Sample Journal 8

Year: 2024-2025

Grade: G10

Semester: 1st Semester

Question 1:

Two of your team members suggested two prototypes (each member had a design idea), and while the team members were discussing the two models, the two members argued because each one of them was biased towards his design. How will you overcome this situation?
1- as a team leader.
2- as a team member.

To achieve highly effective results, teamwork and collaboration are essential. Arguments and fights among the members are inevitable. Moreover, we must overcome these situations as a team.

As a team leader, I would first stop the argument before it gets heated. Afterwards, I would remind my team members that we are here to work together and reach a solution that satisfies everyone. In addition, I would tell them that we shouldn't be biased towards our ideas. We should listen to each other's opinions and decide the best for the team. For example, during our last capstone meeting, there was an argument about which type of truss we should choose. There were two team members with different ideas and each one insisted on their idea and wouldn't change their minds. I solved the conflict by reminding them of the morals and rules we should follow. Then I assessed each idea and stated the advantages and disadvantages of each one. My team members were convinced since we were using facts and logical analysis.

As a team member, I would solve this problem by calming down my teammates and ensuring the importance of teamwork. Another way I would use as a team member is to come up with a third idea that has common features with the other two teammates' ideas. That way, each one will be convinced and unbiased.

To summarize, arguments and fights are bound to arise among teammates and they should be solved with calmness and logic.

Grade: Blue

Feedback:

Strengths:

1. The response is clearly structured as an essay: an introduction, a body, and a conclusion.
2. It directly answers the question in both positions: as a team leader and a team member.
3. Shows relevant personal experience to support the solution as a team leader.
4. Employs academic terms and logical connectors to help arrange thoughts.
5. The end is well-structured and a good summary of the solution.

Weaknesses:

1. Some sentences can be more academic. For example: "I would tell them that we shouldn't be biased towards our ideas" ➔ "I would remind them not to be biased towards their own ideas."

General Notes:

There are no notes.

Question 2:

While constructing your bridge , you test many designs and ratio of material components to make your prototype able to carry at least 10Kg of traffic load , Choose two of your tests you did and explain it, then discuss the results you obtained to reach the final design of your prototype

According to the EDP process, the fourth step is to test our prototype so we can take notes and make improvements. This step can be repeated as many times as needed.

To construct the bridge, we have chosen many designs to work on and there were various ratios of material components related to each design. To ensure that the prototype will be able to carry at least 10kg, tests on our design must be conducted. In the first test, our prototype had a warren truss design and lift mechanism. For the lift mechanism, we used counterweights to lift the bridge. While testing, we increased the weight gradually. At 8 kg, the bridge had a lot of deflection and almost broke. The reason for that was that the Warren truss didn't provide enough support for the structure of the bridge. Furthermore, the counterweights added extra weight to some parts and made the load unevenly distributed. In the second test, we changed the truss design to Warren with verticals which added more support and used gears to lift the bridge which were lighter than counterweights. During the test, we followed the same steps. The bridge was able to carry 10kgs thanks to the improvements we made. However, some minor improvements had to be made to decrease the amount of deflection and stress. Overall, we decided on the design used in the second test.

In conclusion, testing our designs and making improvements are crucial to reaching the best possible solution.

Grade: Blue

Feedback:

Strengths:

1. The response is nicely structured as an essay: an introduction, a body, and a conclusion.
2. It specifically answers the question by describing two particular tests and their outcomes.
3. It shows the mastery of engineering principles like truss designs, distribution of loads, and counterweight vs gear effect.
4. Clearly explains why the second design is better and more successful than the initial one.
5. The conclusion sums up the key steps and improvements well.

Weaknesses:

1. Some sentences are lengthy. For example: "the Warren truss didn't provide enough support for the structure of the bridge" ➔ "the Warren truss lacked sufficient structural support."

General Notes:

There are no extra notes.

Question 3:

Concerning PH 1.01 in which you deal with measurement. Mention three factors that would affect the accuracy of your measurements negatively, then explain how to overcome one of these factors to make measurements accurately.*

In PH 1.01, we have learnt how to measure accurately and calculate the error ratio to get the closest measurement.

Many factors should be taken into consideration to achieve precise results. The first factor is human mistakes. Measurements are taken by humans who might make mistakes. Thus, these mistakes can affect accuracy. The second factor is problems with measurement tools. Some tools might be too old or were manufactured improperly leading to inaccurate measurements. The third factor is external factors and conditions. To illustrate, while calculating the bridge's height, the ground may be uneven, affecting the height and stability of the bridge. While measuring the durability of the truss members, the weather might be bad and windy, adding more load to the truss structure.

The easiest factor to deal with is human mistakes. By taking the same measurements several times, each time will be slightly different than the other. Then, we can calculate the average measurement. For example, while working in the fab lab last week. Our team was taking measurements of our bridge so we ensured it followed the design requirements. My teammate measured the width of the deck and it was 22.5 cm. I measured it again and it was 22.4 cm. So we measured it three more times with 22.6cm, 22.8cm and 22.7cm as results. Then we calculated the average width by dividing the total of the values by their number. The result was 22.5 cm and it was indeed the most accurate result.

Grade: Blue

Feedback:

Strengths:

1. It states three of the significant elements that have a bad impact on the accuracy of the measurement, namely, human errors, bad tools, and outside conditions.

2. It is understandable and practical to describe how human errors can be overridden by using several measurements and averaging them.
3. The fact that in a real case, the Fab Lab is used to demonstrate how the solution is achieved makes the answer stronger and demonstrates the actual application.
4. The language used is mostly well understood, and there is proper use of academic words.

Weaknesses:

There are generally no significant weaknesses in this response.

General Notes:

The wording can be improved in some places, such as: “might be too old or was manufactured improperly” ➔ “may be old or poorly manufactured.” The description of external factors might also be more specific and briefer. The response shows an adequate knowledge of the problems related to measurement and how to improve accuracy by taking repetitive measurements and calculating the average result.