Capstone Journal 1 Grade 2 (STEM Menof)

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

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While working in the past capstones, you may have encountered challenging situations with your teammates that had a negative effect on the teamwork. SELECT one of these situations and EXPLAIN how you overcame it. \*

Personal Reflection/Team Collaboration

While working in capstone each semester we benefit too much. We gain new way in critical thinking and we think in scientific way. We learn EDP and how to make projects based on strong scientific base. In other side we learn from each other. We gain more experience in teamwork and dealing with new persons with new ways in thinking and dealing. We face many problems together but first of all, our teachers teach us that we should deal with our problems together and make from the bad situations a way to get closer from each other and be the best team to work and make a perfect project. All of us face at least a challenging situation had a negative effect on him while working with his teammates. Many times, happen that two from the team have flighted together and they feel badly, and they don’t want to deal with that person again. They get the personal situations between each other in the work and affect the whole team badly. When that repeated, we should take a serous action. First to hear from each one and know what is the wrong with each of them and ask help from all the team to solve the problem between our teammates. we make a meeting and try to solve the problem between them and make each one of them be happy. These problems led us to discuss more with each other, spend time together. It makes us discuss in all things that relate with the capstone and solve other problem together. We benefit from each one’s way in thinking and understood each other more. It appears in our teamwork and be a positive side instead of just a problem between two persons.

This semester Capstone Challenge is about energy industry and its impact on the environment. Your Capstone team must choose a specific part of the energy industry to focus on so that you can have a well defined problem to solve. Pick a specific part of the energy industry and explain how this industry negatively affects the environment today. \*

Using the Engineering Design Process (EDP)

Each semester we used to work on a new challenge different from the previous one. This semester the challenge is about reduce environmental impacts from energy industry. We follow the EDP steps to select the field that we will work and figure out the idea from. First by searching the grand challenges. Then the problem to be solved we talk specially on the problem of environmental impacts from energy industries. To make a good and wide background that will help us in finding the solution, we put our main topics to search. The environmental impacts and the causes of it. And we make sure that the energy industry is the most field that cause environmental impacts. Then we search more in the energy industry sections even collecting energy, refining, converting, storing, etc.. we search to find the best section and the specific industry that we will work on. And while searching we take in consider working on a section that Egypt is special in. Extraction of petroleum and refining it. We also know that petroleum is a main cause of energy industry that cause environmental impacts in each part and each process. The negative impacts start with extraction of petroleum there are many spilling happen during the extraction that pollute the water, ground and affect people. Then in refining of petroleum there are huge number of emits, one of the most is poison it is phenol that pollute water and make Ismaillia cannel that we waste the phenol in be poison and then harm humans that drink from or use water from it.

In Math you have been studying the chain rule as it applies to differentiation or determining the rate of a relationship (MA 2.07). Explain the CONCEPT of the chain rule of differentiation in terms of how the level of energy production affects the level of environmental impact. Your answer explaining the chain rule should include these terms: (1) level of energy production (2) level of environmental impact. \*

Learning Transfer

We used to try to take the most available benefits from the learning transferee that we are studying and use that in our capstone project each semester. We study in math LO 7 the differentiation and specially the concept on the chain rule. First differentiation is function describe a rate of change in a certain point. We use chain rule when we compare a change in a main thing during the results of it. Chain rule states that: dy/dx We will use in our capstone to compare the level of energy production and the environmental impacts that produced from it. Math always helps us in representing the data that we figured out the analysis and the results of the work that we done. Differentiation is a widely use concept that we benefit from it in many applications in the daily life and the work. We will use the concept of the Chain rule to make the function and represent the level of energy production and the level of environmental impacts that will help us to select the rate of change and the efficiency that we will work on and help us to select the range and the results of the function to reduce the environmental impacts and achieve the design requirements.

(PH.2.08) In Physics you studied how to use Faraday's law of induction to determine induced voltage in conducting loop due to changes in magnetic flux. Some of proximity sensors can be implemented using a magnetic technique (Hall Effect). SELECT an energy industry application for such a sensor that would help reduce the environmental impact of that industry, and EXPLAIN WHY the Hall Effect is useful in this application. \*

Learning Transfer

Physics is found in each application, technic, or mechanism in our daily life. In industrial section we benefit from physics and take our concept that we base the application on from the physics. Also, it helps us in our challenge with energy industry. We studied in PH.2.08 Faraday’s law of induction and ow to determine the induced voltage and induced current produced. And by Lenz’s law we studied how to select the direction of current. Magnetic induction produces induced voltage through the change in magnetic flux. By Faraday’s law that states: emf = (Δ magnetic flux)/Δt We studied about Hall Effect that produce an induced emf in the electric conductor and induced current. That will be useful in our challenge. Some sensors are made in depend on the Hall Effect concept, where it will be useful in make an application that determine the environmental impacts produced from energy industry. Spilling of petroleum in the energy industry of the transmitting petroleum need a high-quality detection as it causes huge environmental impacts and pollute water affect humans and pollute ground. to solve the problem, we will use that sensors to detect the spilling and sent signs to take an action to repair the spilling and reduce environmental impacts. By that way, this application will solve the problem, reduce the environmental impacts and the feedbacks will be effective and quick technic.