

## **Authentic Learning: Combining Real-World Experiences/Problems in ICT-Supported Learning Activities**

By

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### **APPLIED MATHEMATICS CURRICULUM OF PGMNHS – AN OVERVIEW**

The unique creation of Applied Mathematics of Pedro Guevara Memorial National High School was an offshoot of Mr. Emilio S. Ulpindo's trip to Texas, USA. Our principal, so eager and determined to upgrade and uplift the curriculum confer with some Mathematics and Science teachers, thus creating the said perspective.

Applied Mathematics' uniqueness, zeroed in on its functionality to everyday life and not just an ordinary subject in school.

### **BACKGROUND OF THE COLLABORATIVE STUDY**

Statistics is one of the elective subjects of Applied Mathematics. Since this is a one-semester meeting, the teacher thought of a way to end the subject meaningfully. The Mrs. Florina C. Federico, Statistics Teacher, conferred with the Guidance Counselor, Mrs. Corazon Caballes and the Information Technology Teacher, Mr. Frederick Zaide. The teachers willingly agreed on a certain topic to work on. The teacher, still apprehensive regarding this matter, brought this up in their classes, thus the collaborative work begins. Preparations were made,

questionnaires, number and kind of respondents, type of research as well as softwares to be used respectively.

In as much as both the Information Technology and Statistics teachers were Intel Teach to the Future trainee the collaborative efforts were made easy since both of them are familiar with the technology integration scheme.

The study aims to determine the common problems encountered by the students of Pedro Guevara Memorial National High School, ranking them according to degree.

Mr. Frederick Zaide, the Information Technology teacher, provided the technical side of the study, such as graphing data using MS Excel, Web design using MS Publisher, and presentation using MS PowerPoint. He also taught the easiest way to conclude a report and a survey using multimedia equipment.

Mrs. Corazon Caballes, the Guidance Counselor guided the students as regards to dealing with the respondents and providing the researchers some data needed in their reports.

Mrs. Florina Federico, the Statistics Teacher, the woman behind this collaborative report stands as the leader of the group, overseeing the study and working hand in hand with the students. Her top notched guidance with her students made learning worthwhile.

The study is just an ordinary classroom subject matter for discussion but it magnified into a full scale of everyone's concern. It's not the end of everything but it's the beginning of an ending definition of problems encountered by our students.

Without everybody's collaborative efforts this classroom study will not be fruitful and successful

## **PROCEDURE**

Prior to preparation of the survey, topics regarding tabulation, presentation and analysis of data were discussed. Simple collection of data was practiced by the students in a survey regarding their favorite subject and courses to be taken up in college. After collecting the data, they were presented in both graphical and tabular forms which were made easy using MS Excel. Conclusions were made after the analysis of the tables and graphs. The whole process is a simple statistics.

Day 0:

The teacher prepared a concrete project for the students to summarize Elementary Statistics as a first semester subject.

Day 1:

The teacher discussed the plan with the students. Brainstorming was followed with groupings of five so as to divide the class into whatever their tasks for the project would be.

Day 2:

To arrive at a common objective, that is to determine the top 5 problems commonly met by PGMNHS students, the Guidance Counselor was invited for that matter. She discussed the “Problem Wall” as the students enumerated their problems. In conclusion, poverty was at the bottom of the wall. The assignment of the students by group is to finalize their survey.

Day 3:

The teacher made some clarifications regarding the unit plans and possible questionnaires. She also told her students to seek the help of their English teachers for the grammar constructions and Filipino teachers, when possible, for the translations of the questionnaires to be given to the respondents. Twenty minutes was allotted for the clarification and 20 minutes for the review lesson about ranking and construction of graphs and tables.

Day 4:

The teacher checked the result of the meeting with the Guidance Counselor about the title and plan on how to conduct their surveys. To avoid having the same respondents they have to confer among themselves the sitio or place they wanted to survey. The teacher advised the students to bring cameras, tape recorders to aid them in their interviews and reminded them to be courteous at all times.

Day 5:

The students started collecting the data using their questionnaires. For those who were teasing them, the group secretary writes and records the answers while the leader does the inquiry. Cameras and tape recorders were at hand. .While the collection of data is going on, discussion as regards to measures of variability continues.

Day 8:

The results were tallied, and presented using graphs. Tallying and analysis of their works were done inside the Statistics Class while the construction of tables and graphs were done during their Information Technology Class. Prior to the implementation of the unit plan, the Statistics and Information Technology teachers talked over a plan for the preparation of the technological side of the project. Meanwhile, from Day 0, Information Technology teacher started discussing MS PowerPoint and MS Publisher respectively.

