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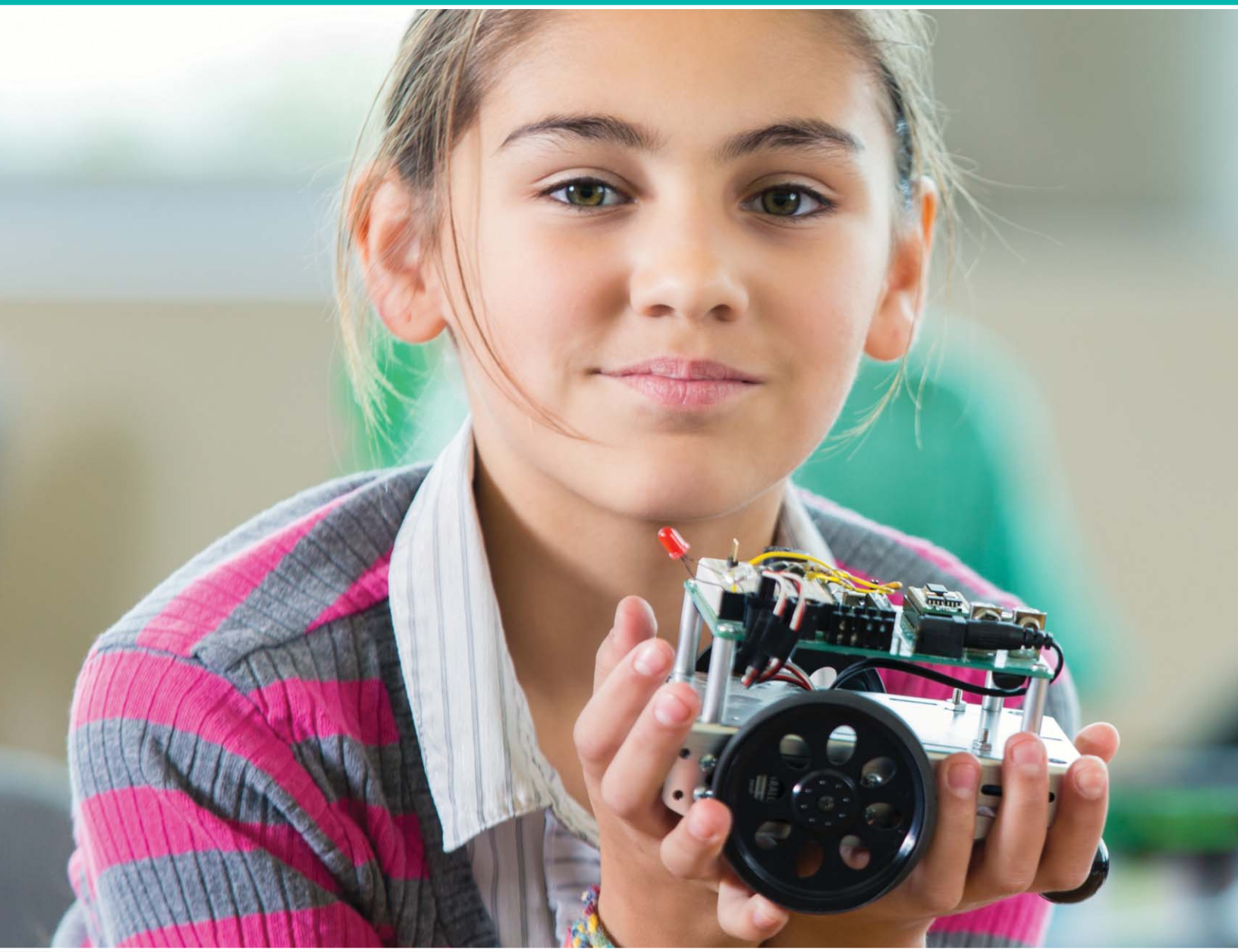

idea packet

Sponsored by:

Ford Motor Company Fund

Tiny House Off the Grid

“Tiny House, Off The Grid”

Interdisciplinary Unit

By

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Table of Contents

Goals and Objectives:

1.) Students will identify what tiny houses are and why they are a trend in today's society.
2.) Students will develop an efficient design plan through planning, construction and the exterior design for a tiny house.
3.) Student will create a scale model floor plan using graph paper, appropriate dimensions and square footage minimums and maximums.
4.) Students will plan a budget to keep concurrent to predicted expenditures for the cost of construction materials, and tiny home furnishings.
5.) Students will investigate alternative energy resources and the efficient use of alternatives for single family homes.
6.) Students will develop a greater awareness of conservations issues involved with water usage, and use a water system in the model.
7.) Students will practice the theoretical application of the three R's of minimizing waste, Reduce, Reuse, and Recycle.
8.) Students will identify practical and intelligent choices for food production through gardening, food sourcing, and self-sustainability for a minimum of three crop types.
9.) Students will design at least three pieces of multi-use furniture.
10.) Students will create a three dimensional model of the design plan for the "Tiny House Off the Grid" project.
11.) Students will develop a marketing sales plan for the "Tiny House".
12.) Students will prepare and deliver a multi-media presentation that highlights their "Tiny House" project.

