**INSTRUCTIONAL TECHNOLOGY GRANT PROPOSAL**

**Name of Applicant:** Angelica Garcia

**District/School:** Whitfield County Schools/Dug Gap Elementary

**Date:** April 22, 2019

**Total Cost of Project:**

**Title of Project:** STEAM THROUGH MAKERSPACES

**To what organization will you submit this grant application in the future?:**

## GEORGIA EDUCATIONAL TECHNOLOGY CONSORTIUM (GAETC) - Innovation Grant

1. **Why is this project important (In 2-3 paragraphs, describe the need for the project and its relevance to the shared vision for instructional technology)?**

This project is essential to leveling the field for all students, in particular female students who I have noticed, sometimes don’t think they are capable of doing things our male students can do. Based on hundreds of studies and articles, male students are more likely to take computer science or engineering course. Latinos, which is over 50% of our school population is less likely to join computer science courses as well. My project will help close the gap between female and male students, and our minority of Latinos.

Also, the students in our schools have not be fully exposed to STEAM learning opportunities that I strongly believe are important to help them understand the importance it will have as they become adults and begin thinking on what career paths to choose from.Based on our technology vision for our district and school, we want to equip students to real and hands on experiences that will prepare them for 21st century jobs.

I see STEAM through Makerspaces as one great opportunity to expose our female groups from any grade level, starting in Kindergarten and ending in 5th grade to this fascinating world where technology meets math, science, engineering and art.

1. **What would you like to accomplish (In 2-3 paragraphs, describe the project and list instructional objectives/project outcomes.)?**

I would like to accomplish the goal of creating rigorous learning opportunities that are focused on STEAM activities that are student driven. One of my main goals is for our female students to experience learning opportunities where they will be challenged and hopefully find a hidden passion for STEAM. Another goal is for our Latino student body population to realize they are capable of achieving their dreams, even it is to become a software engineer or an IT specialist. Adding two makerspaces to the school will allow all students students a chance to visit the lab when they attend the media center through our specials rotations or signing up to use it at our second location, the science lab.

**Instructional Objectives:**

* Use Makerspace to provide inquiry-based, real world learning experiences
* Integrate technology to provide meaningful instruction
* Increase rigor of instruction by 100%

1. **In what ways is this project an example of exemplary technology integration (In 2-3 paragraphs discuss your project regarding one or more of the following: LoTi, SAMR, TPACK, TIM, etc.)?**

The project is an example of a level 5 LoTi level technology integration. This project will allow students to activate their higher levels in the Bloom’s taxonomy, real world application, and learning experiences that reach beyond the classroom. The students will become authentic learners, producers of their own projects that will be shared with their peers, community, parents, teachers and the entire student body.

The project shows an excellent integration between technology and learning that goes above the four walls of a classroom. It meets the guidelines for it to score a 5 on the LoTi framework scale. Students will be problem solvers of what they plan on creating. Their creations may come from imagination or even for a problem we may have in our school or around the community. I see this project as an open opportunity for all students to become problem solvers and to begin to think outside the box.

1. **How will you complete the work? (Describe how the project will be completed.)**

In order for the project to be completed, grant will first be submitted. If application is accepted, a meeting with the technology committee will be set up in order to create a timeline of the entire project. Project will include wait time to begin ordering materials, check on estimated time for all materials to arrive, space in the media center and science lab will also be part of the discussions in order to ensure the needed space is available, if not, decide changes to the rooms that may be required. Once materials arrive, the process of seeing who will be in charge of putting the makerspaces will be discussed. After this, once the makerspaces are put together, then a faculty meeting will be schedule to show the finished makerspaces. Each grade level and class will also have the opportunity to do a walkthrough of the makerspaces. Demonstrations will be given to each class in order to help them understand the purpose of the makerspace and the technology center that will be located in both the media center and the science lab. Constant monitoring of the makerspaces will be set in place in order to ensure the students and teachers are using the materials and technology correctly and are being used to their best opportunities. First time the makerspaces are used will be more of a modeling type of projects in order to help those students that are not sure what to do.

