THE EFFECTS OF REMEDIAL PROGRAMS ON THE STUDY OF LIVING THINGS IN THE SCIENCE ACHIEVEMENT OF GRADE 2 STUDENTS

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ABSTRACT

Academic underachievement among students remains to be one of the major concerns of schools and parents. While there are students who excel and are able to perform according to expected standards, there are also others who have difficulties in the learning process. In order to assist these students and help overcome their difficulties so that they may achieve success, a special provision in the form of an instruction reinforcement program should be made available to them.

This study aimed to examine the effects of six weeks of participation in a Remedial Program on the Science achievement of young students particularly on the core content about living things. For this case study, two subjects (n=2 boys) of a private school in an urban setting were observed during the 3rd Trimester of Academic Year 2014-2015. Teacher-made assessments, student interviews and anecdotal records were used to collect actual data. A comparison of the pre-test and post-test results and analysis of the interviews and teacher’s anecdotal records were conducted after the intervention period. Results indicated marked improvement in the students’ assessment scores, as well as in their participation in the remedial and regular classes. Additionally, the study revealed the students’ preference for outdoor and hands-on activities when learning about living things and the opportunities for practice in a relaxed environment.

Keywords: remedial program, science, instruction reinforcement, pedagogical practices, science achievement

I. Introduction

Academic underachievement among students remains to be one of the major concerns of schools and parents. In the classroom, teachers witness this every day. While there are students who have the ability to easily grasp concepts, perform according to expected standards, and excel in classes, there are also others who have difficulties in the learning process. Some may not be necessarily disabled but nevertheless struggle as they cope with the demands of a traditional academic setting. In order to assist these students and help them overcome their difficulties so that they may achieve academic success, a special provision in the form of an instruction reinforcement program should be made available to them.
According to the Philippine’s Department of Education’s Order #14 of 2013 which focuses on the Strengthening of the K-12 Educational Program delivery system for Elementary Education, schools should provide the “less able” students or those struggling with their understanding, special instructional programs or remediation to ensure that they meet the standards set and the competencies expected of them.

Remedial is defined as intended to correct or improve deficient skills in a specific subject. Remedial programs or classes help students who are having problems with advanced concepts to fully understand the basics of a subject. They can be useful tools to gain a more complete grasp of difficult ideas. Several studies have indicated the success of remedial programs as it enhances student learning and academic achievement. Calhoon (2005), as cited in Hausheer, Hansen, & Doumas (2011) stated that productivity is increased when students receive immediate feedback and a more personalized and individual attention from the teacher. He added that when remedial programs include these strategies, the learning objectives are achieved. Similarly, being with a small group having similar concerns allow for building of relationships and productive discussions making students ease to work toward improving their skills and comprehension, thus, paving the way for learning (Hausheer, Hansen, & Doumas, 2011).

In their study on how remedial teaching impacts the improvement of competencies of low achievers, Selvarajan & Vasanthagumar (2012) seemed to support earlier researches as they averred that remedial programs are one of the acceptable solutions for low achievement. Hausheer, Hansen, & Doumas (2011) further justified the importance of providing remedial programs particularly to elementary school students because it is at this stage of development when early intervention can impact the progression of academic difficulties.

II. Theoretical Framework

Some theorists whose concepts support the remedial program as being helpful to learners are Edward Dale and Jean Piaget. They also guided this study as they underscored the importance of providing concrete learning opportunities for learners.

Jean Piaget and the Constructivist Theory

One of Piaget’s significant contributions in education is his influence on the conceptualization of the educational theory called “constructivism.” Arendale (1993) shared that while Piaget preferred the confinement of his insights to epistemology, education experts linked the former’s observations to education. Piaget believed that learners must be actively involved in the learning process as this allows them to construct their own knowledge and understand how to use it. Proponents of constructivism likewise advocated that learners be allowed to explore, experiment and discover as they learn about concepts and their environment (Arendale, 1993). Supporting their interests and challenging their abilities by providing a variety of concrete and appropriate learning opportunities while keeping in mind their age and developmental characteristics are important considerations when working with young children.
Edward Dale and the Cone of Learning

Dale concurred with Piaget’s theory in his conceptualization of a model called – the Cone of Learning. Basically, this model shows some of Piaget’s concepts on learning and the variety of instructional methods teachers may employ in order to stimulate learning. Several studies have indicated the effectiveness of using this model particularly when working with young students (Arendale, 1993).

