

Monsanto and Mike



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Teaching content area: Math

School: Davenport Central High

Extern host site: Monsanto

Part I: Overview of Business

- Began in 2002 when it divested from Pharmacia.
- Monsanto is in the agricultural business that is invested in helping all farmers grow food in a more sustainable way.
- Facilities in 69 countries in the world.
- Over 20,000 employees globally.
- Best known for their product Roundup’.

Part II: Job Specifics

- Everyday, the lab is sent countless samples to be tested. The samples can be from the beginning of production, middle of production, the finished product or customer samples to make sure the product is not cross-contaminated. With so many solutions to be tested, efficiency is a large focus along with accuracy of the test to ensure accurate reporting. Everytime a new method wants to be put into place, it must go through a validation process which will prove that this method will provide accurate data.

Part III: Introduce the Problem

●With new technology comes new methods of testing solutions. One of the tests, Cloudpoint, has had a recent update and the lab chemists wants to switch over to using the new method. The problem is the following:

- 1.) Is it reliable compared to the old method?
 - a.) Describe how you would prove this?
- 2.) Is it more cost effective?
 - a.) What is the approximate savings to switch to this method?
 - b.) How much would it cost to validate the method?
 - c.) How long will it take to offset the cost of the machine? (when do we break-even as a company)
- 3.) Is it more efficient for the analysts?
- 4.) Will it be easy to train everyone on the new method?

Part IV: Background

- Background knowledge will be a basic understanding of statistics.
- Students should know basic principles of “system of equations” and “linear programming” in order to find a “break-even” point.
- Students must be able to use microsoft excel and understand equation editing in cells.
- Students must possess collaboration and communication skills to work in a team.
- Students must be able to search and find reliable data for a cost analysis (wages, average method time (provided), length of validation process).
- Cross-curricular activity to discuss with a chemistry class about an experiment that they currently run and a potential change to their procedure.

Part V: Business Solution

- Monsanto assigned an analyst to begin the validation process. The analyst created a cost comparison finding data from “average stir time”, predicted price of the machine and supplies, and average length of human resource time the old method vs. the new method.
- Monsanto, after getting approval to purchase the machine, tasked the externs to validate the process and find the best settings for the machine.

Part VI: Student Solutions

- Students should come up with a reasonable answer for the number of trials in order to validate a method.
- Students should work on team work and assigning roles as a team to find accurate values for the cost analysis.
- Students should be able to find a reasonable “break-even point” for the cost analysis.