

# SHOWCASE LESSON

<p><b>TOPIC/Objectives</b></p>	<p>SWBAT</p> <ul style="list-style-type: none"> <li>* Collaborate with one another to build a roller coaster with a loop, hill, and a jump</li> <li>* Manipulate Potential, Kinetic, and Mechanical Energy formulas</li> <li>* Collect data using photogates</li> <li>* Calculate theoretical and actual energies at various points throughout their roller coasters using collected data</li> </ul>
<p><b>P</b></p>	<p><b>HOW DID YOU GET THE STUDENTS EXCITED ABOUT THE LESSON?</b></p> <p>STUDENTS WERE TOLD THEY WOULD GET TO BUILD THEIR OWN ROLLER COASTER FOR A MARBLE TO GO THROUGH. THE STUDENTS ENJOY DOING PROJECTS BECAUSE IT ALLOWS THEM TO DO A HANDS-ON ACTIVITY RATHER THAN COMPLETE CALCULATIONS AND HANDOUTS. THE CONSTRUCTION OF THE ROLLER COASTER ONLY HAD A FEW REQUIREMENTS, SO IT ALLOWED THEM TO SHOW OFF THEIR CREATIVITY.</p>
<p><b>L</b></p> <p><b>A</b></p>	<p><b>HOW WERE STUDENTS ACTIVELY ENGAGED?</b></p> <p>STUDENTS ACTIVELY CUT OUT THEIR PIECES, COLLABORATIVELY DESIGNED WHAT THEIR ROLLER COASTER WOULD LOOK LIKE, AND ASSISTED ONE ANOTHER IN THE CONSTRUCTION, TESTING, AND DATA COLLECTION PROCESSES.</p> <p><b>HOW DID YOU COMMUNICATE CONNECTEDNESS TO PRIOR AND FUTURE LEARNING TOPICS?</b></p> <p>THIS WAS AFTER COMPLETING THE WORK &amp; ENERGY UNIT, SO THERE WERE A LOT OF EASY CONNECTIONS TO MAKE. ADDITIONALLY, THE STUDENTS NOTED THAT THE THEORETICAL CALCULATIONS OF THE COASTER IGNORE FRICTION AND THEIR ACTUAL CALCULATIONS WILL BE DIFFERENT FOR THE KINETIC ENERGIES. STUDENTS ALSO MADE CONNECTIONS TO CHANGES IN THE MARBLE'S MOMENTUM AS IT'S SPEED SLOWED OR INCREASED AT DIFFERENT POINTS, WHICH LEADS WELL INTO THE NEXT UNIT.</p> <p><b>HOW WERE STUDENTS FORMATIVELY ASSESSED?</b></p> <p>STUDENTS WERE FORMATIVELY ASSESSED THROUGH CONCEPTUAL QUESTIONS ABOUT POTENTIAL, KINETIC, AND MECHANICAL ENERGY. ALSO ASKED TO EXAMINE WHERE IN THEIR COASTERS THEY MAY BE LOSING ENERGY DUE TO SHAKINESS OR OTHER CAUSES.</p> <p><b>HOW DID YOU DIFFERENTIATE INSTRUCTION?</b></p> <p>MOST OF THE WORK WAS DONE IN SMALL GROUPS. THE INSTRUCTIONS AND EXPECTATIONS WERE REVIEWED AT THE BEGINNING OF EVERY DAY AUDIBLY, PROJECTED AT THE FRONT OF THE ROOM, AND WERE AVAILABLE AS PART OF THE HANDOUT THAT ACCOMPANIED THE PROJECT</p>
<p><b>N</b></p>	<p><b>HOW DID YOU SUMMARIZE THE LEARNING GOALS?</b></p> <p>LEARNING GOALS SUMMARIZED THROUGH FORMATIVE AND SUMMATIVE ASSESSMENTS ON THEIR WORKSHEET AND IN BLEND</p> <ul style="list-style-type: none"> <li>• <b>POSTING THE SHEETS OF TRACKS WOULD LIKELY VIOLATE COPYRIGHT, BUT THEY CAN BE FOUND AT <a href="http://PAPERROLLERCOASTERS.COM">PAPERROLLERCOASTERS.COM</a></b></li> </ul>