Engaged Learning Project Final

Title of Project: But that’s not what the price tag said!
Subject(s): Mathematics and Social Science
Grade Level(s): 7th – 8th

Abstract:

The students at Adairsville Middle School will research and calculate prices of vehicles (including sales tax, currency conversion, and gas prices) throughout the world. Students will investigate how different economies impact citizens through sales tax. During their study, students will assume the role of an accountant/economist. At this age many students are getting ready to tackle driving so they are interested to see how much vehicles cost and whether this is something they can obtain in their near future. The teachers will take upon the role of a facilitator engaging students in discussions and will also take upon the role of a co-learner. The audience will consist of teenagers and adults from the community and around the world through the use of the class blog. Instruction is aligned with the Common Core Mathematics Standards and Georgia Performance Social Studies Standards.

Learner Description/Context:

The school in which this project will take place is a title one school in a very rural town in north Georgia. The majority of students are white with about 4% Black, and 1% Hispanic. Class sizes are about 27-30 students, with each student having their own computer. Students will have access to laptops/internet on a daily basis. This will allow students to perform quality research and successful Skype sessions while in class. By completing research details at school, when students are at home they will be able to compile and synthesize their findings and publish to the class blog. Students will be able to pick which country they want to investigate, while at the same time digging deeper into their heritage. The majority of this project will take place within the classroom since many students do not have access to Internet at home. Through this project students will begin to understand that there is more that goes into owning a vehicle than simply paying the listed price. Students will see the correlation between the type of government and economy found within each country and how the Organization of the Petroleum Exporting Countries (OPEC) impacts the price of gas within each country.

Time Frame:

(3 weeks)
Week 1: Research and gather information
Week 2: Compile spreadsheet for math and iMovie for social studies
Week 3: Produce and publish information to class blog
Other than 10 minute daily warm ups, the majority of class time will be dedicated to this learning project.

Standards Assessed:

Content Standards
SS7E2b- Explain why international trade requires a system for exchanging currencies between nations.
SS7E3b - Explain the relationship between investment in capital (factories, machinery, and technology) and gross domestic product (GDP).
SS7E4 - The student will explain personal money management choices in terms of income, spending, credit, saving, and investing.
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SS7G8e - Evaluate how the literacy rate affects the standard of living.
MCC7.RP.3 - Use proportional relationships to solve multistep ratio and percent problems.
MCC7.RP.1 - Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units
MCC8.EE.5 – Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways

NETS – S
1. Creativity and innovation
Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.
a. Apply existing knowledge to generate new ideas, products, or processes
b. Create original works as a means of personal or group expression
d. Identify trends and forecast possibilities

2. Communication and collaboration
Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.
a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media
b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats
c. Develop cultural understanding and global awareness by engaging with learners of other cultures

3. Research and information fluency
Students apply digital tools to gather, evaluate, and use information.
a. Plan strategies to guide inquiry
b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media
c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks
d. Process data and report results

4. Critical thinking, problem solving, and decision making
Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.
a. Identify and define authentic problems and significant questions for investigation
b. Plan and manage activities to develop a solution or complete a project
c. Collect and analyze data to identify solutions and/or make informed decisions
d. Use multiple processes and diverse perspectives to explore alternative solutions

5. Digital citizenship
Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
a. Advocate and practice safe, legal, and responsible use of information and technology

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b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity

c. Demonstrate personal responsibility for lifelong learning

d. Exhibit leadership for digital citizenship

6. Technology operations and concepts
Students demonstrate a sound understanding of technology concepts, systems, and operations.

a. Understand and use technology systems
b. Select and use applications effectively and productively
c. Troubleshoot systems and applications
d. Transfer current knowledge to learning of new technologies

Learner Objectives:

As a result of this project, students will know how to calculate prices of vehicles including sales tax, currency conversion, and gas prices. They will be able to calculate the differences in price throughout the world based on the differences in sales tax, currency conversion, and gas prices. Students will know why prices vary in different parts of the world based on specific government and economic factors and they will be able to analyze the effects of OPEC. Students will be able to explain why international trade requires a system for exchanging currencies between nations.

