

# **Extent of Utilization of the Different Teaching Approaches and Strategies and the Students' Level of Achievement in English, Science and Mathematics in the Laboratory Schools of the University of Eastern Philippines System**

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## ***Abstract***

*Employing descriptive-co relational design, this paper determined the teaching approaches and strategies of nine teachers and the academic achievement in English, Math and Science of one hundred thirty-four first year high school students in the University of Eastern Philippines Laboratory High Schools. Fajilan's (2005) inventory on teaching approaches and strategies was used while the National Assessment Test (NAT) results were bases for academic achievement. Findings revealed that the teaching approaches and strategies were related to students' academic achievement suggesting that academic achievement may depend largely on the teaching approaches and strategies of teachers.*

**Keywords:** *Utilization, teaching, approaches, strategies, achievement*

## **1. Introduction**

Teachers incessantly search for appropriate teaching approaches and strategies for their classes to be lively, dynamic and conducive. So, it is assumed that teachers are highly interested not only in what their learners do but on how they perform and why they do such things. Given this, teachers' use of teaching approaches and strategies seem to largely affect students' learning outcomes.

One important factor in facilitating learning is teaching approach or strategy. In many ways, these approaches and strategies help students acquire knowledge or competencies along the way. For example, Gordon (2005) suggested that teachers need an approach or strategy in teaching which promotes or effectuates learning. Hence, successful classroom instruction depends upon the approach or strategy of teaching used.

Freeberg and Drescale (2006) put forward that strategies of teaching may refer to the regular ways or the orderly procedures employed by teachers in guiding their students in order to accomplish their aim in a specific lesson. Similarly, Balintang (2003) posited that strategies are related and progressive acts performed by the teacher and the students toward accomplishing general and specific instructional aims.

For many years, much research has been conducted on strategies and approaches to teaching resulting in institutions working hard towards development of their teachers. Yet positive results on academic achievements in English, Math and Science were not observe.

At present, the demand for quality education makes the assessment of teaching approaches and strategies timely. Through the years, teaching approaches have changed paving the way for the most current ones. Thus, teachers must periodically evaluate their repertoire of teaching approaches and strategies to determine if they are still relevant. Hence, this paper aims to access the teaching approaches and strategies of teachers in relation to students' academic achievement in three areas such as English, Science and Math.

## 2. Methodology

This study was conducted in the Laboratory High Schools of the University of Eastern Philippines System employing descriptive-correlational design on nine teachers and one hundred thirty four first year students drawn by complete enumeration technique.

The researcher used questionnaires in gathering the necessary data. Two sets of questionnaires were given to the faculty-respondents: faculty information sheet and set of questions reflective of the extent of the different approaches and strategies mentioned in the study which were utilized by the faculty in their teaching. An assessment test in English, Science and Mathematics was answered by the student-respondents.

### Questionnaire for Faculty-Respondents

Part I – The faculty information sheet was given to respective faculty-respondents where they indicated their educational background and qualifications and identified if they were majors or non-majors in the subjects they were handling. This one-page faculty information sheet is composed of four questions about education; undergraduate degree earned; graduate degree pursued but not completed, number of years in teaching English, Science and Math Subjects and professional trainings attended. Questions were answerable in a tabular form and were statistically treated using frequency counts and percentage. This information sheet was copied from the research work of Flores, who adopted it from the Regional Science and Testing Center Science and Mathematics Education Institute of San Carlos, Cebu City. The information sheet was modified to include only the important subheadings that had bearing with the problem which included only the profile background of the faculty, teaching experiences and professional trainings attended.

Part II – Questionnaires for Faculty on the Extent of Utilization of the Different Approaches and Strategies in Teaching English, Science and Mathematics subjects.

This content questions reflecting the extend of utilization of the different approaches and strategies which were adopted from the study of Fajilan.

