

# TERRA MINI-GRANT APPLICATION

## 2013-2014 SCHOOL YEAR

**The Technology Education Resource & Redesign Alliance (TERRA)** is a non-profit organization whose mission is to mobilize the resources, knowledge, and capacity of individuals, foundations, business and industry in shaping and facilitating educational policy, practice, and research for increased achievement in a global environment.

**What this funds:** TERRA's Mini-Grants are intended to support school-based projects in pre-K through 12 that are consistent with TERRA's mission, and have a positive impact on education by using technology. These grants should fund initiatives that utilize technology in a new and innovative way or sustainability initiatives seeking to encourage and support creative, local environmental education and stewardship activities.

**Who can Apply:** Florida public, charter, and private schools and educators are eligible to apply.

**Amount awarded:** A total of \$30,000 will be made available for a limited number of awards ranging from \$500 to \$3,000. Grant applications may be submitted for the 2014/2015 school year from September 1st through midnight October 3rd, 2014. The TERRA Grant Committee will review proposals and make funding recommendations to the TERRA Board of Directors.

**What we are looking for:** TERRA seeks applications for projects in which students participate in learning experiences that utilize technology in an innovative way or promotes environmental sustainability. **Funding is intended to encourage and support creative activities that build on the unique assets and strengths of individual education communities.** As part of this project, individuals receiving awards will be required to share what they learn with the broader community through outreach such as public events, presentations and displays and/or media engagement. Preference will be given to projects with matching funds or in-kind services.

### Details:

- **The deadline for the 2014-15 school year is October 3, 2014. Applications received after this date will not be considered.**
- Financial assistance is limited to \$3,000 per school, per year.
- Grantees will be required to provide ongoing feedback of grant activities, documentation of their project, including a financial report of how money was spent, at least 5 high-resolution digital photos (including publicity releases), and a short reporting form.
- The Teacher/Applicant listed is whom we will contact regarding your application.
- Inquiries should be submitted via email to: [grants@terraonline.org](mailto:grants@terraonline.org).

### Application Instructions:

- To apply, please submit this completed form by October 3, 2014.
- Fill out the form completely
- Gather appropriate signatures. Applications without signatures will not be considered.
- Submit signed proposal via e-mail to [grants@terraonline.org](mailto:grants@terraonline.org) with your school name contained in the filename.
- We will confirm receipt of your application within 2 weeks via email. If you have not heard from us, please contact us at [grants@terraonline.org](mailto:grants@terraonline.org). Awards will be sent within one month of application submission.

# TERRA MINI-GRANT APPLICATION 2013-2014 SCHOOL YEAR

## A. SCHOOL AND APPLICANT INFORMATION

<b>Submission Date:</b>	10/3/2014	<b>School Year:</b>	2014-2015
<b>School Name:</b>	Maniscalco Elementary School		
<b>Applicant Name:</b>	Alison Rizzo		
<b>Principal Name:</b>	Tammy Reale		
<b>County:</b>	Hillsborough		
<b>Type of School:</b>	<input checked="" type="radio"/> Public <input type="radio"/> Private <input type="radio"/> Charter		
<b>Student Enrollment:</b>	526	<b>Number of Teachers:</b>	45
<b>Range of Grade Levels at School:</b>	Pre-K-5	<b>% Eligible for Free/Reduced Lunch:</b>	56%
<b>Applicant's Phone #(s):</b>	<b>Schools Main #</b> (813) 949-0337	<b>Direct # (ext. or cell)</b>	(813) 966-0922
<b>Applicant's Email Address:</b>	alison.rizzo@sdhc.k12.fl.us		
<b>Applicant's Affiliation to School/Organization</b>	Gifted Teacher		
<b>If Applicant is a Teacher, please list:</b>	<b>Teacher's Grade Level(s):</b> K-5	<b>Teacher's Subject(s) Area:</b>	All
<b>If Parent/Community Volunteer or Other non-school staff, please list School Contact as a Co-Applicant:</b>	<b>Co-Applicant Name:</b> Christina Zook	<b>Co-Applicant Affiliation to School/Organization:</b>	Teacher
<b>If Co-Applicant is a Teacher, please list:</b>	<b>Teacher's Grade Level(s):</b> 5	<b>Teacher's Subject Area(s):</b>	Math/ Science