The “hook” or Introduction:

Students will preview car commercials from dealerships around Georgia with prices included. They will participate in a discussion concerning the costs of the cars shown. Several guiding questions will be used such as: Are these prices fair? Which car do you think you could afford? What about the gas costs? Etc. Students will then view car commercials from around the world with prices included in the commercial. They will discuss similarities and differences between the commercials. Are the prices similar? What do you notice about the currency? Do you think the cost of gas is the same everywhere? This project should be interesting and motivating to the students because at this age (7th and 8th grade) many students are getting ready to get their learner’s permits and begin their driving adventure! They are curious about cost, and if obtaining a car is something they can manage in their near future.

Process:

Week 1: Research and gather information. In math, students will be researching, and exploring. The teacher will be a guide as well as a co-learner while students are exploring their countries of choice and calculating costs. At the end of the week, the teacher will assess the students’ blog posts as well as the student feedback providing suggestions for improvements. In social science, students will be investigating and analyzing relationships between their chosen country’s gross domestic product and factors that influence the country’s economy. Students will research and discuss ideas concerning personal money management choices. The teacher will serve as a guide, facilitator, and a co-learner while students are analyzing economical influences.

Monday:
- Math: Hook- Begin watching car commercials and discussing guiding questions as stated above in the “Hook section”. Students and teachers create the rubric that will be used to assess projects. Students begin research on cars in the U.S.

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- SS: Students collaborate on a ‘chalk talk’ listing initial thoughts on money management. The teacher will present the project overview and have students share thoughts on rubric. Students begin to research various countries to compare with the US. Before leaving class students will decide on the country they will inspect and compare for the project.

Tuesday:
- Math: Continue research on cars in the U.S. Students compile a list of questions they will be asking the expert from a local car dealership for a class Skype session.
- SS: Continue research on chosen country. Students will begin to investigate factors that influence the country’s government and economy, and how those factors impact citizens. Students need to start composing a list of ideas/connections as they continue research. Students will add initial predictions/thoughts about the project to the class blog. Students will be able to post final reflections at the end of the project to the blog.

Wednesday:
- Math: Skype session with expert from car dealership. Students ask their questions about prices, gas mileage, etc.
- SS: Students will explore the OPEC website and analyze how this organization impacts the US as well as their chosen country. Students will take this information back to their math class to help calculate the cost of gas for each country.

Thursday:
- Math: Students decide on their car of choice and use the answers they received from the Skype conversation with the expert and begin calculating sales tax, gas mileage, and cost of gas for their particular car in a given month using Excel.
- SS: Students will examine gross domestic products for the US and their chosen country. Students will analyze the relationship between investing in capital and how that influences GDP. Students will post blog reflection over their explanation as well as their thoughts on how this will impact the price of their vehicle.

Friday:
- Math: Finalize research and calculations. Students compose individual blog posts discussing their car of choice and their initial calculations. Students must read and respond to three other student’s posts correcting any errors and critiquing initial work.
- SS: Students will conclude research. Class will end with group discussions focused on sales tax and how to ensure sales tax is properly calculated between nations. This will lead to students’ blog post on why international trade requires a system for exchanging currencies.

Week 2: Continue research and begin compiling info for project In math, students will continue their roles as researchers and explorers as they begin exploring costs in their foreign countries. Students collaborate with each other by checking each other’s calculations and initial ideas for projects. The teacher will be a guide as well as a co-learner. At the end of the week, the teacher will assess students’ blog posts and discussions. In social science the students will create their iMovie over research findings from the week before. The teacher will serve as a guide and facilitator. The teacher will monitor the process of learning as well as providing explanations about iMovie when needed.

Monday:
- Math: Students respond to each other’s blog posts correcting calculation errors and critiquing initial work. Students then review the feedback from others and make any corrections to their initial projects.

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- SS: Students will be introduced to iMovie. They will begin to write their script from their research for the voiceover.

