Lesson Title: Introduction to RFID Applications

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Rationale
Why is this lesson important? Why does the student need this lesson? How does this lesson fit in the larger module?

RFID is a technology that enables automatic identification of objects. The student needs this lesson to understand that the ability to identify objects uniquely is important in several different types of applications. This lesson categorizes RFID applications.

Objective(s)
What will the student know, be able to do, and value at the end of this lesson? This is smaller amounts of information than the module objectives.

The student will be able to list different categories of RFID applications.

Exploration
Explicit concepts related to the Module goal are explored. It is at this point that the student will be provided basic information about the topic and the chance to explore some basic concepts about the topic. This is where the instructor imparts information.

- RFID application categories
  - Item management
  - Physical access control
  - Travel documents
  - Finance & banking
  - Sensors
  - Animal tracking
  - Human identification
  - Anticounterfeiting

- Item management
  - Railroad
  - Supply chain: The supply chain is the network that brings a product to market and includes suppliers, manufacturers, shippers, storage facilities, distributors, and retailers.
  - Logistics: Logistics is the management of a supply chain.
  - Inventory control: Inventory control is the process of ordering, receiving, controlling and maintaining the correct amount of each item in stock, which requires tracking the amount and type of stock.
  - Equipment management: Equipment management is tracking the repair and maintenance of equipment as well as charging its usage to a particular job.

- Physical access control
  - Automobiles on toll roads
  - Automobile
  - Building access
  - Parking garage
- Travel documents
  - ePassport
  - DHS Peoples Access Security Services (PASS) card
- Finance & banking
  - American Express
- Sensors
  - Sensor tags
- Animal tracking
  - Livestock tracking
  - Pet tracking
- Human identification
  - Verichip
- Product counterfeiting countermeasure
  - ePedigree

**Reflection**

Several questions are posed to the student to answer and then often discuss as a class. This is an attempt to determine whether the student "gets" the basic concepts delivered above. If they do get it, move on to engagement. If they do not get it, go back to exploration above. It could be as simple as asking a few probing questions or as complex as asking the student to write a paper.

- Define supply chain.
- Why would using RFID in the supply chain save money?
- What are the advantages of using RFID for livestock tracking?
- What are the advantages of using RFID for pharmaceuticals?

**Engagement**

Concepts learned in the Exploration are further developed by conducting experiments, designing and building solutions, and solving problems. This is an attempt to cause the student to apply the new knowledge. By applying the new knowledge, the student is much more likely to retain this information. This engagement could be accomplished through a debate, an experiment, a problem solving activity, or anything else that would cause the student to demonstrate understanding and competence.

- Have the class divide into groups of 3-4 and answer the question “In physical access control, is possession of the tag enough?”

**Expansion**

Provide opportunities for students to expand the concepts to more general or global situations including connection to the Module goal. Expand back to the big ideas of the module and prepare for the next lesson.

- What are the advantages of using RFID in travel documents?

**Lesson Assessment**

Assess student understanding of the lesson content. This does not have to be a full-blown examination. It could be a graded homework assignment, a quiz, a performance examination, a graded problem solving activity, or something similar.
Homework problem providing present or future applications for each of the categories

Equipment
- None

Software
- None

References
- None
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