Dale theorized that more learning is achieved and retained when students are engaged and active in the learning process (Arendale, 1993). As can be seen in Figure 1, instructional strategies that allow for students to learn and retain knowledge more are those where they are more involved. With Dale’s Cone of Learning as a guide for teachers in planning their instructional methods, Arendale (1993) stated that student involvement in the learning process is given emphasis. He added that “when students can relate the lessons to real life and everyday experiences, knowledge retention is strengthened as they are directly involved in purposeful learning experiences. In this study, Students A and B listened to discussions, read text, watched audio –visual presentations and short films, and engaged in simple experiments and outdoor or field experiences. Having all these in the program not only helped augment the concepts they were learning in the classroom but also promoted in them the construction of their own knowledge.

Background of the Study:

In a class of 28 Grade 2 students where this researcher teaches Science for 40 minutes thrice a week, students exhibit great interest in discussions. They also show enthusiasm in classroom activities such as simple experiments, games, and other hands on activities. However, results of assessments show a different scenario particularly for 2 students. Both usually get very low marks on written assessments and these were evident especially in their 2nd trimester average grades. These same students also failed in the pre-test on the concept about living things. It was a concept the class
would be learning in Science for the whole 3rd Trimester. Because of their unsuccessful performance on Science academic tasks, this researcher recommended that they be provided with extension enrichment opportunities through an after-school instructional intervention program called remedial classes.

Taking into account the academic underperformance of the participants in this study, a letter to their parents was sent to inform them of the Science Department's recommendation that they attend the Remedial Program. The purpose of this program was to help them meet the required core content and skills in order to improve their academic performance in the subject. It also aimed to assist them in adjusting to their studies, find satisfaction in learning, develop self-confidence and assume responsibility for their own learning.

In the Remedial Program, personalized strategies were given in order to address each student's individual needs and to measure their progress. These included creative approaches to teaching and learning through short discussions, cooperative learning activities, assessments and reviews, and ample practice opportunities which were all integrated with the Science program in the mainstream classes. In order to differentiate the activities of the program with that of the regular classes, PowerPoint presentations, outdoor/field experiences, and interactive game activities were conducted every session. One (1) hour sessions were held thrice a week for a period of 6 weeks.

**Action Research Questions:**

The following research questions were addressed:

1. How did the Remedial Program help improve the performance of Grade 2 students in their study about living things?
   a. Which of their activities in the Science Remedial classes had an impact on the assessment scores of the students?
   b. What are the perceptions of Grade 2 students about being in a Remedial Program?

**III. Methodology**

This study was conducted in the Science Department of a private school in an urban community. Students met for enrichment or additional instruction time after their regular classes three times a week over a period of six weeks in the Third Trimester of Academic Year 2014-2015. The lessons covered for this period in all the classes included the unit on living things with sub-topics on animals and plants.

**Participants**

Two (2) students in Grade 2 were chosen to participate in the Science remedial program based on the following reasons:
A. They failed in the Pre-Test (Knowledge) administered at the beginning of the 3\textsuperscript{rd} Trimester: With a general passing score of 16 for a 20-item assessment, the students got the following scores:

a. Student A – 5/20  
b. Student B – 15/20

B. Their final grade in Science for the 2\textsuperscript{nd} Trimester were failing marks:

a. Student A – 73 or B (Beginning)  
b. Student B - 72 or B (Beginning)

The passing final grade is 75%

Student A is 7 years old. In Science classes, he has been observed to be often inattentive. He enjoys talking with seatmates, at times, even during discussions. He walks around the classroom a lot to play with peers. During seatworks, he has been observed to rush through his works so he can have time for play. Even when reminded to go over his work to review them, he would often say that he is finished.

Student B is also 7 years old. During discussions, he is observed to be slouching in his seat. His desk would always be seen with things not needed for the day’s lessons – water bottle, pencil case, scissors, and sheets of papers. When reminded to put them away, he would often place them under his desk and still play with them even when discussion is ongoing. While he seems comfortable with the teacher as he would often converse with her during quiet activities, his topics would be mostly about matters not related to the lessons. Motivating him can be, at times, quite challenging.

During the 2\textsuperscript{nd} Trimester of Academic Year 2014-2015, Students A and B’s Final Summative Scores were 73 and 72, respectively. While Student A scored slightly higher than Student B, he failed in most of the assessments given in class. Both also failed in the Pre-test on the topic of Animals given in the beginning of the 3\textsuperscript{rd} Trimester of the same academic year. With these results, both students were recommended to enroll in the Science Remedial Program to be given in the same trimester. According to the school’s policy on Remedial Programs, students recommended into the program are those who score below the expected level of standardized/placement tests or with an average trimester rating of 79 or below.