Unit Overview and Outline

Who: This unit is taught to all classroom students, the electives teacher, social studies teacher, math teacher, language arts teacher, and also the science teacher plan together and expedite lessons. Support persons include library personnel, parents, YouTube videos, various web sites and professionals from the area of construction, building trades, architects, and environmental agencies.

What: This is an interdisciplinary unit that students work on for one full marking period. The basic tenants of the project focus on the "Tiny House", no more than 600 square feet of living space, a "mortgage" money borrowed over time and the interest on that loan, multifunctional furniture, Eco Friendly and environmentally friendly use of resources, and square footage as the unit of measurement represented in a scale equivalent. Students will incorporate skills that include but are not limited to critical thinking, public speaking, active listening, complex problem solving, judgment and decision making, and personal interpretation and application of concepts.

Guiding questions: "How big is your house, would you like it to be bigger or smaller", "How much space do you really need", "What could humans do in their homes to protect the environment", "What is a foot print on the Earth", "What is dependence on Big Box Stores", "What would folks do with more money and more time".

When: The Tiny House project can be adapted to various time lines. This project packet is set on a 9 week or a grading period guideline. The culminating activity is in either the second or third marking period thus giving students a reasonable amount of time to perfect the presentation, improve the model, and to be on a comfort level with the concept.

Where: The main focus of this project takes place in the classroom with fourteen class days dedicated to concepts required by the project. The project extends to the home in the real and practical construction of the actual "Tiny House" model. Finally, the culminating event, "The Tiny House Maker Fair" can be in the library or the cafeteria, or the school patio.

How: Emphasis from a teaching perspective should be placed on the fact that this is an entirely new, untraditional, and extremely progressive line of thinking. The initial introduction of the project will include becoming more familiar with what Tiny Houses are, how they function, and why they are becoming more popular in today's society. When introducing the project, include videos, examples, and how do demonstrations. Encourage students to involve their relatives and to work collaboratively with their peers. Teachers will use a rubric to grade various components of the project including but not limited to a.) Tiny House Blue print b.) The budget c.) Marketing Plan d.) Alternative energy poster e.) Gardening plan f.) Multi use furniture g.) Tiny House Model. Several other types of evaluations will include quizzes, Q and A session, peer reviews, and assignments from other teachers.

Why: The project provides an opportunity for students to take a practical look at the application of ideas regarding housing and concerning the environment. The question of "quality of life" comes into the equation of life style and alternative thinking in regards to the way we live and interact with the planet. The focus for this project is quality not quantity. While using engineering and efficient design principals' students can learn what the dependence on "Big Box Stores" means to our economy and to the "band wagon" mentality. The large concepts that are addressed in this guided set of activities are energy alternatives, sustainable water resources, self-sustainability regarding food and minimizing waste.

Plans for lessons

Tiny House: Off the Grid

Background knowledge:

Develop a power point presentation that explains Tiny Houses, includes pictures of Tiny Houses, explains the function of Tiny Houses and explains why they are becoming more popular. Have students investigate web sites for Tiny Houses and end with a class discussion on these points. Questions for discussion can include, what advantages and disadvantages are there to living in a Tiny House? How can people reduce, and more importantly reuse and recycle trash and garbage? Is "Bigger" always better?

Evaluation:

Various components of the project can be graded. Those include but are not limited to the design plan, the floor plan, the budget, eco-friendly components for utilities or garbage handling or water systems or the marketing plan or the 3D model or the presentation or the multi-use furniture design or the gardening plan.

Criteria for grading

Design Plan

Size, scale, materials list, budget

Please see attached sheets for student hand-out.

Floor Plan

Scale drawing, measurements, window and door placement, storage opportunities, square footage and room dimensions, labeling, and this must include a living space, a bedroom space, a kitchen, a bathroom, and storage.

Have students use graph paper for this component.

Materials budget

Estimated cost, a list of supplies, tools, equipment, fixtures and appliances

See attachment for student hand out.

Marketing Promotion Presentation

Multimedia, timing, eye contact, completeness, slogan, brochure, target audience, pricing, and uniqueness.

See attachment for student hand-out.

3D Model

Neatness, attractiveness, completion, conform to plan, inclusive of all required components, stable structure, portability.

