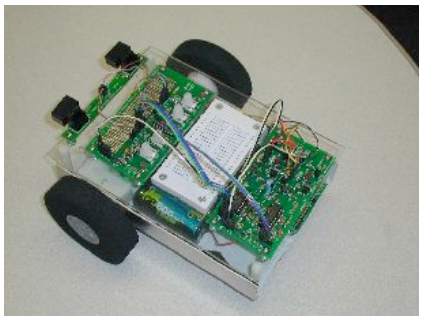

The SPIRIT Project

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)*

Vectors and vector addition

II. Standards

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

NST 5-8 Earth and Space

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

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

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

Students in small groups will be given a Tekbot to set the potentiometers to their own settings to backup and turn. The Values for the "Pots" are plotted on a Left bumper and Right bumper chart, L setting=Y axis : R setting=X axis. The tekbots will be launched in (a) hallway to the main office. The main office is 230 m East and 110 m North of the starting point. The students will time the robots and insure that they don't get trapped in blind areas or areas out-of-bounds such as bathrooms and stairs. The time for the mission will be used as a third axis data point.

IV. Teacher and Student Suggestions/Tips

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

If you have more than one multimeter, the students will get the robots set quicker.

V. Teacher Questions

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

What is more important to the forward motion of the robot; reverse or turn amount?

What is the relationship between the Pot setting and the angle of turn? The students can make a chart.

VI. Assessment Ideas

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

The students can have a partner travel with the Tekbot to record the number of turns in each direction to reach the destination and then see if the total number of turns gives a comparable vector to the map to the office.

VII. Other Information

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

VIII. List of marterials