



Drexel-SDP GK-12 LESSON

- ***Reverse Engineering***
- *Engineering Module*
- Subject Area (Unit): ***Engineering***
- Concept: Electronics
- Objectives: *Students will disassemble several electronic devices including an iPod, DVD Player, VCR and computer to identify the different parts inside them and the complexity of the entire system.*
- PA Academic Standards: *3.1.7ABCE, 3.2.7ABC, 3.4.7AC, 3.6.7BC, 3.7.7E*
- Grade Level: **6**
- Setting/Group Size: Classroom split into small groups of 3-4.
- Duration/Time Required: ***2 60 minute sessions***
- Materials List: Broken Electronics such as iPod, VCR, DVD Player, Computers, Radios or any other electronic device that can be safely taken apart and has different components inside. Each group will also need the necessary tools to disassemble the device such a screw driver and perhaps wire cutters. (iPod is difficult to open and requires a small flathead screw driver)

Context: *This is a continuing part of the engineering module that gives students a sense of what engineers do. The goal in this lesson is to introduce students to the complexity of electrical devices and identify the parts that make up a complete system.*

- **Methods and Procedure:**

1. Begin with a discussion of an electrical device that will not be used in the lesson. Say a television for instance (though let them know that taking apart of CRT could result in serious injury even when unplugged). Talk about what it does and start a diagram on the board. What are the different components needed, the screen, the channel changing knobs, volume control and speakers, the input, the controller for the menu screen, etc. Discuss that each system is made up of smaller subsystems that allow the entire device to work.
2. Have each group chose a number and then distribute the electrical devices to them based on the numbers they choose. Provide them with the necessary tools.
3. Ask each group to create a diagram of how they think their particular device works and what subsystems are involved. Assist them by asking questions and guiding them to the particular answers.
4. Ask each group to take the devices apart and identify the sub-system parts inside. If they don't know what they do, have them set them aside and try to figure out what part performs what task.
5. Move around and assist them in identifying parts and subsystems. Ideally if they have access to the internet they can also look up information to identify parts by using google or another search engine.
6. Have each group generate a short presentation and poster on how their device works using information from the instructor, the internet or whatever other reliable sources they use.
7. Have each group present their findings in front of the class and present a "How It Works" poster that can be hung in the class.

- *Assessment: Evaluation of the poster and presentation*

- **Keywords:** Engineering

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