Name: Date:
Period:

Module: Engineering Design EXPLAIN Unit: Predictive Analytics - POM

Subject Matter Expert: EDP Challenge

Learning Target:
I can understand the Engineering Design Process and apply that process to an Engineering design and build challenge.

Introduction to the Engineering Design Process (EDP)

Start with Video
EDP - Introduction Video

Introduce EDP Steps
Website - Engineering Design Process

Display poster
Poster - Engineering Design Process - Teach Engineering

Activity

You are the Subject Matter Expert (SME)

Objective
At the end of this project, students can articulate the Engineering Design Process including the importance of each stage of the process in addition to being the Subject Matter Expert in one of seven stages of the Engineering Design Process.

Instructions:
You will be prepared to give a short presentation of the stage using a version of the What, So What, Now What discussion protocol.

Materials:
Template - What, So What, Now What

Guiding Questions:
What - “What does this stage mean? What happens during this stage?
So What - “Why is this stage important? Why is this stage in this order? Why is the previous and next stage so important?
Now What - “With this information, what should we do next?”

Step 1 - Working Group Discussion - We are the SME of this stage of the EDP

12 minutes - Students will work together in their working groups presenting to each other. At the end of this step, each student in the group will be the subject matter expert of their team's assigned EDP stage.

Teacher Actions

- Divide the class into working groups of 2-3 persons.
- Assign each team 1 of the 7 steps of the EDP
    - Allow the teams to learn the assigned EDP stage as a group and guide them through the What, So What, Now What protocol:

Student Actions

- Individually - Determine what your EDP stage means and be ready to answer the "What and So What?" Questions of your assigned EDP Stage.
- Begin the Discussion Protocol
    - 1minute - Presenter explains their What and So What responses
        - Audience Takes Notes
    - 2 minutes - Audience can ask up to 2 clarifying questions
        - Presenter can respond
    - 2 minutes - Audience then talks amongst themselves discussing openly to the presenter
        - The following Prompts are suggested
            - "What I heard the presenter say was…"
            - "Why this seems important to the presenter is…"
            - "What I wonder is…"
            - "The questions this raises for me are…"
            - "What this means to me is…"
            - "What I might suggest is…"
        - The presenter is quiet and taking notes on the audience's responses
    - 1 minute - Presenter states their reflection in their Now What response.
- Repeat for each person in the group.
- 5 minutes - Now What? - Debrief and come to a consensus the team's response for the questions: What? and So what?

Step 2 - Break off to Discussion Groups - EDP All Stages Discussion

42 minutes - Students, now SME's in their particular EDP stage will now break off into discussion groups of 7 with at least one representative for each stage. They will then deliver the same What, So What, Now What protocol. Add the end of this activity students will come to a complete understanding of the EDP Process from start to finish and the importance of each step.

Teacher Actions

- Divide the class again, this time into 2-3 discussion groups of 7 persons.
- Ensure that there is 1 SME representative for each stage of the EDP (based on previous group discussion activity)
- Assign each team 1 of the 7 steps of the EDP
    - Allow the mixed team to now learn the entire EDP process. Guide the students through the What, So What, Now What protocol:
    - Keep the chronological order of the EDP and allow the students to go through the protocol:

Student Actions

- Begin the Step 2 Discussion Protocol
    - 1minute - Presenter explains their What and So What responses of their EDP Stage.
        - Audience Takes Notes
    - 2 minutes - Audience can ask up to 2-3 clarifying questions
        - Presenter can respond
    - 2 minutes - Audience then talks amongst themselves discussing openly to the presenter
        - The following Prompts are suggested
            - "What I heard the presenter say was…"
            - "Why this seems important to the presenter is…"
            - "What I wonder is…"
            - "The questions this raises for me are…"
            - "What this means to me is…"
            - "What I might suggest is…"
        - The presenter is quiet and taking notes on the audience's responses
    - 1 minute - Presenter states their reflection in their Now What response.
- Repeat for each person in the group (7 rounds, 1 round for each EDP stage).
- 5 minutes - Now What? - Debrief.

Step 3 - Back to Working Groups - Recap

- 5 minutes - Now What - Highlight at least one important factor you have learned from your discussion group discussions? Share with your Working Group.