Science Remedial Program

The Science Remedial Program is a follow-up instruction program aimed at helping students improve their skills, reinforce core concepts, and meet the required level of proficiency in Science. It is a program offered for grade levels 1-11 students with a trimester average grade of 79 and below. Services include a series of diagnostic quizzes, concept reviews and practice exercises which are all aimed to determine a student's problem areas, address specific strengths and weaknesses, and eventually improve comprehension, science skills, and proficiency at applications related to the course curriculum.
**Data Collection Procedures**

1. Administered pre-test to all Grade 2 students
2. Checked and recorded raw scores from the pre-test
3. Selected student participants eligible for the remedial program
   (Based on the 2nd Trimester final grades and pre-test raw scores)
4. Conducted remedial classes for 6 weeks, meeting the students thrice a week
5. Delivered science lessons in the regular classes
6. Administered weekly formative assessments and summative assessments every end of a concept; recorded all raw scores
7. Conducted student interviews on remedial program participants; completed teacher’s anecdotal records
8. Administered posttest at the end of the unit
9. Compared pre-test and post test scores
10. Analyzed results of student interviews and anecdotal records

**Data Collection Tools**

The following instruments were used for the study:

1. Teacher-Made Tests – are assessments given to the students at the end of a concept/s learned during regular Science classes. These are based on prescribed K-12 curriculum with questions on Knowledge, Process or Skills, and Understanding.
   
   a. Pre Test and posttests – are 20-item tests consisting mainly of knowledge questions on the topics:
      
      i. Animals – body parts and functions, comparing animals (similarities and differences), growth of animals, needs and care, and importance to man
      
      ii. Plants – parts and functions, comparing plants (similarities and differences), growth of plants, needs and care, and importance to man
   
   b. Formative Assessments – are 20-item tests comprising knowledge, process or skills and understanding questions.
   
   c. Summative Assessment – are 25-item assessments consisting solely of understanding questions.

The intervention consisted of individualized instruction of a small study group consisting of the teacher/researcher and two Grade 2 students. The objectives of the remedial classes were to: 1) to enhance student Science assessment scores, 2) to determine the students’ areas of difficulty in the concepts taught.

2. Student Interview Sheets – semi-structured interviews were held thrice over the 6-week intervention period. The interview sheets consisted of two (2) open-ended questions each which the students answered individually and face-to-face. Interviews were recorded and transcribed by the researcher.
3. Anecdotal Records – these are records of observations made by the researcher of the students’ behavior or performance during the following situations:

   a. At test-taking  
   b. During remedial classes  

Table 1 indicates the class schedule for the Science Remedial Program. As can be seen, about 35% of the session is devoted to hands-on activities. Another 35% of the session’s schedule is also dedicated to raising questions, clarifying, and ideas-sharing.

**Table 1. Remedial classes schedule.**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Monday, Wednesday, &amp; Thursday)</td>
<td>Activity</td>
</tr>
<tr>
<td>2:45 pm – 3:00 pm</td>
<td>Review of previous lesson and discussion of lessons for the day</td>
</tr>
<tr>
<td>3:00 pm – 3:20 pm</td>
<td>Enrichment Activity: Hands on or outdoor, simple experiments</td>
</tr>
<tr>
<td>3:20 pm – 3:30 pm</td>
<td>Questions and Answers</td>
</tr>
<tr>
<td>3:30 pm – 3:40 pm</td>
<td>Formative Assessment</td>
</tr>
<tr>
<td>3:00 pm – 3:45 pm</td>
<td>Journal Writing</td>
</tr>
</tbody>
</table>

Classes in the Science remedial program are held thrice weekly and run for an hour each session. These are held in a classroom after the regular classes. Since the participants in this study proceed to the designated room for remedial immediately after their regular classes which end at 2:15pm, they are often early for their remedial classes, hence, the extra time is devoted for warming up and settling down before the classes begin.

