



Karen Lowande
Dow

Create a New Lesson

Subject Area: Physics & Honors Physics Grade: 11th & 12th

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Bringing Guest Speakers to the Classroom for Career Exploration

Abstract:

In order to connect physics and engineering curriculum to the real world it is important for students to understand how their learning applies to possible career opportunities. For this lesson, I am inviting engineers from Dow to come to the classroom to explain what they do and what it took to get to where they are today. Students will take notes during the visit and ask appropriate questions. Using evidence from the speakers talk, they will write how their impressions of what an engineer does has changed.

Focal Standard or Skill:

California Common Core State Standards

Standards for Literacy in History/Social Studies, Science and Technical

College and Career Readiness Anchor Standards for Speaking and Listening
Speaking and Listening Standards 6–12

Comprehension and Collaboration

3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.

California Common Core State Standards

Standards for Literacy in History/Social Studies, Science and Technical

College and Career Readiness Anchor Standards for Writing

Writing Standards for Literacy in History/Social Studies, Science and Technical Subjects 6-12

Production and Distribution of Writing

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

Measurable Objectives:

Students will produce a written five paragraph paper that demonstrates a greater understanding of engineers and what they do at Dow. They will also clearly demonstrate in writing an understanding of Dow's commitment to their community and the apprenticeship program that is available at Dow demonstrating their listening skills by providing evidence from the speaker.

Assessment:

Students will participate in a class discussion before the guest speakers visit concerning their impression of what engineers do. Students will be observed during the visit for their participation and asking appropriate questions. After the visit, students will demonstrate in writing their understandings of engineers including their responsibilities at Dow and how their view of engineers has changed since the visit.

21st Century Skill(s):

21st Century Skills:

COMMUNICATION AND COLLABORATION

Communicate Clearly

Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts.

Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions.

21st Century Skills Application:

Prior to the visit by a Dow Representative, students will be asked to write their thoughts on what engineers do. Next, students will participate in a group discussion articulating their thoughts and ideas effectively. Finally, students will be asked to further communicate their ideas by drawing a picture of an engineer.

During the visit, students will listen effectively to decipher meaning, including knowledge, values, attitudes and intentions during the speaker's presentation. This will be assessed through observation as well as through the written response to the visit in which they articulate their thoughts on how their view of engineers has changed in a five paragraph paper.

Fellowship Description:

As a Training Coordinator it was my job to improve training across the site. I've used my skills with PowerPoint to standardize Dow's Indoctrination training modules ensuring use of consistent style, font type and font size. By comparing the learning modules for different positions, I've selected the best slides from each presentation ensuring that photo's and diagrams were used in the most advantageous manner for learning.

My teaching skills have been used to ascertain areas for improvement in the teaching techniques used for current courses such as practicing a skill, or strengthening connections between the procedures that are outlined and implementing them. By observing a variety of training sessions taught by different trainers, I've developed a PowerPoint presentation concerning improving teaching skills to improve trainee learning.

I've also developed a PowerPoint presentation for the Isolation of Energy course which is taught to new hires. For this task, I organized the best slides from a variety of PowerPoint presentations including checks for understanding, a hands on activity, a quiz and a field exercise. This balance of learning activities both individual and collaborative provides all students an increased opportunity for learning.

Fellowship Connection to School or Classroom:

One of the most important skills that I observed being used daily at Dow is the safety expectation. All procedures are performed in a manner which maximizes safety for the individual, team and the community. This responsibility to self and others is practiced individually and collaboratively as a team. Even the act of signing into their shift is done for safety purposes, since in an emergency, this is how Dow knows where to look for each person. Safety is also important in the classroom especially for lab activities.

The next skill that connects to the classroom is collaboration. I've observed constant communication between people and departments at Dow giving the impression that people work together effortlessly. This requires constant and clear communications both verbally and in writing. These skills are needed not only for lab activities which are group activities but during explicit direct instruction, transitions and homework instructions as well. This relates directly to the Common Core Standards for Writing, Speaking and Listening that are chosen for this lesson.

By bringing Dow representatives to the classroom, I have directly connected my fellowship to the classroom. During my fellowship, I've been exposed to Dow's training program through my sponsor, who is the Site Training Coordinator. I've also been exposed to Dow's Apprentice Program through their coordinator. I've met with a variety of leaders from various positions in the company. These relationships connect my students to Dow as a possible employer and has increased their awareness of career opportunities in STEM.

