# Capstone Journal 3 Grade 2 (STEM Menof)

Each response allows a maximum of 250 words, please try and be concise in your answers.

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## What is your team’s most difficult challenge as you prepare to communicate your project results? Why do you consider this to be your most difficult challenge? How are you going to solve this challenge as a team? \*

**Personal Reflection/Team Collaboration**

In the current period of capstone work we worked in the test plan and try it many times to reach to the most suitable results that we need to be accomplished for the achievement of design requirements. For our work we are working in chemical reactions in our change in the process. We are face a difficult problem in our work and our test plan collecting results, which is to indicate and select the most suitable amounts of chemicals to get the perfect results that we need. The problem made it difficult to communicate our results in a smoothy, simple way to make the reader understand us well. Also, it was very hard for us to repeat the test plan more that one time by different amounts. It cost us and make us tired. We needed some main things to make our test plan accurate. The problem faced us for 3 or 4 days then we should take a reaction and put new plan to face the problem. We decide to ask professors again and go to the collages. We searched more about similar reactions like that we are doing. We make many chemistry equations that helped us to indicate the best amounts that we will use. And the best results that we would get. And our chemistry Los helped us too much.

## Every written test plan faces some problem when real testing is done. How did you change your written test plan steps when you faced a problem during testing? \*

**Using the Engineering Design Process (EDP)**

Usually before test plan we were searching a lot to reach the problem to be solved, the design requirements and the selection of our solution and prototype. We search and search to get the most accurate information that we will work and based on. So, we get cited sites and ask professors. Each of these steps is to reach to the test plan that will based on cited information. but, however of all that the test plan in the real is very different from the research and the last experiments. So, we should deal with the problems of test plan and then write it down and make the steps clearly. The change of our written steps depends on the biggest of the problem that we will face during the test plan. For example, if the problem was very big like the chemical substance that we used first was not achieving the design requirements perfectly or not achieve it at all. So we make two test plans in the written we explain the first test plan and the bad problem that happen then the second test plan by the change in the thing that cause the problem by another that gave me the needed results. in another case if the problem was small like some errors in the results we can written it by the rules of errors and explain it in the test plan and results. We can say that it is easy to change the way in written and the steps of the test plan, but the most important part is to deal with the problems and errors by scientific way.

## "(PH.2.03) In Physics you are studying electric potential energy (voltage) to analyze the flow of current through conductors and resistors. In your Capstone project you must measure the parameters of water quality. Explain how you could use one or all of the following concepts: electric potential, current, and resistance to measure one useful property of water." \*

**Learning Transfer**

We studied in LO 3 in physics some useful concept in current, potential energy (voltage) and resistance. We used to take each beneficial part from our concepts that we study to use it in our capstone work. First for current we learnt that current is a flow of electron charges in a conductor cause the electric current. It means the charge in a unit time is the current. I = Q/t. where Q; charge. I; current and t; is the time. We learnt that pure water does not conduct electric current. But the polluted water is. By this information we can use the measurement if electric current to identify the water quality. If there is an electric current flow through my result water and the water conductivity is high that means the quality if the water is not good. And I will need to change again in the process to reach to the least conductivity for water almost to make the water as pure as I can. Where it will not conduct electric current. Also, the electric potential energy and the resistance depend on a similar concept like the resistance is direct proportional with the resistivity. And resistivity is reverse relation with the conductivity. We will be able to know the quality of water by these concepts in undirect ways. But it is very interesting and useful to relate and apply physics concepts in our works.

## In Earth Science (ES.2.04) you studied water and pollution. In your project you modified a process to be able to reuse water. How do the final results of your project reduce pollution in Egypt's fresh water supplies?

**Learning Transfer**

In earth science, we benefit from it a lot this semester and learned to much about water and water pollution specially in LO 4. We learnt about water supplies first, then we know about water pollution. We could indemnify the worst sources of pollution and tried to work on to achieve the challenge of the reduce water pollution in Egypt. We studied about the manufactured pollutions, household pollutions, environmental pollution, and agriculture pollution. When we were studying in the earth science, we noticed that the manufactured pollution is the most common in Egypt by 39%. And the household pollution by 48%. We searched about many industries in Egypt the make water pollution and that we will be able to edit in their process. Finally, we select the paper industry and specially the pulping process that cause about 86% of water pollution in the paper industry. We edit in the chemical that they use in the pulping process which react with the lignin in the wood (bagasse of sugarcane) and change that by another chemical that reduce the pollutants in the produced water like PH or TDS. By that our results showed a reduce in the pollution of the water in the rivers and lakes near the factory. That called in earth science the surface water. We help in make the water suppliers bitter clean.