**Title of Project: Habitat for Humanity House Design Contest**

**Subject(s):** Math, Language Arts

**Grade Level(s):** Seventh

**Abstract:**

For this project, the students will take the role as a contractor to build a home for Habitat for Humanity. The students will work with a local contractor to create house plans and design the home. He needs the help of all seventh grade students in the county to create a low-cost, quality house. The design would include paint, flooring, and molding. The students will work in a group of three to complete the project. To complete the project, the students will create their house plans using online software, research and calculate prices for design materials, input design material prices into Excel spreadsheet, write an essay, and present plans to contractor. The student’s house plans must be 1300 to 1800 square feet and have 8 foot ceilings. The home must have three bedrooms, two bathrooms, a living room, kitchen, dining area, and laundry room. The contractor will pick one winning design from each class period for each teacher. From the winning house designs, the contractor will pick five final designs and those designs will be built for the Habitat for Humanity homes.

**Learner Description/Context:**

The students completing the project are a mixture of males and females. The ethnicity of the students is Caucasian, African American, and Hispanics. The students are from middle and low-income socioeconomic status. Many of the students participating in the project also qualify to receive free or reduced lunch. The classes completing the project are seventh grader math students from honors and inclusion math classes. The students in the inclusion classes will also have assistance from a special education teacher. During the project, the contractor will provide students with an overview of how to create and design house plans and show students examples of house plans with final pictures of homes, the students will use prior knowledge to complete a WebQuest on surface area, area, and perimeter, the teacher will present a tutorial on the house design software, and a tutorial on inputting data and how to calculate prices using Excel.

**Time Frame:**

The time frame for the project is 10 to 11 hours or 11-12 class periods.

1: Introduction to project, show video on Youtube- Habitat: What We Build; A local contractor will come to each class and show examples of home designs and pictures of finished products.

2: WebQuest; Surface Area, Area, and Perimeter to review concepts (WebQuest has not been developed-Will be developed before project begins)

3 – 4: Tutorial on creating house plans with online software, Use online software to create house plans (Contractor will check with each class and assist in developing plans)

5 – 7: Tutorial on using Excel, Use internet to research design material prices, input prices into Excel spreadsheet

8 - 9 : Use Microsoft Work to write essay about why the student would want to help Habitat for Humanity and persuade the contractor to pick their design (Contractor will meet with classes again to check progress of plans and essays)

10-11: Present plans and designs to contractor (include essay in presentation)

**Standards Assessed:**

**CCGPS**

* **MCC7.G.6** Solve real‐world and mathematical problems involving area, volume and surface area of two‐ and three‐dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.
* **MCC7.EE.3** Solve multi‐step real‐life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations as strategies to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.
* **ELACC7W1**: Write arguments to support claims with clear reasons and relevant evidence.

**ISTE NETS-S**

* **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**
* **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**
	+ **c. Develop cultural understanding and global awareness by engaging with learners of other cultures**
	+ **d. Contribute to project teams to produce original works or solve problems**
* **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.**
	+ **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**
* **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**
	+ **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**
* **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**
	+ **d. Transfer current knowledge to learning of new technologies**

***Learner Objectives:***

At the end of the engaged learning project, the students will be able to use area, surface area, and perimeter and apply these concepts to real-world applications. The students will be able to use each concept to calculate prices for design materials based on their home design. The project will be measured based on a rubric created by the teacher and the contractor will also choose a design of his chose from each class.

**The “hook” or Introduction**:

To “hook” the students into the engaged learning activity, the students will watch a video on Habitat for Humanity. The video will provide the students with a brief outlook of how poverty stricken families’ lives can be transformed with the help of Habitat for Humanity. The video also shows the construction of homes built by volunteers and the families. This project should motivate the students to want to help other families in the community by designing house plans for Habitat for Humanity to use. This project also provides the students with the opportunity to volunteer to help build the homes to help families in the community.

**Process:**

**Scenario:** A local contractor needs your help to design a home for Habitat for Humanity. The home needs to be a low-cost, quality home. Each home will need to have the interior painted, flooring installed, and molding installed. The home must be 1300 to 1800 square feet and have 8 foot ceilings. The design of each home must have three bedrooms, two bathrooms, a living room, kitchen, dining area, and laundry room. You will present your designs to the contractor and he will choose a winning design from each class period. The five top design choices from the entire school will be chosen by Habitat for Humanity to build five homes in the community.

**What you need to know:**

* This project will be completed in groups. The grouping of students will be chosen by Mrs. Brown.
* To complete this project, your group will be designing a home to present to the contractor along with an essay explaining why you want to help Habitat for Humanity and persuade the contractor to pick their design

Phase 1:

1. To complete your project, you will design a home using <http://www.homestyler.com>. The design must meet all the criteria provided by the contractor.
2. Using Area, Surface Area, or Perimeter:
	* + Calculate amount of materials needed for flooring
		+ Calculate amount of materials needed for painting each room
		+ Calculate amount of materials needed for molding
3. Search <http://www.lowes.com> or <http://www.homedepot.com> for design materials and record prices for chosen materials into an Excel spreadsheet
4. Into same Excel spreadsheet, enter calculated amounts for needed for flooring, paint, and molding

Phase 2:

1. Brainstorm with group members reasons why you want to help Habitat for Humanity and also persuade the contractor to pick your home design
2. Write a rough draft that has 5 paragraphs that includes what you brainstormed
3. Type your final draft of your essay into a Word document
* Your home design, amounts for design materials, and essay will be presented to the contractor and to Mrs. Brown.
* You will be graded on a rubric (rubric will be provided to students)

During the completion of the project, the teacher will serve as the facilitator. The local contractor will also meet twice during the completion of the project. I will be circulating between each group to assist and check for understanding. To assess the learning, the students will be required to check their answers with the teacher before they are allowed to go to the next phase.

**Product**:

The end-product will include the creation of house plans, Excel spreadsheet for prices needed for home designs, and essay. The product will be use by the local contractor to decide on house plans. The use of the house plans and designs will allow Habitat for Humanity to build 5 houses in the community. The product will be meaningful to the students, because at the end of the project the students will have a chance to have their designs chosen. Each student will also have a chance to volunteer to help build the homes during their summer break. For this project, the students will use technology to complete a WebQuest on surface area, area, and perimeter, build their home plans using online software, research internet for prices on materials for design, input prices into Microsoft Excel spreadsheet, and use Microsoft Word to write essay. The product will be assessed through the use of a rubric for grading project and essay. Each project will also be assessed by the contractor, who is going to decide on the final five house designs.

**Technology Use:**

The use of the internet and Microsoft Office is crucial in the completion of this project. The students have to use the internet to create their house designs and research prices and choices for their design materials. Word and Excel from Microsoft Office, allows the students to type their essay and input their design calculations and prices. These forms of technology allow the students to learn standards-based content and promote student-centered learning through the use of the home design software, Excel, and Word.

**References and Supporting Material**:

To develop this learning experience, the students need to use Home Styler (<http://www.homestyler.com>). The students will use the tool for the creation of the group’s home designs. To support student learning, the students will view the video, Habitat-What We Build, from YouTube (<http://www.youtube.com>). To complete the engaged learning project, I need to create a rubric for the project and WebQuest (The WebQuest has to be made).