### Assessment Test for English, Science and Mathematics

The questionnaires to assess the achievement level of student-respondents were adopted from the National Education Testing and Research center (NETRC) through the DepEd Northern Samar Division Office. This is a standardized test relatively consistent with Philippine Secondary Schools Learning Competencies of PSSLC's and the textbooks used by the students under the re-structured Basic Education Curriculum (BEC) with Makabayan.

It consisted of 150 items with four choices and 50 questions per subject area were answered in writing in an answer sheet. The questionnaire was composed of 27 pages, the first page of which gave the general directions and the test question proper which started with English, Science and Mathematics items. It was answered within a time limit of 2 to 2 ½ hours.

Fajilans' (2005) inventory was employed to determine the approaches and strategies used by the teachers while result of the National Assessment Test served as the measure of the students' academic achievement in English, Science, and Mathematics. Multiple regression analysis was utilized to determine the relationship between academic achievement and the approaches and strategies used by the teachers.

### 3. Results And Discussion

Table 1 shows the distribution of the differences on approaches and strategies in teaching English. It can be gleaned from table1 that reflective teaching ranked first (mean = 4.43); cooperative and experiential learning, second, (mean = 4.12) and team teaching (mean = 3.8) which means that the teachers are facilitators guiding the students in analyzing their past learning experience.

**Table 1. Distribution of the Differences on Approaches and Strategies in Teaching English**

<b>Approaches</b>	<b>Mean</b>	<b>Rank</b>
Reflective Teaching Approach	<b>4.43</b>	<b>1</b>
Cooperative Learning Approach	<b>4.27</b>	<b>2.5</b>
Experiential Learning Approach	<b>4.27</b>	<b>2.5</b>
Inquiry Teaching Approach	<b>4.12</b>	<b>4</b>
Team Teaching-Learning Approach	<b>3.08</b>	<b>5</b>
<b>Strategies</b>		
Synectics	<b>4.37</b>	<b>1</b>
Role Playing	<b>4.33</b>	<b>2</b>
Problem Solving	<b>4.28</b>	<b>3</b>
Peer Tutoring	<b>4.27</b>	<b>4</b>
Simulations	<b>4.14</b>	<b>5</b>

On the strategies, Synectics got the highest mean score (4.37) followed by role-playing (4.33), problem solving (4.28) peer tutoring (4.27) and lastly simulation (4.14). This result may mean that the teachers expose the students to learning activities which would develop their ability to perceive ideas while the low mean score of simulations may be attributed to lack of simulators as teaching device in English resulting in not being used often.

**Table 2. Relationship Between the Academic Achievement in English and the Use of Approaches and Strategies of Teachers**

	<b>Coefficient of Determination</b>	<b>Interpretation</b>
<b>Approaches</b>		
Reflective Teaching	75%	Significant
Cooperative Learning	18.79%	Not Significant
Experiential Learning	.22%	Not Significant
Inquiry Teaching	.15%	Not Significant
Team Teaching-Learning	.15%	Not Significant
<b>Strategies</b>		
Synectics	64.4%	Significant
Simulations	.04%	Not Significant
Role Playing	.25%	Not Significant
Problem Solving	.26%	Not Significant
Peer Tutoring	.22%	Not Significant

Table 2 illustrates that reflective teaching and synectics are related academic achievement of students in English signifying that the use of reflective teaching increases achievement in English because students are exposed to analysis which means that creativity promotes learning as demonstrated in the students' poems and essays.

**Table 3. Distribution of the Differences on Approaches and Strategies in Teaching Science**

<b>Approaches</b>	<b>Mean</b>	<b>Rank</b>
Reflective Teaching	<b>4.67</b>	<b>1</b>
Cooperative Learning	<b>4.62</b>	<b>2</b>
Experiential Learning	<b>4.61</b>	<b>3</b>
Inquiry Teaching	<b>4.50</b>	<b>4</b>
Team Teaching-Learning	<b>3.93</b>	<b>5</b>
<b>Strategies</b>		
Synectics	<b>4.42</b>	<b>1</b>
Role Playing	<b>4.21</b>	<b>2</b>
Problem Solving	<b>4.20</b>	<b>3</b>
Peer Tutoring	<b>4.18</b>	<b>4</b>
Simulations	<b>3.38</b>	<b>5</b>

Meanwhile, Table 3 reveals that the approaches were closely rated reflective teaching at the top with a mean score of 4.67 while team teaching at the bottom with a mean score of 3.93. This means that the teacher's guide students reflect on their experiences to arrive at new ideas.

