Abstract-clear statement of the problem (appox.250 words)

During the beginning of school, the school was separated in to two academies. The 7th to 9th grades were call Fundamental and the 10th to 12th graders were called Commencement. The previous years the ninth graders were included in the Commencement Academy. The ninth graders didn't think too much about the separation at first, but, later in the year the Principal announced the different privileges for each academy. Consequently, the ninth graders were allowed to attend pep rallies, have a formal, and attend or participate in other events. The ninth graders became very concerned regarding the lost of privileges and didn't know how to address their concerns. The math class was working on constructing, presenting, evaluating and analyzing graphing on paper and calculator. There were several examples on conducting surveys and presenting the finding. I had several students in the class to generate a hypotheses or concern, conduct a survey to obtain data regarding their hypotheses, organize their data, construct a graph, create a report on the survey results (statistics, and other pertinent information), and present their finding to explain their concerns. I asked the class to use their knowledge they learn in math to address their concern to the principal. The class first action was to generate a letter addressed to the principal expressing their concerns regarding the exclusion of the ninth graders from high school events. The class generated a letter, but, was afraid to send the letter to the principal without names. The class, during lunchtime and hallway passing, obtain a list of about five hundred students' names to accomplish the letter. The letter was sent to the principal and about two weeks later the principal replied to the class concerns. Basically, the principal indicated that until the ninth graders show or demonstrate to the school staff that they can behave like high school students should, it would be very difficult to give them high school privileges. Consequently, the ninth graders thought this was a cop-out and was at impasses. I indicated to the class that the principal had just opened the door for them to prove they can behave like high school students. They started talking about conducting surveys and collecting and organizing data, creating a report of their finding, and presenting their findings.

Paragraph of justification of software used

The software used in this project was to assist the team in generating forms, collecting data, storing data, evaluating data, analyzing finding, creating finding reports, creating PowerPoint report, and storing documentation for project.

The software used on the project:
1. EXCEL to create survey forms
2. EXCEL to calculate some statistics on the forms
3. EXCEL to enter and store the data in the forms
4. WORD to create a cover letter addressed to teachers the students concerns and survey purposes
5. WORD and EXCEL to design reports and presentations
6. Use STELLA to monitor processes or activities at school, and predict and monitor data.

Log files for the project

Files from the project were:
- Survey_Number_Of-Referrals.xls
- Survey_Homework_Percentage.xls
- Survey_Honor_Roll.xls
- Survey_Number_Of_Late_Studetns.xls
- Survey_Participation.xls
- Survey_Food.xls
- Project_Documentation.doc
- Driven_By_Data-Final_Project.ppt
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2-3 page paper that includes <u>problem definition</u>, <u>problems encountered</u>, <u>evaluation of results</u>, <u>summary of experience</u> and <u>curriculum standards addressed</u>

Problem Definition:

The students wanted to explore other possible opportunities for improvement in and outside of school. Since all math classes were studying graphing, evaluating, and analyzing graphs they thought it would be great to explore opportunities to creating a more positive environment at school for students, teachers, and other staff members. They started by brainstorming or asking questions and writing the questions. Next the students prioritized each question and worked on the highest rank question first. The students generated a list of concerns from the highest ranked question and asked if they would be able to obtain more information to address the specific concerns from that question. Consequently, they designed form(s) to inquire about obtaining additional information to answer the question. The students obtain the information, but, need additional to make an accurate conclusion. Consequently, some trends needed to be done on many concerns to obtain additional or accurate conclusions.

Problems Encountered:

Some problems encountered were getting the students to use a **common directory** to store all the information collected from different sources. They started addressing their portion of the question and needed to brought together to centralize their information.

Many students wanted to be involved in the data collection portions of the project. Some collected data after school and some collected data **while school was in session**. This meant that some students weren't in classes if they were collecting data for the project while classes were in session. Also, this meant that some classes had to be interrupted for those students to obtain the information. Consequently, this meant less classroom time for the students and less classroom time for the teachers.

Some students collected the data and some **other students stored the information** in the forms. The problems here was some students didn't understand the hand-writing of some students and the information wasn't entered correctly. Since the information wasn't entered correctly then some conclusions weren't drive accurately. This was concluded after the students were evaluating and analyzing the information.

Students felt that there **wasn't enough time to work** on the project and submit the information that CMST requested, to do a great project. They felt rushed some months (December and January) because of Christmas and New Year holidays and the break from school.

