

PROJECT BASED UNIT DEVELOPMENT TEMPLATE

Unit Title: Simple Machines

Team Members: ENTREPRENEURS (Debra Lapka, Jesse West, Denise Hopper)

Grade Level: 6-7

Allocated Time (Days): 16

Section I: Identifying Standards, Level of Application and Central Theme

Common Core	UNIT THEME: Section I A: Why are simple machines important in life?	
X ELA _X_ Math _X_ Science _X_ Technical	Section I B: Identifying Standards: Reading: RI.7.1 – Cite evidence; RI.7.4 – Determine meaning of words; W6.2b – Write information text with relevant facts, definitions, details, quotes, etc.; SL.7.1 – Engage in relevant collaboration. Math: Number Sense; Ratio & Proportion; Equation & Expression; Geometry	
Section I C: The instructional purpose for the unit of study is to identify simple machines in daily life.		
Section I D: Record below what students have to know and be able to do in order to meet selected targeted standards.		
Students will know <ul style="list-style-type: none"> ● Text structure ● Persuasive techniques ● Formulas for work & mechanical advantage ● 6 types of simple machines 		Students will be able to do <ul style="list-style-type: none"> ● Cite Evidence ● Use all four operations for fractions and decimals including conversions ● Use proportions ● Formula substitute ● Measure accurately using a ruler and tape measure. ● Construct simple machines ● Identify simple machines in real life. ● Construct a Rube Goldberg Machine
Section I E: Identify essential questions that will be used in gaining student interest. <ul style="list-style-type: none"> ● Which inventions have had the most impact in society? ● What are simple machines? ● What are everyday examples of simple machines? ● How are simple machines incorporated into more advanced machines? ● How do simple machines impact our daily lives? ● How have simple machines evolved and developed into more complex machines? (cell phone, iPod, cars, etc...) 		

Unit Developer Template

Section II: Complexity of Learning Task and Technology Standards

Section II A: Identifying the level of complexity for each task as matched to common core and NET standards.	
Identify Depth of Knowledge	Identify the learning task that the students will experience.
<input type="checkbox"/> 1 Awareness(Recall/Memorize) <input type="checkbox"/> 2 Comprehension <input type="checkbox"/> 3 Application(Demonstrate Understanding) <input type="checkbox"/> 4 Analyze/Hypothesize <input type="checkbox"/> 5 Synthesize/Process Information/Investigate <input type="checkbox"/> 6. Evaluation (Make Connections)	<p>Science: The students will</p> <ul style="list-style-type: none"> • Assemble working simple machines including pulley, wheel & axle, inclined plane, & wedge. • Identify an example of each simple machine from outside the school and take a photo to share in the class. • Brainstorm and design a working Rube Goldberg Machine. • Demonstrate their understanding of forces and motion by building a working Rube Goldberg machine. <p>Math: The students will</p> <ul style="list-style-type: none"> • Use fractions/decimals with ease. • Use ruler/tape measure with accuracy • Understand how two different sized circles function together but at different rates. • Become familiar with substitution on formulas. • Find and evaluate simple slope. • Participate mathematically with ELA in creating a poster in collaborative groups based on the simple machine of their choice. <p>ELA: The students will</p> <ul style="list-style-type: none"> • Research inventions & simple machines. • Cite evidence. • Present findings. • Discuss text structure. • Read expository articles. • Write how-to essay. • Discuss persuasive techniques. • Develop advertisement of simple machine. • Present cross curriculum with science and math. • Create a poster in collaboration with science.
Identify Level of Application <input type="checkbox"/> Quadrant A: Acquisition <input type="checkbox"/> Quadrant B: Application <input type="checkbox"/> Quadrant C: Assimilation <input type="checkbox"/> Quadrant D: Adaptation	
Select matching NETS for Students <input type="checkbox"/> 1.Creativity/Innovation <input type="checkbox"/> 2.Communication/Collaboration <input type="checkbox"/> 3. Research/Information Fluency <input type="checkbox"/> 4. Critical Thinking, Problem Solving, /Decision Making <input type="checkbox"/> 5. Digital Citizenship <input type="checkbox"/> 6. Technology Operations/ Concepts	

Section II C: What content language will be included in this unit? Content language will be a part of the ELL component of summer school.

Science:

Friction, gear, inclined plane, lever, linkage, pressure, pulley, machine, mechanical advantage, mechanism, moment, screw, wedge, wheel-and-axle, work, wedge

Math:

Measurement, conversion, circumference, area, velocity, resistance, effort,

ELA: paraphrasing, summarizing, quote, bandwagon, emotional/logical appeal, glittering generalities

<p>Section II D: Identifying technology tools as resources to methods and types of presentations that students will use to demonstrate their learning.</p> <p>Laptops, Desktops, iPads, Gmail Accounts, Smart Board, Smart Tablet, Collaborizeclassroom.com, prezzi, quizlet, research data bases, Edmodo, smart phones, iPods, simple machines test kit, QR Codes, QR reader, calculators,</p>
<p>Section II E: List non-related technology materials and resources needed to support unit standards.</p> <p>Poster board, markers, measuring tapes, folders, team crate, pencils, paper,</p>

Section III: Identifying Summative and Formative Assessment Types

Identify methods of summative assessment: Rub Goldberg Machine, Poster Presentation	Identify the performance assessment content standards measured. RI.7.1, 7.4, 2.6, SL7	
Develop Scoring Criteria Rubric for ELA & Science Checklist for Math	Identify tools that will evaluate end of unit assessment. Rubrics & checklist	
Identify formative assessment types Test for substitution for science and math formulas. Test for measurement. Test for decimals & fractions. Test for identification of simple machines. Home inventory of simple machines.		
Assessment Type	Learning Target	Frequency
Anecdotal Records Final exams Quizzes Reports Surveys Observations Rubrics Quizzes Essays Questioning	Knowledge Reasoning Performance Product Development	