Table 1 shows a typical day’s schedule in the Science remedial class. The sessions ordinarily begin with a brief review of the previous meeting’s lesson followed by a discussion on the lesson for the day. Aside from discussions, other forms of lesson presentation are oftentimes used. These may be through viewing of pictures, short films, and PowerPoint presentations. As an enrichment activity, the students are provided opportunities to engage in various sensorial activities such as simple experiments, hands-on exercises, or an outdoor activity. The students have the opportunity to ask and clarify a part or parts of the lessons which may not be clear to them as well as correct misconceptions, share ideas, anecdotes, or a personal experience relating to the lessons through a question and answer activity. A short formative assessment is given to the students at the end of session to determine how well they understood the day’s lessons. As a closing activity, the students are made a write, on their journals, a short reflection exercise to share what they have learned for the day, lessons which are still not clear to them, and what they liked about the day’s remedial class.
IV. Results and Discussions:

Comparing the results of these students’ pre-test and post tests on the topic of animals, Figure 2 illustrates that only Student B showed an improvement. What could have affected the score of Student A? Why was his post test score even lower than his pre-test? Could this be an indication that the intervention or the remedial program was not beneficial in enhancing his Science performance?

![Figure 2. Comparative student performance on Science assessments on animals.]

For the topic on plants, it was a different scenario for both students as they showed marked improvements in their assessments as shown in Figure 3. Could these results be an indication that their remedial classes were helpful in enhancing their Science performance? In order to validate these results, open-ended interviews with these students were conducted. The teacher’s anecdotal records of the students’ behavior during remedial classes and at test-taking were also analyzed.

![Figure 3. Comparative student performance on Science assessments on plants.]

The results of the interview were clustered according to three main themes, namely: students’ preference for hands-on activities, varied learning styles, and classroom atmosphere.

Hands-On Activities

The students’ responses in the open-ended interviews conducted seemed to address Research Sub-Question A: “Which of the activities in the remedial classes had an effect on the students’ assessment scores?” Both students stated that they enjoyed the outdoor activities that were done in the remedial classes. Recalling the results of their post-test on plants where both students showed marked improvements, it may be an indication that their remedial classes, specifically the outdoor activities, contributed greatly to their understanding of the lessons which were also translated to their science post-test on plants.

It was also gathered in the interviews that the students liked being able to see and hold actual samples of objects they were learning in their classes. Specifically, the students had this to say:

“It is fun when we go outside of the classroom. We learn many things outside.”

Research indicates that providing hands-on and multi-sensory experiences give students concrete experiences that establish a foundation for learning more abstract concepts (Salend, 1998). In the remedial classes, this researcher also showed videos of different animals and their habitats. During the discussions on the comparison of land and water animals, this researcher knew that she should not limit her students within the four walls of the classroom. Since it was not feasible to show them actual habitats of water animals, a short video was presented to them. Their responses in the interview revealed how they, like most young students, learn visually. Salend (1998) shared that when students are provided with the opportunity to directly experience, see authentic samples, and even watch from a video when an outdoor activity is not possible, the learning becomes more meaningful and real for students. He added that watching videos are like “virtual field trips” that “promote learning not just of factual information but also of processes. In this study, students A and B shared how they found the activity enjoyable and educational as they stated the following:

Student A:

“I like looking at pictures and watching videos because it is fun….because I can see it and hear it.”

Student B:

“I learn a lot because I can see the color and how it actually looks like. I see how it moves too.”

Learning Styles

Several studies have recommended the employment of different teaching strategies when delivering lessons to students. These have been validated later on by researches which indicated the success of learners when teaching styles and strategies are varied. Citing the work of Piaget and other theorists who advocated constructivism, Boylan & Saxon (1999) argued about the possibility of students learning best through direct experience or visual orientation. They added that employing a variety of instructional methods were more likely to appeal to the learning styles of students especially those who struggle at the conventional methods.
The student interviews and this researcher’s anecdotal reports from her remedial classes seem to establish the diverse intelligence and learning preferences of the participants in the study. Education experts believe that teaching, especially in the early grades, should not be a “one size, fits all. (Gregory & Chapman, 2013).” Children learn, process, and retain information in different ways. It is for these reasons that teachers should present materials, introduce concepts, and deliver information, in ways that will arouse the curiosity and increase the interest of the children and eventually help them absorb it while addressing their varying learning styles.

In this study, the participants exhibited this as they differed in the ways they responded and participated in the activities in the remedial classes. Different strategies were employed in order to meet the students’ different learning styles. In one student interview, the students shared the following:

Student A: “My favorite subject is Science! It is fun to do experiments.

Student B, however, had a different view on it as he stated: “I like going outdoors. We can see real things. We learn from them.”

Even in this researcher’s anecdotal report, Student A was observed to be often prepared for the day’s session. He also listened intently and answered questions promptly. Student B, on the other hand, often took time in getting his materials ready. He also moved a lot but showed excitement during outdoor activities.