Contrary to strategies in teaching English, simulations ranked first (4.42) followed by problem solving (4.21), role playing (4.20) synectics (4.18) and lastly peer tutoring (3.38) which suggests that teachers allow students to explore and that to understand lessons, contents are performed through simulations.

It appears in Table 4 that all the approaches are not related to the academic achievement of students in Science. On the contrary, all the strategies are seemed to affect the students' academic achievement implying that the strategies work well with the students. To teach Science, the teachers taught analogies for doing things. Students also do well when they are asked to perform problems and relate these to life experiences. Peer tutoring helps increase academic achievement when it serves as reinforcement tasks geared toward developing students' science skills.

**Table 4. Relationship between the Academic Achievement in Science and the Use of Approaches and Strategies of Teachers**

	<b>Coefficient of Determination</b>	<b>Interpretation</b>
<b>Approaches</b>		
Reflective Teaching	.77%	Not Significant
Cooperative Learning	.17%	Not Significant
Experiential Learning	.77%	Not Significant
Inquiry Teaching	.07%	Not Significant
Team Teaching-Learning	.24%	Not Significant
<b>Strategies</b>		
Synectics	72.1%	Significant
Simulations	74.51%	Significant
Role Playing	82.18%	Significant
Problem Solving	51.62%	Significant
Peer Tutoring	51.77%	Significant

Table 5 shows cooperative learning approach was used often (4.88) in teaching Mathematics. The four other approaches according to rank are: reflective teaching (4.83); inquiry teaching (4.70); and experiential learning and team teaching (3.46). Probably cooperative learning approach was used by the teachers to promote collaboration among students in problem solving.

**Table 5. Distribution of the Differences on Approaches and Strategies in Teaching Math**

<b>Approaches</b>	<b>Mean</b>	<b>Rank</b>
Cooperative Learning	<b>4.88</b>	<b>1</b>
Reflective Teaching	<b>4.83</b>	<b>2</b>
Inquiry Teaching	<b>4.70</b>	<b>3</b>
Experiential Learning	<b>4.50</b>	<b>4</b>
Team Teaching	<b>3.46</b>	<b>5</b>
<b>Strategies</b>		
Problem Solving	<b>4.85</b>	<b>1</b>
Simulations	<b>4.73</b>	<b>2</b>
Synectics	<b>4.65</b>	<b>3</b>
Role Playing	<b>4.55</b>	<b>4</b>
Peer Tutoring	<b>4.3</b>	<b>5</b>

Among the strategies, problem solving was placed at the top (4.85) followed by simulations (4.73), synectics (4.65), role playing (4.55) and peer tutoring (4.38). Noticeably, problem solving strategy is very often used in Mathematics class to train students to solve puzzling or difficult situations.

In Table 6, cooperative learning, experiential learning and team teaching appeared to be related to the academic achievement of students in Mathematics. Heterogeneous grouping, for instance, was found out to increase group performance because high achievers tutored the other students thus improving academic achievement. Dimabuyu (2000) also found out that cooperative learning facilitates a higher level of learning activities such as competencies in exploring different strategies in solving and formulating mathematical problems.

