Unit Map 2011-2012

Hampshire Regional School District

Heffernan, John / Technology 1 / Grade 1 (District Elementary School)

Friday, October 21, 2011, 9:55AM

Unit: Introduction to Lego WeDo Robotics (Week 10, 6 Weeks)

Enduring Understandings	Essential Questions
Students will understand that... Computers are used to program robots. Gears transfer mechanical energy from place to place. Belts and pulleys transfer mechanical energy from place to place and can go longer distances than gears.	How can you use the computer to make your robot do different things? What's a gear used for? What are belts and pulleys used for?

Curriculum Frameworks and Learning Standards

MA: Science and Technology/Engineering, MA: PreK - 2 , Physical Sci (Chemistry & Physics)
Position and Motion of Objects

- 3. Describe the various ways that objects can move, such as in a straight line, zigzag, back-and-forth, round-and-round, fast, and slow.
- 4. Demonstrate that the way to change the motion of an object is to apply a force (give it a push or a pull). The greater the force, the greater the change in the motion of the object.

MA: Science and Technology/Engineering, MA: PreK - 2 , Technology/Engineering
2. Engineering Design

- 2.1 Identify tools and simple machines used for a specific purpose, e.g., ramp, wheel, pulley, lever.

MA: Technology Literacy, MA: PreK - 2 , Computer Proficiency
Standard 1. Demonstrate proficiency in the use of computers and applications, as well as an understanding of the concepts underlying hardware, software, and connectivity.

Basic Operations

- K-2: 1.1 Demonstrate beginning steps in using available hardware and applications (e.g., turn on a computer, launch a program, use a pointing device such as a mouse).
- K-2: 1.2 Explain that icons (e.g., recycle bin/trash, folder) are symbols used to signify a command, file, or application
- K-2: 1.3 Identify, locate, and use letters, numbers, and special keys (e.g., space bar, Shift, Delete) on the keyboard.

Content	Skills
Students will understand that... Using belts of different sizes can change the speed of a machine. Program execute in a sequence.	**Science** Trace the transmission of motion and transfer of energy through the machine. Identify the pulleys and belt drive mechanism, and the effect changing the belt has on the direction and speed of the dancing birds' movement. **Technology** Create a programmable model to demonstrate the knowledge and operation of digital tools and technological systems. **Engineering** Build and test the dancing birds' movement. Modify the dancing behavior by changing the pulleys and belt to affect the speed and direction of motion. **Mathematics** Understand and use numbers to represent the amount of time the motor is turned on in seconds and in tenths of seconds.

Assessments

Observation and Worksheet
Formative: Performance: Authentic Task
Teacher(s) observe children performing their tasks. Check for cooperative learning skills and for performance of the task. During discussion, check for understanding of key concepts. Dancing Birds worksheets should be checked for understanding.

Learning Activities	Resources

Students use the Lego WeDo curriculum to:
 	
1. Do these Getting Started activities as a whole class
    1. Gears (#2)
    2. Gearing Up (#4)
    3. Gearing Down (#5)
    4. Pulleys and Belts (#7)
2. Dancing Birds project in pairs
 	
Teachers can demostrate the programming using a SmartBoard or projector and leave it
	Lego Education WeDo Teacher's Guide
	Lego Education WeDo Robotics Kits
	Laptops with WeDo software installed
	
	Kids Engineer Web Site

up. The Getting Started Activities can be done as a whole class (students can still be in pairs). It can be easier to get the specific parts ahead of time and not provide access to the complete WeDo kit.	

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