While evaluating the results or analyzing the information

Evaluation of Results:

The true evaluation was if the students learn from using tools or software. That answer is yes. They had experience with several tools (WORD, EXCEL, STELLA, and

calculators). My objective was for the students to learn in a real-life situation. They created a real-life situation or a situation was presented to them and they had the foresight to recognize it and try and improve conditions in school.

Summary of Experience:

Students enjoyed the experience of creating/designing their forms on the computer using WORD and EXCEL software. Students liked using the calculators at first to sum and find statistics, but, they started using EXEL and concluded it was easier to use EXCEL because or the additional reporting opportunities. Students liked the work in STELLA. They didn't like the interface/equation portions, but, loved the model portion. Some enjoyed the model because they could see the switches and RUN command on a screen like most program for them to understand. Their experiences with programs were derived from their game-boy or other games they use for entertainment. Students enjoyed the experience of working with each other on a real-life situation, that they had ownership. They saw a value in something meaningful for them to relate to and continue to work for school improvements. Students understood that this project needed to be done all year to really find opportunities for improvement at school. They learned that learning is a life long relationship for continuous improvement for opportunities. Also, they experience the fact that this information and experiences should be passed on to other students in school. This experience is priceless and all should benefit from this experience. Students realized that enough time is required to effectively collect and analyze information. Students realized that that should work together more in centralizing their work for all to reference as needed. Students realized that they should document all work for all to reference and for all to understand what was mentioned and what was agreed upon by the all students.

Teachers and administrators also experience the fact that students were actively involved in a real-life situations and using their math or other subject lesson to solve their problems. The fact that the students were trying to find opportunities for improvements in school was rewarding to all teachers, staff, and students.

In conclusion, all benefited students and teachers, from this project. Students were able to receive some privilege from obtaining, evaluating, interpreting, and analyzing this information.

Curriculum Standard addressed:

All students must be able to draw, interpret, evaluate, analyze graph and conclude or make a decision from the information on the graph. They must be able to analyze graph real world situations by using graphs. All students should be able to find the slope and find trends in data from a table or graph. All students should be able to find or calculate the rate of change from a table or graph. All students should be able to generate an equation from a table or graph. All students should be able to predict and monitor information on a graph for past or future work. All students should be able to find statistics from data (mean, mode and median).interpret graphs and tables using mathematical reasoning, number and numeration, operations, modeling and multiple representations, measurement, pattern/function and uncertainty.

Instructions on how to run software

The WORD and EXCEL software can be run by opening the files (.doc for WORD, and .xls for EXCEL).

The STELLA program "DRIVEN_BY_DATA" can be run by double-clicking on the icon and doing the followings:

1. For reviewing Late Students information the following must be done:

    Go to the Interface Level and update the A_Late_Rate_Init, B_Late_Rate_Init, Late_Growth, and Late-Students values. Switches, tables, and graphs are displayed for all these values at this level.

    Go to the Map Model Level and review the interface and connection from all data.

    Go to the Equation level and review the equation and values for the programs.

2. For reviewing Number of Referrals information the following must be done:

    Go to the Interface Level and update the A_Referral_Rate_Init, B_Referral_Rate_Init, Referral_Growth, and referral_Students values. Switches, tables, and graphs are displayed for all these values at this level.

    Go to the Map Model Level and review the interface and connection from all data.

    Go to the Equation level and review the equation and values for the programs.

3. For reviewing Homework Percentage information the following must be done:

    Go to the Interface Level and update the A_HW_Rate_Init, B_HW_Rate_Init, HW_Growth, and HW_Students values. Switches, tables, and graphs are displayed for all these values at this level.

    Go to the Map Model Level and review the interface and connection from all data.

    Go to the Equation level and review the equation and values for the programs.

4. For reviewing Honor Roll information the following must be done:

    Go to the Interface Level and update the A_Honor_Rate, B_Late_Rate, Honor_Roll_Growth, and Honor_Roll values. Switches, tables, and graphs are displayed for all these values at this level.

    Go to the Map Model Level and review the interface and connection from all data.

    Go to the Equation level and review the equation and values for the programs.

5. For reviewing Participation in Event information the following must be done:

    Go to the Interface Level and update the A_Participation_Rate, B_Participation_Rate_Init, Partic_Growth, and Participation values. Switches, tables, and graphs are displayed for all these values at this level.

    Go to the Map Model Level and review the interface and connection from all data.

    Go to the Equation level and review the equation and values for the programs.

Put this file into a document folder labeled "Project Documentation"