1. **Describe how the instructional objectives/project outcomes will be met (2-3 paragraphs).**

The instructional objectives/project outcomes will be met by using the grant money to buy the makerspaces, (2) and other materials that will be used while students are using the makerspace. The makerspace will be stocked with materials that students will be used for real life problems that need to be solved. The makerspace will also bring opportunities for our business partners and community members that will help provide authentic learning.

1. **Describe the time involved (project length including amount of time each day/week; include a timeline for planning and implementation).**

The time frame for the project will be year round. The set up of the makerspaces will take several weeks to set up in order to ensure it is safely secured and all materials are in place for students to use. A schedule will be set up for the makerspace in the science lab, while the one in the library will be used based on the grade levels and classes who attend it on a given week.

1. **Describe the people involved (grade level/subject & # of students, teachers and/or staff, other stakeholders).**

All grade levels will be involved in the schedule for the use of the makerspace. Teachers will include the media center specialist, grade level teachers, business partners and volunteers as needed. Teachers who sign up for the makerspace in the science lab will be required to sign up for a time slot and be expected to stay with their students to provide assistance, model lessons and/or be facilitators of the projects that are taking place.

1. **Describe any professional development that you or others will complete prior to implementing the grant.**

Professional development will be provided for the staff to guide them through the process on how the makerspaces function. Professional development will come before the makerspaces are completed in the school and as needed once the makerspaces are in place in the media center and science lab. Staff of the school district may be invited to conduct STEAM/Makerspace training for the entire staff to continue the development in these areas. These staff members have been recognized at the state level for their passion and encouragement to promote STEAM/STEM opportunities for their students in their schools.

1. **Describe the materials needed for the project (provide links to relevant websites; include a written description of how the technology/ies will benefit students)**.

**Makerspaces include the following: Link for makerspace--->**[**Makerspace order Form**](https://teachoutsidethebox.com/makershop-order-form/)

* \*Dual-sided storage and play surface for up to four children
* \*Adjustable Interior Shelves for Arts and Crafts
* \*Lower Shelves for Engineering Materials and Robotics
* \*Middle lower shelves for trays and paper
* \*Upper Shelves to fit [STEM Bins®](https://www.hand2mind.com/category/science/stem-bins/3383) Engineering Kits
* Hooks for [STEM Bins®](https://www.hand2mind.com/category/science/stem-bins/3383)task cards
* \*Upper dry erase board for design challenges, quotes, schedules, or teacher instructions
* \*Dry erase tabletop for collaborative blueprints and problem solving
* \*Clear display signs for Maker Mats or Maker Stations
* \*Interactive side panels for up to 6 students to play at once:
* \*PANEL 1: Magnetic Dry Erase Board for magnetic gears, magnetic roller coasters, magnetic shape designs, letters, etc.
* \*PANEL 2: Building Brick wall for LEGO or Strictly Briks building bricks, also doubles as green screen
* Teacher guide (pdf file)

**Materials Needed for the Makerspaces:** Link--->[Amazon Order](https://www.amazon.com/shop/teachoutsidethebox?listId=3T984JZ1XD5S2)

* Neon drinking straws
* Disposable plastic cups
* Disposable plastic spoons
* Makedo cardboard construction toolkit
* Play-Doh
* Paper plates
* Bathroom cups
* Rubber bands
* Jumbo craft sticks
* Assorted pompoms
* Pipe cleaners
* Cardboard tubes
* Mindware Q-Ba Maze 2.0
* Snap circuits electronic exploration kit
* Lego large box
* GoldieBlox and the Builder’s Survival kit

# Learning Resources Botley the Coding Robot, 45 Pieces

* Learning Resources Code & Go Robot Mouse Activity Set, 83 Pieces
* Short weave baskets

# PLUS PLUS - Construction Building Toy, Open Play Set - 600 Piece - Basic Color Mix

* Keva maker bot maze

# VIAHART Brain Flakes 500 Piece Interlocking Plastic Disc Set

* Gears! Deluxe Building Set, 100 Pieces

# Learning Resources Tumble Trax Magnetic Marble Run, STEM Toy, 28 Piece Set

* Apple Ipads (4)
* Wonder Workshop Dash – Coding Robot for Kids 6+(4)