## B. PROGRAM INFORMATION

<b>Please list the focus area(s) for this TERRA Mini-Grant request.</b>	Technology	Science (Structures, Hurricanes, Plants, Drip Irrigation, Biomimicry)	Research
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## C. PROJECT INFORMATION

<b>Project Title:</b>	STEM: Research and Florida Design Challenge		
<b>Project Start Date:</b>	January 2015	<b>Project End Date:</b>	June 2015
<b># of Students Participating:</b>	80 per year	<b>Grade Levels of Students Participating:</b>	5
<b>Mini-Grant Abstract (300 word max):</b>	Briefly describe what your proposed project is about. Abstracts of winning proposal will be viewable at <a href="http://www.terraonline.org">www.terraonline.org</a>		
*please see attached			

## TERRA MINI-GRANT APPLICATION 2013-2014 SCHOOL YEAR

### Mini-Grant Project Proposal (1500 word max)

Please explain how your proposed project/activity will enhance learning for your students. Include the following:

- 1) How is your project innovative? (25 points)
- 2) How will it fit into your curriculum (include standards)? (10 points)
- 3) How will it encourage long-lasting change in your classroom, school or community? (20 points)
- 4) How will technology be utilized? (20 points)
- 5) What evidence will you collect to show student gain? (10 points)
- 6) How will participants share your project results with the community? (15 points)

\*Please see attached

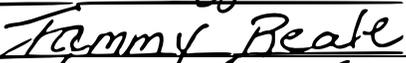
### D. BUDGET: Describe all costs associated with your project activity. (Attach additional pages if necessary)

Service/Item Description	Cost
iPad Mini 16GB Wi-Fi (\$279+\$99 Applecare= \$378 x 7 devices total)	\$ 2646.00
Survivor All-Terrain Case and Stand (\$22.50 each x 7 total)	\$ 157.50
TechArmor iPad Mini Screen protectors 3-pack (\$8.95 each x 3 packs)	\$ 26.85
<b>Total Cost of Project</b>	<b>\$ 2830.35</b>
<b>Amount requested from TERRA:</b>	<b>\$ 2830.35</b>
<b>If matching/additional funds have been identified to help pay for your project, please list →</b>	<b>Source:</b>
	<b>Amount: \$</b>
<b>If any goods or services have been donated for this project, please list →</b>	<b>Source:</b>
	<b>Goods/Services:</b>

### E. COMMITMENT

By submitting this application and signing below, you agree to the following:

- TERRA is not liable for any injuries or losses that may occur as a result of participation in the proposed project.
- The applicant is responsible for submitting required documentation via e-mail to TERRA including on going updates, financial report, high-resolution digital photos (and media releases) that are cleared for use in TERRA's outreach materials, and any mini-grant project-related lessons developed. A short reporting form will be sent to schools when awards are made.
- Schools that do not submit reporting documentation materials automatically waive this remaining 10% and may jeopardize future funding opportunities.
- Equipment purchased using mini-grant funds will become the property of the school receiving funds.

<b>Applicant's Name:</b>	Alison Rizzo		
<b>Applicant's Signature:</b>		<b>Date:</b>	10/3/2014
<b>School Administrator/ Principal's Name:</b>			
<b>School Administrator/ Principal's Signature</b>		<b>Date:</b>	10/3/2014
<b>School Address (for mailing of award)</b>	Maniscalco Elementary School: 939 DeBuel Road, Lutz, FL 33549		

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### **Abstract:**

Our project is incorporating technology and the STEM Design Challenge process. It will encourage students to make better scientific connections. Independent research will help them make better inferences which will, in turn, help them to make evidenced based design decisions. Linking the lessons to topics about Florida will increase student interest and motivations as well as increase student awareness of the delicate Florida ecosystem.

