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# Teaching Students How to Learn Differently with Robotics

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*The College at Brockport*

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# Applications of Robotics

## Design Challenge 2005 - 2006

GRADE LEVEL: 8

Subject: TECHNOLOGY

Prepared By: SABRINA JOHNSON

<p><b>Problem Statement:</b> Students will participate in creating physical and tangible projects that are relevant to real world experiences – by designing and building experimental models that solve problems in a challenging and fun atmosphere. Specifically- students will construct a robot to perform certain duties <b>[IN THEORY -TO GO INTO DANGEROUS PLACES]</b> and then write a program for the robot using ROBOLAB software. Students will further design a replica of their robot using Interactive Physics.</p>	<p><b>Education Standards Addressed</b></p> <p><b>MST 3-</b>          Uncertainty – predicting experimental probabilities.          Modeling/multiple representations – physical materials and manipulative tools.</p> <p><b>MST 5-</b>          Exploring, Manufacturing, Generating Ideas</p> <p><b>ELA 3-</b>          Participates in group meetings, turn taking behaviors, contributes, volunteers answers, and asks questions.</p>
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	STUDENT ACTION	ADDITIONAL COMMENTS	
<p><b>Applications</b> Introduction to the study of robotics</p>	<p>Students research the nature of robotics. Students will be asked to identify the general uses of robots. What are the applications of robots? Students will report their findings to the class</p>	<p>How are robots used in industry and science?            Gathering information from authoritative reference sources; websites, and books. Must have works cited section. Paper will include:            Definition of the word robot            3 different applications of robots            Ways robots may be used in the future</p>	<p><b>Materials Needed</b></p> <ul style="list-style-type: none"> <li>• Paper</li> <li>• Pencil</li> <li>• Internet</li> <li>• Robotic Software</li> <li>• Interactive Physics</li> <li>• Smartboard</li> <li>• PC using Windows</li> <li>•</li> </ul>
<p><b>Design Challenge</b></p>	<p>Students will build a robot with rotary to linear motion that move inside of dangerous places in theory</p>	<p>Students will have lots of fun!</p>	
<p><b>Analysis of Data and Results</b></p>	<p>Students will analyze data collected from Robotic Software by transferring that knowledge into Interactive Physics showing the various values of velocity and acceleration.</p>	<p>Students will use Microsoft Excel to express results mathematically using a spreadsheet.</p>	<p><b>Parts Needed</b></p> <p>Axle            Beams            Bushings            Pulleys            Building Bricks            Spur Gears            Lift Arms</p>
<p><b>Grade Level 8<sup>Th</sup></b> Lego Robotics</p>			

			<b>Summary</b>	
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