



# The SPIRIT Project

## *Educational Robotics*

### Lesson Building Block Template

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**Grade Level:** 7-8\_ **Date:** Summer 2006

Directions: Definition of a Lesson Building Block: This is a “Lesson Building Block” from the SPIRIT educational robotics institute. A ‘lesson building block’ is in essence an educational activity that might be later turned into a more formal classroom lesson by a creative teacher. The SPIRIT Institute is striving to put a variety of “lesson building blocks” up on the web for the potential use of teachers as they try to prepare more formal educational lessons using the TekBot robotics platform.



**I. Concepts** *(Give a list of one or more concepts that might be taught using this activity)*  
Name major categories of the designed world.  
Identify robots relationships in the designed world.

## II. Standards

*(Give a list of one or two local, state or national standards that appear to apply)*

Standards for Technological Literacy (STL)

Standards 2, 3, 14, 15, 16, 17, 18, 19, 20

## III. Learning Activity Context (Describe the overall context for the learning activity)

Context:  *Moving TekBot*  *Building a TekBot*  *Engineering / Notebook*  *Other*

Abstract: *(Give a 1 paragraph abstract of the activity)*

Students go to the web and find pictures of robots doing work. Copy and paste these pictures onto a word or draw document and print them. In large group, have students tape their robot picture under the design world category they feel the robot belongs. Then have them explain to the group why that category best fits their robot. Discuss other possible solutions.

## IV. Teacher and Student Suggestions/Tips

*(Provide some general tips or suggestions for trying the activity)*

Put more than one robot on a sheet of paper.

Students will discover that their robots could fit in more than one category. They could use string or tape to “draw a line” to the other category(s).

Have several websites available for the search. If you do not have access/time for a search, have pictures from magazines or prints from the web available.

## V. Teacher Questions

*(Give a list of questions that teachers might ask students during the activity)*

What category(s) of the design world are you looking for robots in?

Why did you choose this robot? What category does it fit in?

What else could this robot be used for?

If you were to design a robot for \_\_\_\_\_, what parts of this robot could you use?

## VI. Assessment Ideas

*(Give an idea or two about how the lesson activity might be assessed)*

In their Engineering notebook, students could have robots listed/sketched and their category(s) stated, with rationale(s) written. Assessment criteria could be in rubric form.

EXAMPLE

The Designed World –

Above Target (3) - Can identify, explain, and discuss robots function in the appropriate category of the designed world.

At Target (2) – Can identify, explain robots function in the appropriate category of the designed world.

Below Target (1) – With assistance, can identify and explain robots function in the designed world.

A worksheet could be developed. Pictures of robots - categories listed. Multiple-choice for the rationale that best fits the robot.

## **VII. Other Information**

*(Give any other information that might be useful or a visual or two)*

The designed world consists of all the modifications that humans have made to the natural world to satisfy their own needs and wants. A system is a group of interrelated components designed to collectively achieve a desired goal. To study the designed world, it is useful to break it up into “technology related categories.” The categories are Medical Technologies, Agricultural and related Biotechnologies, Energy and Power Technologies, Information and Communication Technologies, Manufacturing Technologies, and Construction Technologies.

LESSON EXTENTION – students could modify their TekBot to satisfy a want or need in the world today. Using the Engineering Design Model, students would identify a need. Then using this lesson as their research, students could develop a solution. Finally they could modify their TekBot, and then communicate their solution.

### **MATERIAL SUGGESTIONS:**

Computer(s) with internet access and a word or draw program  
Magazines (Popular Science/Mechanics) or pictures of robots  
Scissors – Tape - String  
Design World “Signs”

Enhancing technology education through technology, innovation, design, and engineering experiences at the K-12 school levels: [www.iteaconnect.org](http://www.iteaconnect.org)  
Designing Robots: Learn about Cynthia Breazeal from the Nat'l Academy of Sciences!  
[www.iWASwondering.org](http://www.iWASwondering.org)