Sample Case Study Assignment #1
Project #1

TExMAT Preparation Manual

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The use of spreadsheet software for Mr. Haddad's proposed activity on matter and energy would be effective for three reasons: it allows students to record data and to use it in a way that traditional tables in a word processing program will not allow; it allows Mr. Haddad's students to learn the spreadsheet formulas and concepts necessary to observe, record and analyze data using scientific inquiry; and it allows Mr. Haddad's students to collect data by utilizing technology currently used by the scientific community thus better preparing them for skills required in the 21st century workplace.

Another additional technology available to Mr. Haddad at the school is two Global Positioning System (GPS) units. I would mention to Mr. Haddad that his students can use the GPS systems to get accurate readings on whether the temperatures within each solar greenhouse are influenced by the location (longitudinal/latitudinal) of the greenhouse. After building the greenhouse, the students can determine their exact location via GPS. As part of the class project, this technology could be effectively integrated into the lesson because Mr. Haddad could have the students determine whether there was a relationship between the location of the greenhouse and the temperatures within the greenhouse over the specified duration of data collection.

This would be appropriate and effective application of technology for his unit because he wants his students to grasp the concept of matter and energy. Along with this additional technology at his disposal, Mr. Haddad also has access to digital and digital video cameras that the students could use to take images of the location of the sun relative to the location of their solar greenhouses. I would encourage him to integrate the use of these into the unit as these images could serve as visual references for the students presentations as they discuss the data collected on temperatures and data collected on the GPS positioning of their greenhouses. Using this technology allows Mr. Haddad's students to research based technologies to provide potential solutions to future potential real world issues such as food shortages.

I would meet with Mr. Haddad to review the available technologies at the school that would facilitate these goals before he begins the unit. Since he has a sufficient amount of temperature probes at the school, he will not have difficulty in having enough probes for each student. This would be the most effective method to obtain temperature readings. Since the probes are wireless, the students will be able to take them outside. Some probeware units allow for data to be directly saved to the unit on chips while some require a wireless connection to a computer in order to save data. I would investigate the options for the school's current probeware and report the best collection method to Mr. Haddad. Since

most of Mr. Haddad's students are not familiar with using spreadsheet software for data analysis, I would first suggest starting with an individualized mini-activity for each student that models some of the functions that Mr. Haddad would like the students to use for his lesson while using the same set of data. Students could use the same set of data to gain experience with data analysis. Therefore, Mr. Haddad can better monitor whether his students are grasping the concept of analysis before allowing them to begin the project with varying data sets. This mini-activity could also serve another function to assist Mr. Haddad with creating his pairs of students for the project on matter and energy. Once students have completed the mini-activity, they can apply the same principals to less familiar/diverse data such as the data that he wishes for them to collect for the solar greenhouse activity.

I would also assist Mr. Haddad by recommending that his students use one of three technology options available to him to present their findings: a video depicting the project from beginning to end; a slide presentation depicting the project from beginning to end; or a web page that depicts the project from beginning to end. By utilizing these options as a means of evaluation, Mr. Haddad as addressed his goal of wanting his students to communicate their scientific findings, and he is also teaching his students to communicate effectively using a variety of relevant technology formats.

The technologies used during this unit on matter and energy have many different potential applications for other subject areas and grade levels. For instance, wireless probeware can be used to measure temperatures for various assignments in other subjects. Depending on the type of probeware, it can be used in art classes to measure the temperatures necessary for kilns to create pottery. It can be used in math class to collect data for doing such things as averaging and creating Venn Diagrams (i.e. the average temperature within the school building). GPS technology can be implemented in history classes, along with Google Earth to show exact location of geographical objects or locations of troops and munitions during major battles and wars. In addition, the digital and video cameras used by Mr. Haddad's classes have tremendous potential use in all academic subject areas ranging from having students supplement or augment a written report with a visual (i.e. giving a demonstration speech in English class and actually showing the demonstration on video). All of these technologies require that students analyze, synthesize and interact with the information being given to them regardless of the content area.