BIRDEE Unit 1 Lesson Plans

1.2.3. Conceptual Design

Engineering requires considering multiple solutions to a problem. These solutions can be roughly drawn or described without complete details to consider whether or not a solution is promising. Students will apply info from benchtop prototype testing to their new design.

Engage: 5 min

View: 1.2.3. BID Inspiration
- **Class Discussion** on what students think
- Ants have special brushes and combs on their legs.
- **Play video:** Ant Cleaning Antennae Video (in ppt)

Explain: 10 min *(videos)*
Sketching 101:
Today we are going to learn more about sketching.
- **Class Discussion:** Who in class has experience sketching? What do you sketchWhy do we sketch in engineering?
- **Play video:** Sketching from Dyson video
- **Play video:** Rapid Sketching video

Sketching is a quick and easy way to communicate ideas to ourselves and others about how our designs might look and how they might work.

Explore: 15 min *(Individual)*

Concept Sketches
View*:* 1.2.3. Conceptual Design Worksheet
- Review the design requirements on your 1.1.4. Problem Requirements handout.
- Review the 1.2.2. Lotus Effect Test Results.
- You will have 5 min to design a footwear concept that addresses the problem (**dirty shoes**), meets the requirements,and incorporates testing data.
- Remember, a conceptual design is a complete design. Ideas can be partial or complete designs.

Evaluate: 20 min *(Group)*

Concept Selection
- Within groups, share designs. Do they meet design requirements?
- Each group will select a final design concept (you may combine multiple ideas).
- Create a Final sketch for your group and label your design.

Student Handouts:

1.2.3. Conceptual Design Worksheet

Student Materials:

N/A

Instructional PPT's & Materials:

1.2.3. BID Inspiration

Sketching from Dyson video

Rapid Sketching video

Teacher Resources:

N/A

Web Resources:

Ant Cleaning Antennae Video