

ACTIVITY 2: DFD (Design for Disassembly)

Activity Objective: Take any mechanical product and create a design that would allow this product to be reused or recycled from product assemblies after they've been disassembled

Materials: Chapter 12, paper, computer, printer, Internet Access, materials as needed to make the product easy to disassemble

Definition: DFD (Design for Disassembly) is the process to easily disassemble products for reuse and recycle materials from product assemblies after they've been disassembled. It is a major area of research and development within DFE. This process endeavors to create obvious access and disassembly points so that products can be disassembled using common tools and equipment. Fastening technology is important in DFD. Dissimilar metal materials that are glued or welded are difficult to separate. So in DFD, separable parts are preferable. The Green Jobs website provides a DFD guide as an introduction to the principles, methods, and materials of Design for Disassembly in the built environment. It is intended for owners, architects, designers and builders to help simplify investigations of this aspect of sustainable design and building.

Fasteners such as bolts and screws make it possible to disassemble product but they add weight and complexity. DFD strives to reduce the number of fasteners or replace them with snap one parts that can be removed without tools. Hitachi develops DFD in its washing machine division by designing a machine that could be disassembled and assembled and disassembled using just six fasteners. The MIRRA Chair was designed to be easily disassembled. At the end of its lifecycle the chair is returned to the factory and can be disassembled in less than 15 minutes. 96% of the chair is recyclable and the fabric can be turned into compost for planting a garden. Plastic and the molded plastic seat back can be recycled and remolded into backs 25 times.

REVIEW VIDEOS:

How to Design for Disassembly and Recycling:

<https://www.youtube.com/watch?v=vcFRvuOnWQ8>

Design for Disassembly: <https://www.youtube.com/watch?v=MeN5dUSHQT0>

Design for Disassembly DFDS: <https://www.youtube.com/watch?v=S7rObLIEYfg>

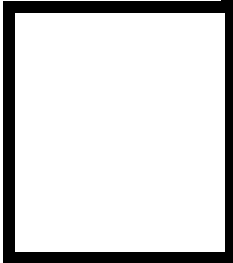
Procedure:

1. Work as partners or small teams.
2. Research the Internet for How to Design for Disassembly and Recycling.
3. Create a product design or the actual product that can be reused or recycled from product assemblies after they've been disassembled.
4. If you do not actually create the product develop a presentation on how the design would work.



RUBRIC

4 World-Class Learner	3 Proficient Learner	2 Developing Learner	1 Emergent Learner
Learner at this level has gone beyond mastery of knowledge, skills, & attitudes described in project. World-class learner consistently exhibits high-quality performance.	Learner at this level has had opportunities to apply knowledge, skills, & attitudes of component of project. Proficient learner has mastered essential attributes, thus proving mastery.	Learner at this level has been exposed to & had opportunity to apply knowledge, skills, & attitudes of project. Developing learner may have only a few essential attributes to master before mastery.	Learner at this level may or may not have been exposed to knowledge, skills, & attitudes required by academic standards of the project.



- 1 = Emergent Learner**
- 2 = Developing Learner**
- 3 = Proficient Learner**
- 4 = World-Class Learner**