Tuesday:
- Math: Students continue to review the feedback from other students as well as input from the teacher. They continue making any corrections to their projects.
- SS: Students finish script for voiceover and start looking for pictures and videos to include in iMovie.

Wednesday:
- Math: Begin researching their chosen car in their foreign country of choice (decided upon in SS) and calculating sales tax, gas mileage, and cost of gas in that country using Excel. They will also factor in currency conversion.
- SS: Students will create voiceover for iMovie and add final touches.

Thursday:
- Math: Students finalize research and calculations using Excel.
- SS: Students will preview at least 3 other students’ iMovies to offer feedback and propose questions. Blog post will be completed focusing on benefits of incorporating iMovie and how their product will be beneficial to an outside audience.

Friday:
- Math: Students upload their spreadsheets to the class blog. Students review at least 3 other students’ spreadsheets offering feedback and posing questions. Students begin analyzing the differences in a countries tax rate, currency conversion and gas prices.
- SS: Students will make final edits and present iMovies to the class. All iMovies will be uploaded to the class blog as well as a short summary of the project.

Week 3: Publish products (spreadsheets and iMovie) to class blog: In math, students will collaborate with each other critiquing each other’s work and asking each other questions. Students will begin reflecting and answering questions from the hook section. The teacher will act as a guide and facilitator leading students thinking. At the end of the week, the teacher will assess the students’ blog discussions and spreadsheets using the rubric the students helped create. In social science the students will create their iMovie over research findings from the week before. The teacher will serve as a guide and facilitator. The teacher will monitor the process of learning as well as providing explanations about iMovie when needed. In social science students will create final blog posts and evaluate other students blog comments. Students will collaborate and explain their findings to others along with car salesman during the Skype session. The teacher will serve as a facilitator during blog reflections and Skype sessions.

Monday:
- Math: Students continue reviewing and analyzing other student's spreadsheets posing questions and offering feedback.
- SS: Students will create a blog post on what they have learned from the project.

Tuesday:
- Math: Students now review the feedback and questions posed from others and make responses and any necessary changes.
- SS: Students will read others’ blog posts and comment using the ABC format. Students will acknowledge something the peer said, build upon the statement, and comment back with a Socratic question. Students will respond to two other classmates.

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Wednesday:
- Math: Students will compile all of their individual spreadsheets into one large class spreadsheet that will then be uploaded to the class blog as well as school website.
- SS: Skype session with car expert allowing students to explain their findings/discoveries. Students will invite the expert to check out their blog posts in both math and social science as well as invite others to view their information.

Thursday:
- Math: Students will use the class spreadsheet to analyze the effects of tax rates, currency conversion, and gas prices on the overall cost of owning a car. Students will revisit the questions posed in the hook at the beginning of the project and have a class discussion about their findings.
  - Are these prices fair?
  - Which car do you think you could afford?
  - How does the cost of gas effect the overall price of owning a car?
  - Are the prices similar around the world?
  - What do you notice about the currency used in other parts of the world? Is it similar to the U.S?
  - Do you think the cost of gas is the same everywhere around the world?
- SS: Students will post final blog reflection about the project, which will include details of the previous Skype session.

Friday:
- Math: Students will post a final reflection on their calculations, discoveries, and overall experience with the project to the class blog. They will use the rubrics generated at the beginning of the project to assess 2 other students’ spreadsheets. They will explain if the price posted on the ticket of the car, really reflects what the overall cost of a car is.
- SS: Students will create a personal money management plan in terms of saving for their first vehicle now that they have all the information. Students now know what all lies behind the price tag. Students will also assess 2 other students’ iMovies based on the rubric generated at the beginning of the project.

Product:

Math: Students will produce a collaborative spreadsheet using Google Drive comparing sales tax, gas prices, and vehicle cost for their chosen country. The spreadsheet will also show the conversion rate between U.S. dollars and the currency of their country. Students will upload the spreadsheet to the class blog. Students will produce an analysis of why the prices between their chosen country and the U.S differ. These calculations will help influence the ideas for their iMovie in social studies.