Our project will encourage long-lasting change by placing technology in the hands of the students who, otherwise, don't have access to it. Many of our students who do have tablet technology available are unaware of the benefits of using them for educational purposes including gathering, sharing, and creating information. By exposing students to these experiences they will learn to use technology in a more purposeful and academic way.

#### Design Challenge Overview:

- **Problem/Challenge**
- **Brainstorm and Investigate**
- **Plan and Design**
- **Build and Test**
- **Collect and Analyze Data**
- **Reflect and Improve**
- **Evaluate and Justify**

#### Weather & Structures Lesson:

Objective: Students will design a structure that can withstand the wind field from an approaching hurricane.

Focus: Forces, Model Building

Essential Question:

- How can we help minimize wind damage to structures within the path of a hurricane?

#### Biomimicry Lesson:

Objective: Design and build a device that solves human problems using biomimicry.

Focus: Animals, Model Building

Essential Questions:

- How do organisms adapt to changes in the environment?
- How do adaptations help plants and animals compete?
- How do adaptations help plants and animals survive in different environments?

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- How can we design a device to solve a human problem using the ideas of biomimicry?

### **Drip Irrigation Lesson:**

Objective: Design and build a drip irrigation system

Focus: Plants, Model Building

Essential Questions:

- How do changes in the environment affect plants and animals?
- How can we design a drip irrigation system that will water crops efficiently?

## Mini-Grant Project Proposal

Q1. Our project is incorporating technology and the STEM Design Challenge process. It will encourage students to make better scientific connections. Independent research will help them make better inferences which will, in turn, help them to make evidenced based design decisions. Linking the lessons to topics about Florida will increase student interest and motivations as well as increase student awareness of the delicate Florida ecosystem.

### Design Challenge Overview:

- **Problem/Challenge:** You or your team will be given a Problem/Challenge to solve.
- **Brainstorm and Investigate:** Your team will brainstorm possible solutions to the Problem or Challenge and explain the pros and cons of each possible solution.
- **Plan and Design:** Sketch a blueprint of the solution you feel is best. Plan how you will build your design.
- **Build and Test:** Your team will now use your plan or design to build and test your solution. Start collecting data as you test.
- **Collect and Analyze Data:** Create some type of data chart to collect data throughout your trials. Analyze the data.
- **Reflect and Improve:** Was it the best solution? Would one of the other ideas have been better? Why or Why not? What would you have done differently? How would you improve your design?
- **Evaluate and Justify:** Discuss your findings with the other engineers in the classroom. Draw a conclusion using your data to justify your thoughts.
- \*Use the data and collected observations to design and test a NEW prototype.\*

### Weather and Structures Lesson:

Objective: Students will design a structure that can withstand the wind field from an approaching hurricane.

Focus: Forces, Model Building

Essential Question:

- How can we help to minimize wind damage to structures within the path of a hurricane?

### Biomimicry Lesson:

Objective: Design and build a device that solves a human problem using biomimicry.

Focus: Animals, Model Building

Essential Questions:

- How do organisms adapt to changes in the environment?
- How do adaptations help plants and animals compete?

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- How do adaptations help plants and animals survive in different environments?
- How can we design a device to solve a human problem using the ideas of biomimicry?

### Drip Irrigation Lesson:

Objective: Design and build a drip irrigation system

Focus: Plants, Model Building

### Essential Questions:

- How do changes in the environment affect plants and animals?
- How can we design a drip irrigation system that will water crops efficiently?

Q2. The new Florida Standards require students to use technology and create presentations based on research.

1. **LAFS.5.RI.3.7**- Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.
2. **LAFS.5.RI.3.9** - Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.
3. **LAFS.5.RI.4.10** -By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 4–5 text complexity band independently and proficiently.
4. **LAFS.5.W.1.2** - Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
  1. Introduce a topic clearly, provide a general observation and focus, and group related information logically; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.
  2. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.
  3. Link ideas within and across categories of information using words, phrases, and clauses (e.g., in contrast, especially).
  4. Use precise language and domain-specific vocabulary to inform about or explain the topic.
  5. Provide a concluding statement or section related to the information or explanation presented.
5. **LAFS.5.W.2.4**- Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)

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6. **LAFS.5.W.2.5**- With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
7. **LAFS.5.W.2.6**- With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of two pages
8. **LAFS.5.W.3.7**- Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.
9. **LAFS.5.W.3.8**- Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.
10. **LAFS.5.SL.2.5** - Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes.