# Sphero BOLT App-Enabled Robot (4)

* Evo App-Connected Coding Robot (Black) (4)

# Learning Resources Code & Go Robot Mouse, STEM Toy, 30 Activity Cards, Ages 4 and up (4)

* Unitek Adjustable Dividers Charging Station, 10-Port USB Charger Charging Station for Multiple Device with SmartIC Tech, Organizer Stand (2)

**\*\*The technology materials will be placed at a different location within the media center and the science lab. Location will be called the technology center.**

Technology will play a key roles when students use the robots to solve various math problems and/or reading skills. Students will also get to use the ipads for research purposes and when possible, conduct global collaboration projects. Students will first receive lessons on digital citizenship to ensure that their privacy is not in jeopardy and for them to understand how to successfully use the technology. Students will also get to use the ipads to try out different apps that will be showcased on a monthly basis. These online tools could also be used to help students take pictures and create presentations of their creations.

**IV. What is the timeline for assessing accomplishments and objectives/project outcomes (In 2-3 paragraphs, describe the program evaluation procedure. Explain how each objective will be measured and how success will be determined.)?**

I believe the second year of the makerspaces implementation will be a great opportunity to assess the effect it is having on our students. Students, teachers and administrators will be part of various surveys that will be used to see feedback, likes, dislikes of the members using the makerspaces. The voice of the students will definitely be taken into consideration for modifications or additions to the makerspaces. Students will also be assessed on their commitment to complete the projects started and their effective usage of technology. In addition, students should be assessed on their inquiry based skills. This will give stakeholders the opportunity to view student and makerspace success from year to year.

**V. How will the students be impacted by the project (In 2-3 paragraphs, include details regarding how the impact on students will be assessed and reported to students, parents, teachers, and others.)?**

Students will be impacted in different ways. First, students will be able to challenge themselves through the use of the makerspaces and the technology center that will available to use. It is projected that the female and Latino population will show the most impact when working in the makerspace and the technology available. Students will engage in science, technology, engineering, art, mathematics, collaboration during this time. Students will be able to understand how all these areas connect to one another. Students will also understand how the skills practiced with the makerspaces and the technology will equip them with important skills they will be able to use in real world jobs.

**VI. What is the proposed budget? Include information on the following:**

A. Materials/supplies: $1,021.95 + the purchase of the makerspaces $5,796 =$6,817.95

B. Equipment (Technological): $2,855.14

C. Total Cost of Proposed Project (include a line item for any required professional development): $9,673.09

D. Additional Funding Sources : (Only if needed)---Apply for the Whitfield Education Foundation

V. List your supporting references.

<https://ngcproject.org/statistics>

<https://www.idtech.com/blog/stem-education-statistics>

<https://www.edutopia.org/article/making-makerspaces-work-all-students>

<https://teachoutsidethebox.com/2019/02/so-you-want-to-start-a-makerspace/>

**INSTRUCTIONAL TECHNOLOGY GRANT PROPOSAL**

**EVALUATION FORM/SCORING RUBRIC**

**Total Points (out of 300): \_\_\_\_\_\_\_\_\_\_**

1. Impacts a variety of skill levels and/or learning styles or impacts an important target population.

Possible number of points: 60 \_\_\_\_\_\_\_\_\_\_

1. Clearly identifies standards and learning objectives/project outcomes being addressed.

Possible number of points: 60 \_\_\_\_\_\_\_\_\_\_

1. Pedagogically sound, based on research and/or best practices.

Possible number of points: 60 \_\_\_\_\_\_\_\_\_\_

1. Clear plan for assessment of project and goals with examples of implementation methods.

Possible number of points: 60 \_\_\_\_\_\_\_\_\_\_

1. Impacts large number of students and/or can be recycled/reused.

Possible number of points: 60 \_\_\_\_\_\_\_\_\_\_

General Comments:

Adapted from: The Education Foundation of Oconee County, Inc.