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| **NAME:** | **CLASS PERIOD:** | **DATE:** |

**Foundations of Technology**

**Unit 1. Technological Inventions and Innovations**

**Learning Cycle 3. The Role of Research and Development: A Problem-Solving Approach**

**File 1.3.2 Product Design Activity**

**Background**: Research and development is a problem-solving approach used to prepare a product for the marketplace. The most innovative ideas are often the product of a group of people. People often find it easier to come up with great ideas when they are able to work with a group and collect feedback. Innovation is also a key to a product’s success in the marketplace. Just because a device works does not mean it functions efficiently or will work for other people. A marketable device needs to be easy to use, priced effectively, and safe for the user. Feedback is essential when creating a marketable product.

**Problem:** If you could invent something to make your life easier, what would it be?

**Procedure:**

* Answer the background questions to develop an idea for your product design.
* Sketch your ideas.
* Develop several questions to help refine your ideas.
* Share your product idea, sketches, and questions with a partner.
* Record your partner's feedback in your Engineering Design Journal.

**Background Questions:**

Record answers/sketches in your Engineering Design Journal

1. What is your favorite product?
2. How does it make your life easier?
3. If you could invent something to make your life easier, what would it be? Brainstorm a list of ideas that address this question. When complete, choose one idea that you think would be marketable and could make your life easier.
4. Name of Invention
5. Problem the Invention Solves
6. Brief Description of the Invention
7. Sketch of the invention

**Generating Feedback:**

Share your ideas with one person in class. Ask him/her a series of questions you feel would improve your product design. Record all feedback in your engineering journal.

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| **Category** | **Below Average** | **Average** | **Excellent** |
| **Device Selection – Sketches / Ideas** | The student does not select a device or does not select an appropriate device. | The student selects an original idea that has relevance to his or her everyday life. The product description is detailed and includes pertinent information. All sketches communicate the idea. | The student selects an original idea that has relevance to his or her everyday life. The product description is detailed and includes pertinent information. All sketches are annotated and communicate the idea. |
| **Feedback** | The student did not work with a partner to collect feedback, or the student did not provide appropriate feedback to another student. | The student works in a small group to give and receive feedback. The student records all feedback in his or her Engineering Design Journal. All feedback provided to classmates is thoughtful and logical. | The student works in a small group to give and receive feedback. The student creates guiding questions for his or her partner that are related to the product and records all feedback in his or her Engineering Design Journal. All feedback provided to classmates is thoughtful and logical. |