

# The Effect of Implementing Bloom's Taxonomy and Other Strategic Interventions to the Level of Student Performance in Science

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**Abstract:** This study was conducted as part of the self-assessment study to determine the factors affecting the level of student performance in Science. The lowest performing class was the focus of the study. The study made use of the application of Bloom's Taxonomy and other Strategic Interventions to see the effect on student's performance in the final examination. The study involved a total of twenty six (26) respondents drawn from six hundred five (605) populations from the grade department enrolled in Royal International School, Doha, Qatar. A significant gain on student performance was noted after the treatment using t-test for correlated samples.

**Keywords:** Reading Intervention, Support, Reading Ability, Effect.

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## 1. INTRODUCTION

Science is a fascinating and interesting subject. Unlike other subjects, it is based on truth and facts. It is where experiments are conducted to explain and predict various phenomena. However, some students find difficulty in learning science, and students of Qatar are no exception to this problem. In the Trends in International Mathematics and Science Study (TIMSS) in 2007 and 2011 for grade 8, Qatari students scored well below the international average of 500. As for the available data on student achievement for grade 4 in math and science from TIMSS 2011, Qatar's scores were significantly below average (Faour: 2013). This student performance in science was classified at proficiency level 1, (the lowest) and only small percentage of students had skills that were sufficiently advanced as measured against TIMSS benchmark (SEC, 2008).

One of the general objectives of education in Qatar is to provide Qatari students an access to knowledge and science according to their age and aptitude and enabling them to apply and adapt and develop scientific and technological inventions. This is in line with Qatar's National Vision 2030 that will provide citizen with excellent training and opportunities to develop to their full potential, preparing them for success in a changing world with increasing technical requirements. (General Secretariat for Development Planning, 2008). With the increasing demands of the Qatar 2030 Vision and expectation from parents, teachers are constantly searching for ways to increase student achievement. These pressing issues have moved the researcher to conduct this study on the level of student achievement in science, and measure the effects of Bloom's Taxonomy and Other Interventions to their performance in the final examination.

### **Purpose of the Study:**

This study aimed to measure the effect of Bloom's taxonomy and other strategic interventions to the Level of Student Performance in Science.

### **Research Questions:**

The study was guided by three main research questions and one hypothesis. The research questions were:

1. What is the level of student's performance in Science before the application of Bloom's Taxonomy and other strategic interventions.

2. What is the level of student's performance in Science after the application of Bloom's Taxonomy and other strategic interventions.
3. Is there a significant gain on the level of student's performance in Science before and after the application of Bloom's Taxonomy and other strategic interventions?

### Hypothesis:

There is no statistical significant difference on the level of student's performance in Science before and after the application of Bloom's Taxonomy and other strategic interventions

## 2. METHODOLOGY

The study was designed as an action research. Action research claims to provide improvements in quality of life of others through critical reflection and inquiry. Action research according to Calmorin (2003) is a decision-oriented research involving the application of the steps of the scientific method in response to an immediate need to improve existing practices. A One Group Pre-Test-Post-Test Design was employed to a total of twenty six (26) respondents drawn from six hundred five (605) populations from the grade department of Royal International School, Doha, Qatar. Purposive sampling was used as a sampling technique. This type of sampling was used purposively to select Grade 4C which happened to be the lowest performing group in the final examination in science to comply with the parametric reliability of the study. A documentary analysis of final examination results was also employed. T-test for correlated samples was used to analyse data.

## 3. RESULTS AND DISCUSSION

### Research Question 1:

As reflected in TABLE I, Grade 4C obtained an overall mean score of  $X = 43.88$  out of 100 and standard deviation of 16.95 in the Pre-test. This means that student's performance in Science was low before the application of Bloom's Taxonomy and other strategic interventions.

TABLE I: Pre-Test Scores of Grade 4C in Science

Variable	Mean	SD
Pre-test	43.88	16.95

### Research Question 2:

As shown in TABLE II, Grade 4C obtained an overall mean score of  $X = 63.69$  out of 100 and standard deviation of 18.02 in the Post-test. This means that student's performance in Science was high after the application of Bloom's Taxonomy and other strategic interventions.

TABLE II: Post-Test Scores of Grade 4C in Science

Variable	Mean	SD
Pre-test	63.69	18.02

### Research Question 3:

TABLE III shows that there was an increase in the performance of Grade 4C from  $X = 43.88$  and  $X = 63.69$  respectively. T-test for correlated samples revealed that a gain of  $X = 19.8$  was significant. This was reflected on the computed p value of 0.001 which is  $< 0.05$ . Thus, the null hypothesis was rejected. This implied that the use of Bloom's Taxonomy and other intervention were effective.

Table III: Pre-Test and Post-Test Scores of Grade 4C in Science

Variables	Mean Scores	Number of cases	SE of Mean	t-value	df	p-value	Interpretation
Pre Test	43.88	26	19.8	6.18	25	<.001	Significant*
Post Test	63.69	26				<.001	

#### 4. CONCLUSION

The conclusions were drawn based on the findings obtained from the study:

1. The Pre-Test scores of students in Science was low before the application of Bloom's Taxonomy and other strategic interventions.
2. The Post-Test scores of students in Science was high after the application of Bloom's Taxonomy and other strategic interventions.
3. There was a significant gain in the mean scores between the pre-test and post-test in Science of Grade 4C. The data provided sufficient evidence to conclude that use of Bloom's Taxonomy and other intervention is an effective means of increasing students' student performance.

#### **IMPLICATIONS OF THE FINDINGS:**

The result of study revealed that the use of Bloom's Taxonomy and other intervention is an effective means of increasing students' performance in Science. Strategic intervention and support such as giving feedback to parents regarding student homework and class participation should be taken into consideration. Finally, student behaviour should be communicated to parents for a successful classroom management and more instructional time for teachers.

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