mathematics, particularly on integers.

The items in the profile of the respondents are the necessary information of the students and their corresponding level assessment of the use of window card technique as an instructional strategy. The Standardized Test assessed the students' performance on integers using multi-response type questions, and questions which require the respondents with short and extended responses, respectively.

The questionnaire and survey in Standardized Test form were presented and subsequently permitted to be administered to five (5) Mathematics teachers to determine its reliability. Then the first draft of the Post Test survey form was also presented to the Division Supervisor for Mathematics, Division of Angeles City schools. The comments and suggestions were then incorporated before validation of the Post Test survey form.

Permission for the administration of questionnaire and survey forms was sought from the Principal of Sto. Domingo Integrated School, and the Schools Division Superintendent of Angeles City. Copies of the letter of requests and replies of the Superintendent are in the appendix.

The researcher floated questionnaires to 183 Grade 8 student-respondents of Sto. Domingo Integrated School. It sought to determine the level of effect to the students as far as their awareness on the window card technique; the manner the method was introduced to them; the level of attention that they show when they were presented of the new strategy; and their level of understanding of the lesson on integers using after they were introduced with the plan.

The Likert-type scale was used to assess the levels of awareness and performance of the respondents on the issues raised in the research. The researcher used the T-test to handle her data. Variables were collected before and after use of window cards on students which were then compared using the t-test with a p-value less than 0.05.
3. Result and Discussions

On the levels of awareness and acceptability of Grade 8 Students on the Introduction of Window Card Technique, it was ascertained that the students have Many effects (McE) on the level of Awareness of Window Card Technique (Table 1). Besides, it also showed that the students have Much Effect (McE) on the level of Awareness on the Manner of the introduction of Window Card Technique to the students.

On the levels of the attention and Understanding of Grade 8 students of Sto. Domingo Integrated School, Sto. Domingo Angeles City, Pampanga on the Use of Window Card Technique As an Instructional Strategy, it was known that the students have Much Effect (McE) on the level of Attention of the students to the new strategy. Besides, the Table also showed that the students have Much Effect (McE) on the level of Awareness on the Understanding of the lesson on integers using Window Card Technique.

On the levels of improvement of the performance of Grade 8 students on the topic about integers before the use of Window Card Technique, Table 2 shows the results of Standardized Test (Pre-Test) and against the Standardized Test (Post-Test) concerning DepEd Memo No. 08 s. 2015 on Students’ Standard Passing Rates. Accordingly, the minimum grade needed to pass a specific learning area is 60, which is transmuted to 75 in the report card.

It shows that out of 183 students who took the Pre-Test, thirteen (13) got High Average (HA); eleven (11) were Average (Ave), and one-hundred fifty-six (156) were below average. However, when the Window Card Technique was introduced, and after the Post Test, the results were as follows: eighty-seven (87) students or 47% got the Descriptive Equivalent (DE) of Excellent (EXL); forty-two (42) or 23% got High Average (H-Ave); thirty-seven (37) or 20% were on Above Average (A-Ave); eleven (11) or 6% Average (Ave), while only three (3) or 2 % were Below Average (B-Ave).

On the Levels of Improvement of the performance of Grade 8 Students in Mathematics, particularly on Integers After the Use of Window Card Technique, Table 3 shows the results of Standardized Test (pre-test) and against the Standardized Test (post-test) concerning DepEd Memo No. 08 s. 2015 on Students’ Standard Passing Rates. Accordingly, the minimum grade needed to pass a specific learning area is 60, which is transmuted to 75 in the report card.

In the Table, it shows that the Mean Difference between Post Test and Pretest has a -31.2 which means that there is a substantial improvement on the level of understanding of Grade 8 students on integers after the introduction of Window Card Technique. Other than the entries in the Table, which may consider as neutral, the findings on Above Average (4.8) and High Average (8.4), the entry on Excellent which has a Mean Difference of 17.4 is an indicator that the Grade 8 students have
significantly improved their level of performance in Mathematics particularly on integers after the use of window card technique.

In Table 3, it is indicated that there is a significant improvement of the level of performance of the Grade 8 students on integers after the introduction of the window card strategy.

Findings of the Study

The significant findings of the study are:

1. The level of Mathematical performance of Grade 8 students as per the result of the Pre-test showed that 153 out of 183 students or 87% were below average (B-Ave); while 11 or 6% were average (Ave); while 13 or 7% were above average (A-Ave). To note, no student was able to get high average (H-Ave) or excellent (EXL) rating in that Test.

2. As perceived by the Grade 8 students, the level of assessment as regards the awareness of the students of the window card technique was of Much Effect (McE); while on the manner of introduction of window card technique, the assessment was also much Effect (McE). The evaluation on the attention to the new strategy and in understanding the lesson on integers using window card technique both got a level of Much Effect (McE).

3. As per the result of Post-test, the levels of improvement of the performance of Grade 8 students on the topic about integers before the use of window card technique showed that there were 3 students or 2% who are Below Average (B-Ave); while there were 11 or 6% who are Average (Ave); 37 or 20% who are Above Average (A-Ave); 42 or 23% are High Average (H-Ave); and 87 or 47% got the Excellent (EXL) mark.

4. Basing from the results, the window card technique has significantly improved the level of performance of Grade 8 students in Mathematics particularly on integers after the use of window card technique. Majority or 129 students (70%) got either High Average (H-Ave) or Excellent (EXL) marks in the test after the introduction of window card technique. This was attested with the computed t-value of 1.984 which is greater than tcomp of 1.881 at 0.05 level of significance.
4. Conclusions

Based on the findings of the study, the following conclusions are drawn:

1. Majority of Grade 8 students of Sto. Domingo Integrated School or 153 students (87%) were lagging behind the lessons on integers before the introduction of the window card technique.
2. Most of the Grade 8 students were fully aware of the window card technique which was introduced to them after the Pre-test. The manner of introduction of window card technique was also assessed to having much effect on the students since it caught much of their attention since it was a new strategy.
3. Majority of the students have generally accepted the original plan of window card technique as per the result of Post-test which showed that the levels of improvement of the performance of Grade 8 students on the topic about integers have increased Below Average (B-Ave) to Excellent (EXL).
4. Conclusively, the window card technique has significantly improved the level of performance of Grade 8 students in Mathematics particularly on integers after the use of window card technique.

Recommendations

Based on the findings and conclusions of this study, the following recommendations are given:

1. The secondary Mathematics teachers are encouraged to upgrade themselves in educational opportunities geared toward learning new teaching strategies toward their professional growth and development in mathematics.
2. The secondary Mathematics teachers are encouraged to devise new policies like the window card technique to reinforce their current lessons in mathematics.
3. The school administrators should support and guide the Mathematics teachers in the introduction of new learning strategies to uplift their confidence and skills which would benefit further the students.
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