



The SPIRIT Project

Educational Robotics

Lesson Building Block Template

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Directions: 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)*
Main concepts are resistance in a current and how D/C motors work in a circuit

II. Standards: *(Standards for Technological Literacy)*

OPS 603 Science/ Magnets and Motors 601 Science/Inquiry 602/Science/Understanding Science Processes 604 Math/Measurement (metric)

III. Learning Activity Context

Moving tekbot and engineering notebook;

With completed tekbots, students will adjust circuitry to affect speed and direction in the tekbot. Challenges will be to use resistors to adjust the speed of the bot, and measure the changes of speed with different amounts of resistance. Other adaptations include changing direction, by changing the flow of electricity, and adjusting the resistance make the tekbot go straight or in different sizes of circles.

IV. Teacher and Student Suggestions/Tips

Make a class diagram of the bread board, so students understand how to make parallel and series circuits. Use the resistors to develop understanding of powers of ten, which should help them better understand metric conversions.

V. Teacher Questions

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

-How can we make the robot reverse directions?

-How can we make the robot go in circles?

-How can we change the diameter of the circle?

- Is there anything we can do with resistors to make the Tekbot go straighter?

-Describe how things are changing inside the Tekbot when we make different changes in the Tekbot?

-How can we make the Tekbot go slower?

-How can we make the Tekbot go faster?

VI. Assessment Ideas

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

The best way to assess this activity is to have students use their Engineering logbook to document what they have done. Have students include diagrams or other relevant information in the section and evaluate their findings. Students can also be assessed by whether the Tekbot can perform as described above.

VII. Other Information

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

That's about all.

VIII. A materials list