TERRA MINI-GRANT APPLICATION
2015-2016 SCHOOL YEAR

The Technology Education Research & 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 grades 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 $50,000 will be made available for a limited number of awards ranging from $500 to $3,000. Grant applications may be submitted for the 2015-2016 school year by midnight September 30, 2015. 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, individual 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 2015-2016 school year is September 30, 2015. Applications received after this date will not be considered.**
- Financial assistance is limited to $3,000 per school, per year.
- Grants will be made to schools to fund the project specified in the proposal.
- Grantees will be required to submit an interim report and a final report using an electronic form provided by TERRA.
- The Teacher/Applicant listed is whom we will contact regarding your application.
- Inquiries should be submitted via email to: grants@terraonline.org.

Application Instructions:

- To apply, please submit this completed form by September 30, 2015.
- 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 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. Awards will be sent within one month of application deadline.

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A. SCHOOL AND APPLICANT INFORMATION

Submission Date:	9/28/2015	**School Year:** 2015-2016
School Name:	Greco Middle School	
Type of School:	X **Public** o **Private** o **Charter**	
Student Enrollment:	865	**Number of Teachers:** 95
Range of Grade Levels at School:	**6-8**	**% Eligible for Free/Reduced Lunch: 90**
School Mailing Address:	6925 E Fowler Ave	Temple Terrace, FL 33617
County:	Hillsborough	
Principal Name:	Olayinka Alege	
Principal's Email Address:	Olayinka.alege@sdhc.k12.fl.us	
Applicant Name:	Elizabeth Simpson	
Applicant's Phone #(s):	**Schools Main #813-987-6926**	**Direct # (ext. or cell)813-486-6737**
Applicant's Email Address:	**Elizabethe.simpson@sdhc.k12.fl.us**	
Applicant's Affiliation to School/Organization	**Lead Teacher**	
If Applicant is a Teacher, please list:	**Teacher's Grade Level(s):**	**Teacher's Subject(s) Area:**
If Parent/Community Volunteer or Other non-school staff, please list School Contact as a Co-Applicant:	**Co-Applicant Name:**	**Co-Applicant Affiliation to School/Organization:**
If Co-Applicant is a Teacher, please list:	**Teacher's Grade Level(s):**	**Teacher's Subject Area(s):**

B. PROGRAM INFORMATION

Please list the focus area(s) for this TERRA Mini-Grant request.	STEM Academy Engineering Course Project Supplies			

C. PROJECT INFORMATION

Project Title: Learning Fluid Power with Robotics	
Project Start Date: 1/15/2016	**Project End Date:** 3/15/2016
# of Students Participating: 44	**Grade Levels of Students Participating:** 8th

Mini-Grant Abstract (300 word max):
Briefly describe what your proposed project is about. Abstracts of winning proposal will be viewable at www.terraonline.org

This project will support the Engineering STEM Academy students and teachers with supplies needed to enhance planned projects and activities. The Engineering STEM Academy is an advanced program for students who are interested in a career in the Science, Technology, Engineering or Mathematics field of study. Students who complete the program in middle school will go to high school having already achieved credits in high school level courses. It is an attempt to introduce students to science/engineering career pathways early in life to encourage them to continue their interest through high school and into college.

Students experience learning through integrated curriculum activities that incorporate various subject areas. They make connections to ideas across classrooms and subjects which creates a learning experience which lasts a lifetime. Our projects are problem based and have students solving complex engineering problems. The funds received by this grant will help out with an 8th grade project in the High School credit Engineering Technology

course that all 8th graders in the program take. They will build and explore manufacturing, fluide power, hydraulic systems, simple machines, robotics, programming and mechanical engineering through the T-bott Robotic system. Students will work in teams to use the robot to explore these concepts during their class period for about 2 months during the 2nd semester of the 2015-2016 school year.

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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)*

Teaching engineering at the middle school level creates pathways for students to explore their options for future careers at an early age. They can make informed decisions about what high schools or advanced programs they want to get into to meet their goals. Innovation in the engineering class comes from the choices of projects that are offered to students. It is very important that students are able to explore current engineering challenges so that the topics are relevant. Rigorous work is combined with the engineering challenges that make connections to other subject areas. This type of learning experience creates lasting connections for students and encourages them to become lifelong learners. Each project gives the students a unique experience to study a different area of technology and experience real skills in the field of engineering. Learning through use of hydraulic robotics is a great way to fulfill these important program ideals, while providing students with fun learning activities.

My curriculum is based on technology education state standards. The projects will be used with the 8th grade high school credit course engineering technology I. The following are the standards associated for each project that will be funded with this grant.

