

TEMPLATE FOR CMap PROJECT

Project Title: research compressed natural gas (cng) vehicles

Created by: Lisa Grunig

Class: Box Elder, July 2008

<p>Project Description</p>	<p>Students will research compressed natural gas (cng) vehicles with consideration to questions such as:</p> <ul style="list-style-type: none"> -what is cng/a cng operational vehicle -what are the advantages/disadvantages to owning a cng vehicle <ul style="list-style-type: none"> vehicle cost/availability fuel cost fill station availability/locations fill station dependability fill station waiting line(s) conversion kits/cost vehicle operation/power mechanic cost cng only/bi-fuel//other fuel options <p>Students will learn the technology of mapping using a geographic placement system.</p> <p>Students will choose a viewpoint (for/against) the feasibility of owning/driving a cng vehicle</p> <p>Review of persuasion, Six Traits, and five paragraph essay writing</p> <p>Students will utilize components of the Six-traits to write a five paragraph persuasive essay from research findings.</p> <p>Contact local newspapers for publishing of essays or request that an editorial based on the student findings be written for the paper.</p>
<p>Community Issue or Problem Selected -How project evolved?</p>	<p>The rising cost of gasoline</p> <p>Last spring the topic of gasoline prices came up in my class and I told my students about the cng bi-fuel car I had just bought. Most of the students were unfamiliar with what it is and were “in awe” to learn it runs on compressed natural gas for only fifty eight cents per gallon.</p> <p>My students are at, or approaching, driving age so when I learned I needed a plan for this class I thought this might be</p>

	something they would enjoy researching and that the community would benefit from learning more about it as well. Since cng is not available at most service stations I think mapping the fuel stations and distances to them will greatly benefit the community, student interest, and end product.
Community Partner(s)	automobile makers/dealerships fuel stations natural gas company cng vehicle owners local newspaper(s)
Project Objectives	research calculating mapping writing
Utah Core Standards/Objectives	Standard 3: Processes of Inquiry/Research -Objective 1: Use the process of inquiry to examine multiple points of view. Standard 2: Writing -Objective 2: Write to persuade others.
Essential Question(s) -Spatial Issue	How many fill stations are there? What is the distance between fuel stations? Where can I buy a cng vehicle/availability of? How many miles per gallon does the vehicle get?
Assessments (rubrics, scoring guides)	Six Traits Rubric

Project Products	map of natural gas fuel stations map distances from fuel stations calculate mpg persuasive research paper
Project Timeline (include a step by step Procedures)	Two hours to teach file management, geographic information system (GIS) and geographic placement system (GPS). Three hours to research vehicles operating with compressed natural gas, cost efficiency, fuel stations and distances. One hour to gage vehicle mpg Two hours on computer to teach/add data to map(s)

	<p>Three hours on computer for persuasive essay writing.</p> <p>Options to correlate with/demonstrate cross curriculum:</p> <ul style="list-style-type: none"> -technology: teaching of GIS mapping using a GPS and computer -drivers education: track distances and compare the mpg using varying fuel types. -math: calculation(s) of mpg
Resources Needed	<p>Arc/Gis software</p> <p>GPS unit(s)</p> <p>cng fueled vehicle</p> <p>time with community partners/research</p> <p>time in writing lab/research and writing</p>
Skills Required	<p>GIS/GPS mapping</p> <p>research</p> <p>computer</p> <p>Six-Trait writing</p>
Project Team Member Roles	<p>Teacher(s): Teach the components of mapping. Review research, calculation, and Six-Trait persuasive writing. Contact local newspaper.</p> <p>Students: Students will use GIS/GPS and computer technology, critical thinking skills, viable resources, and writing skills to map, research, calculate and write a persuasive essay.</p> <p>Partner(s): Partners will work with the teacher and students to provide information. Local newspaper(s) will be presented with the information and requested to address the issue in the paper.</p>
Celebration/Presentation	<p>Present findings and request publishing of the information to local newspaper(s) for consumer awareness</p>
Project Evaluation	<p>Fuel station map</p> <ul style="list-style-type: none"> -evidence of mpg distance map -evidence of Persuasive Essay -Six-Trait Rubric
Project Bibliography	<p>NA</p>

Plans for Future CMAP Activities	Mapping of activity/recreational sites in the area. Address city council with the need for varying/more entertainment options.
----------------------------------	--

Optional:

- Lesson Plans
- Student Artifacts
- Publicity