Instructional Plan:

Day 1: Pre-visit lesson

Warm-up: Describe what you think an engineer does.

Give students 5 minutes to answer then pull equity sticks to have students discuss their description.

Individual work: Distribute the "What is an engineer?" Worksheet. Give students 10 minutes to draw, color and label their diagram.

Class discussion: Ask students to write words that describe an engineer. Use equity sticks picking a few students to share one word describing an engineer. Write them on the board and have students write the descriptive words on their worksheet. Collect the worksheets to post on the bulletin board.

Distribute "Instructions for Dow Engineer Project" and the "Rubric for Five Paragraph Engineer Paper" to students. Explain that a guest speaker from Dow is coming and their job

title. Encourage students to take full advantage of this opportunity since the engineer is volunteering their time to spend with them. Explain they have an opportunity to get a glimpse of what it is like in engineering, what it took to get there and the path the person took. Also discuss expectations as per the 21st Century Skill of Communication and Collaboration: Students will turn off and put away their cell phones, be respectful, listen attentively and ask appropriate questions. Inform them they will be graded on their participation. Instruct them that they will need to write a five paragraph paper describing how their impression of what an engineer does has changed, the Dow apprenticeship program, and how Dow affects the community.

Homework: Write 2 questions you would like answered by the guest speaker.

Day 2: Guest Speaker Visit

Have the name and job title of the guest speaker written on the board.

Stamp the homework: two questions they would like to be answered by the guest speaker. Distribute the "Guest Speaker" worksheets. Ask the class "What are my expectations?" and select students to answer. Remind students that they will be required to write a five paragraph paper concerning how their impression of what an engineer does has changed, the Dow apprenticeship program, and how Dow affects the community using evidence from the speaker.

Introduce the guest speaker to the class.

Have students take notes during the guest speakers talk.

Allow time for questions and answers

Day 3: Five Paragraph Outline

Warm-up: What similarities did you notice between the guest engineer and yourself? Give students 5 minutes to write their answer then pull equity sticks to have students communicate their answers.

20 minutes: Distribute the "Five Paragraph Outline" worksheet. Have students complete the outline using their notes from the "Guest Speaker" worksheet as their supporting evidence.

Homework: Students are to type a five paragraph paper using the outline filled out in class. They are required to have a printed copy of their paper in class for the peer review. They may use the printer in my classroom the day before the peer review.

Day 4: Computer Lab

The following day, students meet in the computer lab to register for turnitin.com. In their class is the Five Paragraph Engineer Paper where they drop their paper. During this time in the computer lab, they have the opportunity to work on their paper. They have a few days to complete the paper.

The peer review is scheduled a few days after they've completed the outline.

Day 5: Peer Review

Warm-up: What surprised you about the guest engineer? Give students 5 minutes to write their answer then pull equity sticks to have students communicate their answers.

Distribute the "Peer Review Engineer Guest Speaker Paper" form. Select students to read the instructions aloud using equity sticks. Students switch papers, making comments on the peer review form. When they finish; they return the paper and the form to the owner. Next, they complete the reflection concerning the changes they need to make before turning in the paper as well as reflecting on their communication and collaboration skills as described in the 21st Century Skills. They turn in the "Peer Review Engineer Guest Speaker Paper" form.

Day 6: Paper is due

Warm-up: Draw a quick sketch of how an engineer looks. How does this compare to your drawing from Day 1? Give students 5 minutes to complete their sketches then pull equity sticks to have students explain the differences in their diagrams. Collect the sketches so they can be posted on the bulletin board.

The five paragraph paper is to be electronically dropped in their turnitin.com account.

Supply List:

"What is an engineer?" Worksheet
"Instructions for Dow Engineer Project"
"Rubric for Five Paragraph Engineer Paper"
"Guest Speaker" worksheet
"Five Paragraph Outline" worksheet
"Peer Review Engineer Guest Speaker Paper" Form
Turnitin.com account

Bibliography:

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Guiffre, Donna. "What is an Engineer?" *Engineeringplanet.rutgers.edu*. 2004. Web. 9 July 2016.

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Keywords:

guest speaker, engineer, essay, evidence, career, communicate

Attachments:

["What is an engineer?" Worksheet](#)
["Instructions for Dow Engineer Project"](#)
["Rubric for Five Paragraph Engineer Paper"](#)
["Guest Speaker" worksheet](#)
["Five Paragraph Outline" worksheet](#)
["Peer Review Engineer Guest Speaker Paper" Form](#)