Social Science: Students will produce an iMovie explaining why there needs to be a system for trade/currency exchange, how their chosen country’s GDP affects the price of goods, and their ideas of how they will manage their money. Students will share their iMovie through the class blog. Other middle school students and parents will be anxious to how many factors play a role in the price of a vehicle.

Assessment: With assistance from the teachers, the students will generate a rubric in each class consisting of five categories they feel they should be assessed on. Each student will be responsible for evaluating two other groups’ products.

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Technology Use:

- **Laptops** – The laptops allow the project to be student directed.
  - Internet (see reference section below)
    - Student Directed: Research emerges from questions posed by students. Students may generate new questions/ideas as they continue researching on their own.
    - Multidisciplinary: Students’ research must integrate both mathematical and social science knowledge to find information to solve problems and address issues.
    - Culturally Responsive: Incorporates students’ cultural knowledge which makes learning more appropriate for each individual student
    - Student Role: Students will peruse new ideas through research that they will compile and publish through their math and social science products. Students will be able to inform each other of their findings.
      - Explorer
      - Teacher
      - Producer
  - Teacher Role: The teacher will learn through the students’ research of unknown questions.
    - Co-learner/Co-investigator

- **Excel**
  - Authentic/meaningful: Allows students to participate in real life/simulated scenario by taking on an adult role that professionals use in their daily lives.
  - Student Directed: Requires students to take responsibility and make decisions related to their learning.
  - Student Role: Students explore new technological tools (Excel) while at the same time informing others of their discoveries and producing a spreadsheet
    - Explorer
    - Teacher
    - Producer
  - Teacher Role: Teachers will mediate and monitor students while working on their projects, redirecting as needed.
    - Facilitator
    - Guide
  - Collaborative: Students co-construct knowledge from multiple perspectives including each other and an outside expert (car salesman).
  - Assessments (Performance based): Students’ product will vary based on the unpredictable results that each student gathers. Students produce an excel spreadsheet that will be published for an outside audience and assessed by a rubric in which students helped generate. The rubrics will be given to students at the beginning of the project to help guide the instructional process.

- **iMovie**
  - Authentic/meaningful: Produce products for audiences that would use/care about the results.
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- Student Directed: Takes new and unexpected directions as new knowledge is discovered and processed.
- Culturally Responsive: Incorporates students’ cultural knowledge, which makes learning more appropriate for each individual student. Project is aligned based on their culturally influenced interests.
- Student Role: Students explore new technological tools (iMovie) while helping others as they create and develop their iMovie.
  - Explorer
  - Teacher
  - Producer
- Teacher Role: The teacher will monitor the process of learning as well as providing explanations when needed.
  - Facilitator
  - Guide
- Collaborative: Students will explain multiple perspectives while learning from others.
- Assessments (Performance based): Students will produce an iMovie to share and publish with an audience. iMovies will be assessed based upon a rubric in which students helped generate. The rubrics will be given to students at the beginning of the project to help guide the instructional process.

References and Supporting Material:
- **Opec Website**: Students will be able to explore the OPEC organization and gather daily data over the price of oil each day. Students will be able to see daily increases/decreases in the price of oil. Students will use this website to analyze data.
- **Brain Pop.com**: (Oil/OPEC video) Students will watch this short video clip to get them thinking about the need for international trade requiring a system for exchanging currency.
- **Oanda Currency conversion website**: Students will utilize this tool to help them convert between currencies accurately.
- **Skype**: Skype will be used as a whole class to connect with a car dealerships from the United States. Passive permission slips will be provided for parents to opt of the Skype sessions if needed. Skype sessions will be recorded so students who are not present may view the sessions on their own time.
- **Tax Rates Wikipedia Page**: Students will use this site to start their research on their chosen country. They will utilize the references at the bottom of the page to gather additional information
- **Kidblog.org**: Students will use this k-12 friendly blog website in the classroom to record and reflect on their discoveries and calculations
- **YouTube**: Students will view several car dealership commercials during the hook section to get them thinking about prices of different cars.
- **Rubric**: A rubric should be made to address specific classroom needs in both math and social science.

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References:


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