**Table 6. Relationship Between the Academic Achievement in Math and the Use of Approaches and Strategies of Teachers**

	<b>Coefficient of Determination</b>	<b>Interpretation</b>
<b>Approaches</b>		
Reflective Teaching	10.77%	Not Significant
Cooperative Learning	38.36%	Significant
Experiential Learning	61.63%	Significant
Inquiry Teaching	.29%	Not Significant
Team Teaching-Learning	92.12%	Significant
<b>Strategies</b>		
Synectics	60.40%	Significant
Simulations	49.75%	Significant
Role Playing	77.5%	Significant
Problem Solving	38.36%	Significant
Peer Tutoring	91.23%	Significant

Meanwhile, experiential learning was also related to academic achievement conceivably because students learn when they are personally involved in the activity. Through direct and keen observations students acquire knowledge. Exposures to several teachers provide an enriching learning experience for the students. Observably, with wide-ranging expectations, students are motivated to learn hence a higher level of academic achievement. For freshmen high school students, looking for new solutions and ideas are appealing because at their age level they perceptive and imaginative. Finally, students learn better if they are taught by their peers (Mendoza, 2005).

**Table 7. Frequency Distribution on the Level of Achievement of Respondents in English**

Level of Achievement	Frequency	Percentage
Very Good (45-48)	25	19
Good (31-44)	83	62
Fair (21-30)	17	13
Passed (13-20)	9	6
<b>Total</b>	<b>134</b>	<b>100</b>

Table 7 reveals that twenty five or 19 percent got very good; eighty three or 62 percent were good; seventeen or 13 were fair and nine or 6 percent passed. This finding indicates that generally the respondents were good in English probably because teachers are competent as demonstrated in their use of effective strategy.

As shown in Table 8, three or 2 percent were very good; fifty or 37 percent were good; sixty five or 49 percent were fair and sixteen or 12 percent passed. It appears that the students has acquired and developed science skills. Also, since they were provided experiences they had improved their critical thinking making them independent learners.

**Table 8. Frequency Distribution on the Level of Achievement of Respondents in Science**

Level of Achievement	Frequency	Percentage
Very Good (43-47)	3	2
Good (31-42)	50	37
Fair (21-30)	65	49
Passed (12-20)	16	12
<b>Total</b>	<b>134</b>	<b>100</b>

It can be gleaned from Table 9 that three or 2 percent were very good; fifty or 37 percent were good; sixty five or 49 percent were fair and sixteen or 12 percent passed. This result signifies that the students had developed mathematical skills fairly and that the use of approaches and strategies most specifically cooperative learning and problem solving promises academic benefit.

**Table 9. Frequency Distribution on the Level of Achievement of Respondents in Math**

Level of Achievement	Frequency	Percentage
Very Good (45-48)	3	2
Good (31-44)	50	37
Fair (21-30)	65	49
Passed (13-20)	16	12
<b>Total</b>	<b>134</b>	<b>100</b>

#### 4. Conclusions

The teachers utilized the different approaches and strategies in English, Science, and Math which means that there is an need for an appropriate and effective use of an approach or strategy for different subject areas, ability levels and age groups. Majority of English and Science teachers very often used reflective thinking approach and synectics and simulations strategies. This implies that learning which results from reflective teaching, synectics and simulation is best described as one borne out of experience which has been deeply thought of, analyzed and evaluated. Therefore, better learning is achieved when students are exposed to new ideas and ways of doing things. Performing situations and real experiences also greatly contribute to academic achievement.

These use of cooperative learning and problem solving approach has improved the level of achievement of students in Mathematics. This only signifies that UEP System Laboratory High School students have developed higher critical thinking and mathematical skills. Meanwhile the use of the different approaches and strategies showed significant relationship with the academic achievement of students in the three subject areas showing how academic achievement may probably depend on the effective and efficient and efficient use of the approaches and strategies. From this, one may think that teachers must be aware of the nature of their learners to ensure that their preferred approach/strategy matches with the learning styles of their students.

Overall, the different approaches and strategies were often used and the academic achievement of the students in UEP System Laboratory High School in English was very good; good in Science and Fair in Mathematics. It is recommended that the teachers in these high schools be financially supported by the University for their Professional Development to keep them abreast with current developments in pedagogy and teacher education.

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