Engineering Technology I – Hydraulic Robots

This unit starts with an introduction to manufacturing processes. Students explore the role of manufacturing, assembly lines and how robotics has changed modern manufacturing. Students then build the T-bott Robotic arm. They identify the simple machines that make up the robotic arm and explain how they are used. Then they begin to use the arm like a real hydraulic robot in a manufacturing environment. They create a Cartesian coordinate plan to use as a guide for programming their robot arm. They create a program to complete a task and then peer evaluate the effectiveness of the program and its ability to perform the task. The standards that these lessons alight with are:

02.0 Methods and strategies for using Florida Standards for grades 09-10 writing in Technical Subjects for student success in Engineering Technology.
03.0 Methods and strategies for using Florida Standards for grades 09-10 Mathematical Practices in Technical Subjects for student success in Engineering Technology.
06.0 Demonstrate an understanding of the relationships among technologies and the connection between technology and other fields of study.
10.0 Demonstrate an understanding of the influence of technology on history.
13.0 Demonstrate an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.
15.0 Demonstrate the abilities to use and maintain technological products and systems.
16.0 Demonstrate the abilities to assess the impact of products and systems.
22.0 Demonstrate an understanding of and be able to select and use manufacturing technologies.
24.0 Demonstrate safe and appropriate use of tools and machines in engineering technology.

In the short term the projects served with this grant build pride and excitement for students about their class and school. Our academy is designed to attract students from the community to our school. Projects such as the hydraulic robots gives the student's opportunities to learn in an fun way, they take that excitement home and parents hear about the exciting way their students are learning. We have received many accolades for our program but the word of mouth press that our parents and students give when they talk about projects like these is the best advertisement of all.

Technology is used throughout the lessons that will be experienced by the students with these projects. Students will use the computer and internet to do research in the activities building up to the hands on projects.

Each unit of study that these projects are part of has a pre and post test to determine what gains the students have made. Additionally each project has a grading rubric that students receive at the beginning of the lesson along with the design requirements, criteria and constraints. Grading rubrics evaluate categories such as construction techniques, following the criteria, having a working solution, collaboration with team members and application of engineering concepts.

Our STEM Engineering Academy participates in many community events where we display student work to the public. We also take project to the Engineering Expo at USF. We have marketing, open house and other events where parents and community member are able to see student work. These projects as well as others will be on display that all of these events to show the community how many exciting opportunities are offered through the engineering class in our academy. Each year we participate in the USF Wissa Civil Engineering lecture and have an activities booth where the engineers experience some of the projects our students produce. The hydraulic robots would be a perfect addition to our booth to allow the engineers to experience some of the learning concepts covered by 8th grade students in our program.

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Hands on learning creates lifelong learners and this is the perfect project to demonstrate this fact. Please consider funding this project for the 8th graders at the Greco Middle School Engineering STEM Academy.

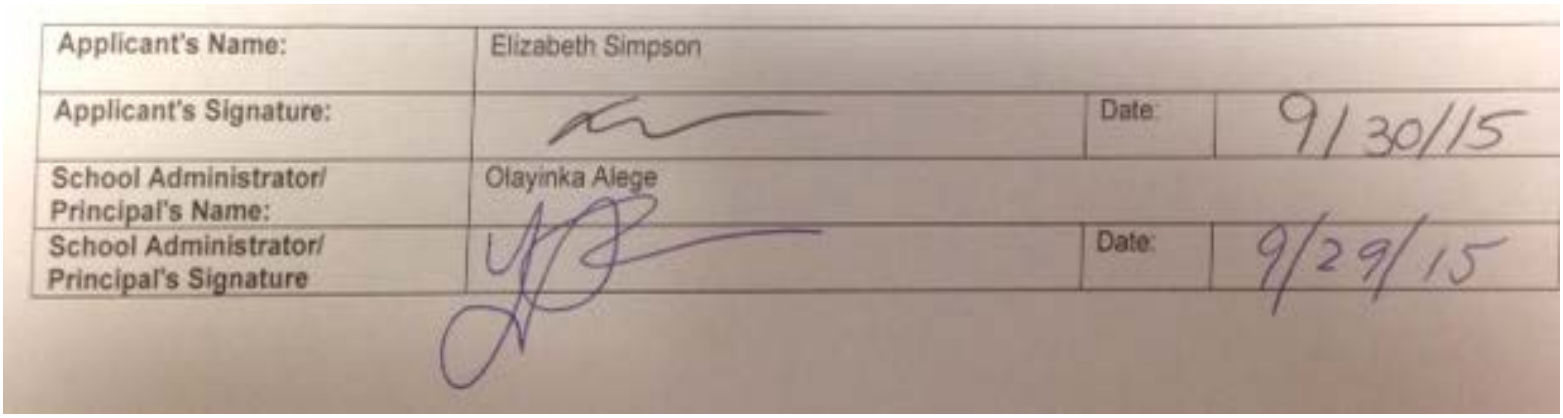
D. BUDGET: Describe all costs associated with your project activity. (*Attach additional pages if necessary)*

Service/Item Description	**Cost**
T-Bott Hydraulic Arm	$735.00
	$
	$
Total Cost of Project	**$**735.00
Amount requested from TERRA:	**$735.00**
If matching/additional funds have been identified to help pay for your project, please list ➔	**Source:**
	Amount: $
If any goods or services have been donated for this project, please list ➔	**Source:**
	Goods/Services:

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 an interim report and a final report using an electronic form provided by TERRA Schools that do not submit an interim report and a final report will not be eligible for future funding opportunities.
- Equipment purchased using mini-grant funds will become the property of the school receiving funds.



Applicant's Name:	Elizabeth Simpson		
Applicant's Signature:		Date:	9/30/15
School Administrator/ Principal's Name:	Olayinka Alege		
School Administrator/ Principal's Signature		Date:	9/29/15