Day 9-13:

The students' lecture on the Publisher resulted on the creation of their Newsletters. The hard copy was submitted to the Statistics teacher while the softcopy was then submitted to the Information Technology teacher. The Statistics teacher asked the students to include in their Newsletters, articles related on their surveys.

Day 14-18:

The students created their websites and presentations to be used in their defense. Their presentations utilized GSA (Graphics, Sound and/or animation) that gave vivid understanding of the concepts and ideas.

Day 19:

Using rubrics, the assessment of tables and graphs as well as the newsletters and PowerPoint presentations became easier.

From Day 0, Statistics class gave 20 minutes allotment to clear out difficulties regarding their surveys and 20 minutes for classroom discussions.

During the classroom discussion, quizzes and long tests were given to the students to determine their knowledge about the given lectures. Some were about the characteristics of the measures of variability and the major examinations were more of computational skills.

An accomplished report written in MS Word was submitted to the Statistics teacher to verify their activities. It includes the results of data collected, presentation in both graphs and tables, analysis of their results and conclusion. Pictures supported the activities. Rubrics were used in evaluating their graphs.

Day 20:

Students' final evaluation.

For critiquing and enhancement, the students defended their results using the PowerPoint Presentation in front of the panel of judges. Criteria for judging were made to ease the rating of the groups with use of rubrics. Tables were

used to describe the profile of the respondents as to their ages, gender and educational background. The rank of the common problems was presented through bar graphs.

During the presentation of the students, each group showed varied styles of reporting. Some were formal and some even mimic MTV idols as if they were on TV. Others presented their works using Hyperlinks

## **SUMMARY OF THE SURVEY**

### **Consolidated Report on the Top Five Common Problems Met By PGMNHS Students October, 2004**

Problems	Number of Respondents
Drug Addiction	154
Early marriage/ Pregnancy and Other School Related Problems Such as distance of home, teachers	138
Lack of Spiritual Values	134
Family Problems	122
Financial Problem	110
TOTAL	658

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Based on the consolidated report on the top five (5) common problems met by PGMNHS students it was found out that 154 out of 658 respondents said that drug addiction ranked number 1 of the five (5) problems namely: drug addiction, early marriage/pregnancy, lack of spiritual values, family problems and financial problem.

From the discussion of the Guidance Counselor, poverty is at the bottom of the “Problem Wall” constructed by the students. The common problems met by students of PGMNHS only shows that poverty is the root of all tribulations.

Poverty can also be measured using poverty gap. It is the amount relative to the poverty line that has to be transferred to the poor families to bring their incomes up to the poverty threshold. Masbate has the biggest poverty gap at 22.6% followed by Sarangani at 19.4% and Maguindanao at 19.1%. Of the ten provinces with the biggest poverty gaps, 6 were from Luzon and the remaining 4 from Mindanao. Poverty gaps were narrowest in Batanes at 0.6%, 2<sup>nd</sup> District of NCR at 0.7% and the 4<sup>th</sup> District at 0.9%. Laguna ranks 8<sup>th</sup> among the top 10 provinces with narrow poverty gap for the year 2000. (Social Sectors B Division, NSCB)

## SUMMARY OF THE PRESENTATION

<b>PERCENTAGE RANGE</b>	<b>CONTENT 30%</b>	<b>PRESENTATION 30%</b>
28	1	3
27	4	9
26	3	10
25	20	9
24	10	7
23	7	11
22	9	6
21	6	5
20	2	2
Total	62	62

Based on the result, the upper 20% or 28 out of 62 or 45 % of the group presented all the ideas with complete explanation and 50% used visual aids which showed the logical ideas being presented.

34 out of 62 groups presented the ideas but with insufficient evidences and 31 out of 62 or 50% of the groups used visual aids that were not attractive but clearly showed the ideas being presented.

<b>PERCENTAGE RANGE</b>	<b>ORGANIZATION 20%</b>	<b>MASTERY 20%</b>
18	5	4
17	11	15
16	15	19
15	12	5
14	4	7
13	3	3
12	4	5
11	3	2
10	4	2
Total	62	62

Based on the result, the top 20% or 16 out of 62 or 23% organized the ideas in proper sequence and 19 out 62 or 31% presented the ideas in full familiarity.

35 out of 62 or 56% of the groups has concise, clear ideas and 11 out of 62 or 17% has some jumbled ideas. 34 out of 62 or 55% of the groups were not so fluent in presenting ideas as indicated by frequent pauses and most terms used were inappropriate.