Requirements include method of water collection

A plan for getting rid of garbage and trash

Intelligent choices for the process, production and harvesting of three food crops

A design for three pieces of multi-use furniture

See attached worksheets.

NOTES AND PRIOR KNOWLEDGE

Before beginning the project students can be introduced to the concept by investigating and developing answers to the following set of fill in the blank questions and statements.

Tiny Houses? What are they?

1.) People in this movement are trying to _____ their living space.
2.) A normal house has _____ square feet, a Tiny House has _____ square feet.
3.) Tiny Houses come in many _____, and _____.
4.) Find the three top reasons that people would choose to live in a “Tiny House”
5.) Find out four facts about “Tiny House” people
6.) What materials do people use to build “Tiny Houses”?
7.) People can buy or build a “Tiny House”. If you build it would be necessary to make or buy a _____.
8.) Tiny Houses can be built on the home a site or _____ to the site.

9.) Tiny House interiors are designed and may include many elements but the most common elements of Tiny House interior design are _____, and _____, and _____.

10.) A common objective of Tiny Houses is to be "Eco Friendly". How would Tiny Houses contribute to environmental sustainability? Please give three or four examples of Eco Friendly systems that could be used in a Tiny House Site.

Answers:

1.) Minimize

2.) 1,200 – 1,600 200 – 800

3.) Sizes and shapes

4.) Cost effective, smaller foot print, more time for other activities

5.) They are progressive, they do not depend on big box stores, they are interested in conserving, they can live a minimal life style

6.) Anything that is air and water tight

7.) Good Plan

8.) Be moved

9.) Small, multiuse, make use of every inch

10.) Many answers apply here

The following lesson plans from the internet give additional support to investigating alternative energy sources and also an in depth look at water sources and how this applies to the concept of a "Tiny House".

http://www.pbs.org/newshour/extra/lessons_plans/exploring-alternative-energy-sources/

http://www.pbs.org/newshour/extra/lessons_plans/understanding-your-water-from-source-to-tap-and-back-again/

Interdisciplinary Correlations

English, Language Arts, Reading

Research/ Gathering Sources

LAFS.68.RST.2.6

Organize information

LAFS.68.WHST.2.6

Research/Synthesize Information

LAFS.68.RST.3.7

Evaluate the Relevance of information to the topic

LAFS.7.SL.2.4

Research/Organize Ideas and present the ideas for a specific purpose

LAFS.68.RST.1.3

Use graphics and illustrations to explain concepts

LAFS.68.RST.3.7

Reading

Extend vocabulary

LAFS.7.RI.4

Determine word meanings

LAFS.7.RI.4

Use strategies to comprehend text

LAFS.7.RI.1

Summarize by using main ideas and relevant details

LAFS.7.RI.3

Increase fluency and understanding

LAFS.7.RI.2

Mathematics

Apply mathematical reasoning to everyday problems

MAFS.7.SP.1.1

Use a problem solving model

MAFS.K12.MP.1.1

Formulate a plan or strategy, determine a solution, justify the solution

MAFS.K12.MP.1.1

Use manipulates, paper and pencil, technology, mental math, estimation

MAFS.7.G.1.2

Use similarity, symmetry, perspective

MAFS.7.G.1.2

Use scale with two and three dimensional objects

MAFS.7.G.1.1

Science

Experience the design process

SC.68.CS.CS.2.2

Recognize that different materials have different purposes

SC.7.P.11.2

Understand the link between recycling and sustainability

SC.7.E.6.6

Develop new uses for discarded trash

SC.68.CS-CS.1.3

Develop a model to describe the arrangement of objects

SC.68.CS-CS.1.4

Construct, use and present arguments

SC.68.CS-CP.3.3

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APPLY FOR AN IMPACT II ADAPTER GRANT!

M-DCPS teachers, media specialists, counselors or assistant principals may request funds to implement an IMPACT II idea, teaching strategy or project from the Idea EXPO workshops and/or curriculum ideas profiled annually in the ***Ideas with IMPACT*** catalogs from 1990 to the current year, 2016-17. Most catalogs can be viewed at The Education Fund website at www.educationfund.org.

- Open to all K-12 M-DCPS teachers, counselors, media specialists
- Quick and easy reporting requirements
- Grants range from $150 - $400
- Grant recipients recognized at an Awards Reception

To apply, you must contact the teacher who developed the idea before submitting your application. Contact can be made by attending a workshop given by the disseminator, communicating via email or telephone, by visiting the disseminator in their classroom, or by having the disseminator visit your classroom.

Project funds are to be spent within the current school year or an extension may be requested. An expense report with receipts is required by Friday, May 5, 2017.

APPLICATION DEADLINE:
Monday, December 12, 2016

Apply online at www.educationfund.org

For more information, contact:
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