### NGSSS in Science

1. **SC.5.N.1.1** - Define a problem, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types such as: systematic observations, experiments requiring the identification of variables, collecting and organizing data, interpreting data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
2. **SC.5.N.2.1** - Recognize and explain that science is grounded in empirical observations that are testable; explanation must always be linked with evidence.
3. **SC.5.E.7.2** Recognize that the ocean is an integral part of the water cycle and is connected to all of Earth's water reservoirs via evaporation and precipitation process
4. **SC.5.P.13.1** - Identify familiar forces that cause objects to move, such as pushes or pulls, including gravity acting on falling objects.
5. **SC.5.P.13.2** - Investigate and describe that the greater the force applied to it, the greater the change in motion of a given object.
6. **SC.5.L.15.1** - Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while others die or move to new locations.
7. **SC.5.L.17.1** - Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycles variations, animal behaviors and physical characteristics.

Q3.

### Classroom:

Our project will encourage long-lasting change by placing technology in the hands of the students who, otherwise, don't have access to it. Many of our students who do have tablet technology available are unaware of the benefits of using them for educational purposes including gathering, sharing, and creating information. By exposing students

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to these experiences they will learn to use technology in a more purposeful and academic way.

### School:

In carrying out our class project and sharing results school wide we will be creating a community where information is valued and collaboration is key to student success.

### Community:

Our project will encourage change in our community because students will carry knowledge home with them and spark conversations about uses of technology as a vehicle to share information with an authentic audience.

The hope is that some families will be inspired to make long-lasting changes at home regarding the issues at hand such as severe weather, water conservation, and looking to nature for design inspiration.

Q4. By using technology the learning experience will be enhanced because more up-to-date and varied informational texts will be available to students for research. Students will also create rich content-based products and presentations.

A recent study conducted by Matthew H. Schneps (et al.) suggests that, "Tablets could aid the study of many scientific concepts that are difficult to grasp, such as distance, time, and other large-scale subjects. These occur in the study of geologic time; the size and age of the universe; the timeframe of biological mutation and evolution; and so on."

\*\*See NASA Visualization Application below\*\*

<http://news.nationalgeographic.com/news/2013/12/131210-ipad-learning-education-space-science/>

<http://www.sciencedirect.com/science/article/pii/S0360131513002534>

### Technology Integration Breakdown:

Application	Use	Weather and Structures	Biomimicry	Drip Irrigation
Safari \$0	Independent research, focusing on locating credible sites	Y	Y	Y
Notes \$0	Word processor to record field notes	Y	Y	Y

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Pages \$0	Word processor to record field notes and draft research papers	Y	Y	Y
Numbers \$0	Create data charts	Y	Y	Y
iMovie \$0	Create slideshows/ movies of design process and findings	Y	Y	Y
NASA Visualization Explorer \$0	NASA Satellite images, simulations and videos	Y Seeing Inside A Storm, El Nino Watch, Visualizing Big Data (Typhoons)		Y Mapping soil moisture, The Three Percent (Freshwater)
The Weather Channel \$0	View current weather, radar, news and video	Y		
Hurricane by American Red Cross \$0	Hurricane tracker	Y		
Tiny PDF	Read and annotate on articles related to topics	Y	Y	Y
Nearpod \$0	Interactive presentation program with polls, galleries, and ability to embed videos	Y	Y	Y
Padlet \$0	Online bulletin board used to elicit multiple student responses	Y	Y	Y
myON \$0	E-book library for Hillsborough	Y	Y	
Wind Tunnel	Wind tunnel simulator	Y		

Q5. We will use previous years FCAT data in science and ELA and future data from the FSA. District formative assessments, administered three times yearly, will also be used.

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Q6. Information will be shared through the school website and school leaning nights. Students will have the opportunity to share their STEM designs and the process they went through. Student will share research projects and presentations to an authentic audience, focusing on how their research influenced and enhanced their designs.