Learning about how best each one learned further strengthened this researcher’s mission of varying her instructional methods so that she is able to address the different learning styles of her students.

Classroom Atmosphere

Similarly, the students’ responses in the open-ended interviews conducted seemed to address Research Sub-Question B: “What are the perceptions of Grade 2 students about being in remedial classes?”

Students A and B seemed to agree that they liked being in remedial classes because of the atmosphere. It was a positive environment that allowed them to ask as many questions as necessary to understand or correct their misconceptions about a concept. Additionally, it was quiet, relaxed, and less threatening unlike in their regular classes where they seemed to be overshadowed by their peers. For struggling students like these two young boys, being in remedial classes was a welcome treat as it allowed them to work at an appropriate level. Specifically, the students stated the following:

Student A: Teacher is teaching us for a longer time. I am happy in remedial class. There is no noise.

Student B: “I like it when we have short breaks. I also like it because there is no distraction. In class, it is noisy.”

In a survey given to the students at the end of their remedial classes, they seemed to agree that they enjoyed having been in remedial classes and that it helped them in understanding and learning more about the lessons on living things. They also shared the same feelings toward the outdoor and hands-on activities done in the remedial classes.
Reviewing the results of the intervention given by this researcher in her Science classes, the following factors were gathered as having affected the results of this study. The remedial program may have been successful because it incorporated feedback from the teacher to the students. According to studies, feedback given during instruction, especially in one-on-one or small groups improves comprehension and fluency. Remedial classes provide opportunities for practice. This method helps build on general knowledge which sets a foundation of basic skills (Hausheer, Hansen, & Doumas, 2011). During the daily remedial sessions, this researcher closely monitored the students’ progress, provided feedback, monitored students’ behavior, and assessed their comprehension and understanding of the concepts taught.

Conversely, a factor which may have negatively affected the results of the science performance of the students, particularly Student A in this post-test on animals was his week-long absence from regular and remedial classes due to illness. When he reported back to school, he only had a day of review in class before the scheduled assessment. There were also several days of class suspensions due to typhoons.

All in all, the students were observed to have benefitted from the remedial classes as the sessions allowed for small and interactive group instruction. Aside from the students receiving more individual attention, it was also an excellent opportunity to bond with the teacher. And because the atmosphere was relaxed and unstructured, the environment may have also been less threatening for the students as they knew that their challenges in the subject area were similar.

For the last summative assessment in Science for the academic year, the coverage of the assessment was about plants and animals. The type of test focused on the more important aspect – assessing the students’ understanding. Both students passed the assessment with Student A getting a perfect score of 24/24 and 19/24 for Student B. These results answered this researcher’s question: “How did the remedial program help improve the performance of Grade 2 students in their study about living things?” Aside from getting an excellent grade in the assessment, the remedial program helped in opening their minds and responding positively to our remedial and regular classes. Since completing their remedial program, both students have shown enthusiasm in the class discussions, actively volunteered in sharing information and ideas with their peers, and more importantly, felt proud about themselves every time they received the results of their assessments in class.

V. Conclusion and Future Recommendations:

While the results of this study may not be fully attributable to the remedial program, one significant finding is that the Science Remediial Program implemented produced a positive response from the students as evidenced by their active participation in the science classes and the overall improvement of their assessment results. Having an open mind and being motivated in remedial classes paved the way to learning, and these are particularly important for early childhood educators such as this researcher. This study likewise revealed the importance of providing opportunities for young students to have concrete learning experiences and more sensorial activities as they learn not only from what they see and hear, but also from what they can touch and feel, smell, and even taste, when necessary – an important consideration when learning about living things.

The following are ways in which this study could be further improved:

- Remedial classes should have more activities where students can make use of their senses. Activities that will allow them to construct their own learning through discovery, exploration, and experimentation should be provided.
• Consider gathering more baseline data, a bigger sample size, and a longer implementation period. Additionally, other measures such as self-esteem may also be looked into as Science Remedial Programs may not only help in enhancing academic functioning but also the emotional development of the students as well.
• For the school administration to include in the teachers’ training program effective ways of conducting remedial classes so that teachers are able to integrate it in their own practices. Professional development programs may also include training on different activity-based learning strategies in remedial classes.
• This study may be replicated on younger children, in the Preschool and Grade 1 levels: ages 4 to 6. Remedial classes should be carefully planned to suit the age and the developmental characteristics of the students.

References:


