



2018-19 Duke Energy Foundation STEM Grant

DEADLINE October 18, 2018 4:00 pm Foundation Office via Jackrabbit or Email

- This Classroom Grant is for 2018-2019 school year.
- Funds must be used to address a STEM related project.
- All funds must be used by May 1, 2019. A final program evaluation must be submitted by May 15, 2019.

Contact Information	
Applicant Name: Marisol Oneill	Position: ESE Self Contained teacher
School: Clermont Middle School	
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Detailed Project Information
Project Title: Cropping Numbers-A Hydroponic Garden Project
What priority area(s) will your project address: science/math/writing/STEM
What is your estimated start date: continuous/on going from Duke Grant 2017-18.
Estimated number of teachers who will participate in this project: 4
Estimated Number of Total Students Impacted by project: 10 ESE and 15 regular Ed. students
Grade Levels to be Addressed: 6-8 grades

Program Background: Our society is evolving to provide the best educational opportunities for our children. The major focus of our district is to prepare students for college and higher education opportunities. Understanding the importance of preparing our special needs students for higher education and real world living opportunities, will guide us to provide innovative learning activities. The Cropping Numbers is an ongoing project that started two years ago providing students the experience of growing a vegetable garden while using math, reading, science, digital technology and writing skills in a functional manner. This project is unique because our students are developing skills needed for their future while learning technology and sustainable forms of living, such as hydroponic gardens.

Now more than ever, we have to prepare and provide to our special needs students with Well-rounded activities and curriculum exposing them to a variety of methods, programs and technology to work and lead in the future. The Cropping Numbers project has successfully prepare students to future careers and educational opportunities, but as any other projects, it requires economic efforts and support to maintain sustainability for our special students.

Project Summary:

Cropping Numbers project will use a 15 feet long by 10 feet wide area in front of our classroom. We will use a variety of garden settings such as raise bed gardens and hydroponic towers. Our special needs class will plan and organize all steps needed to have a functional garden. The students will prepare plot garden diagrams, irrigation schedules and implementation of calendar to assure wellness and life of plants.

In the Cropping Numbers project, all students will rotate in four different working areas:

- Data collectors/crop specialists –students will collect data of water level, temperature, height of plant-color, crops size
- Weather forecasters- in charge of getting the daily weather forecast using technology, checking temperature, warning gardeners about drastic changes of temperature, keeping weather log and graphing information for the week
- Irrigation leaders—students in charge of watering plants twice a day based on the information provided by the data collectors and forecasters.
- Designers- students will brainstorm ideas on how to set up pocket planters, watering towers and raised beds. They will use garden design software to create overlay of designated area. As the garden grows, this group will create ideas of keeping the plants healthy by using different devices such as wood fan, stakes and frames.

Weekly rotations will ensure students to learn and maintain knowledge for that specific area. Each rotation will have their specific duties and students will use overall core skills to perform actively. Just to mention, some of the skills are designing, researching, measuring, graphing, data collection, math operations and cooking. To measure the academic and vocational performance of the students, core skills assessments will be provided before, during and after the project is finish. The project also promotes parent involvement with volunteering opportunities to work in the garden.

Need:

Our exceptional student population are in great need of hands on, real life educational opportunities. As teachers, we need to provide an array of learning activities because our students learn differently from other populations. Usage of technology throughout science, math and reading activities will prepare our students to conquer their future as they grow in the community. In addition, students will

have a once in a lifetime experience were they can apply everything they learn for a future agro culture career. Our project is in need of materials, equipment and basic agro technology for our students to participate in this project.

Project Goals and Objectives for school improvement and individualization of student:

Target group:

Academic discipline: Science, Math, Social Studies, Language Arts, Reading

School Improvement goal(s) addressed: At Clermont Middle School, the reading goal is: the percentage of students achieving proficiency level will increase by 2%.

In this project, our students will use Unique Learning Systems to compile, organize and edit data from the results of observation.

Our garden project support activities to develop journal writing, editing skills using language arts guidelines and reading comprehension, just to mention some.

The project will give students the opportunity to develop all language and reading skills needed to score at the Independent Level in the Florida Alternate Assessment Test.

For Math, CLMS the goal is: to increase the percentage of students scoring 3 or higher on FAA assessment by 3%.

Our garden project support activities to develop all math skills needed to score at the Independent Level in the Florida Alternate assessment. Usage of measurement equipment, calculators, graphing, comparing data and computation to get total results, are some of the skills addressed in this project.

Next Generation Sunshine State Standards or Common Core addressed:

Mathematics

- a. Write and evaluate mathematical expressions that correspond to given situations.
- b. Write, solve, and graph one- and two- step linear equations and inequalities.
- c. Work backward with two-step function rules to undo expressions.
- d. Solve problems given a formula.
- e. apply the Commutative, Associative, and Distributive Properties to show that two expressions are equivalent.
- f. construct and analyze tables, graphs, and equations to describe linear functions and other simple relations using both common language and algebraic notation.

Language Arts/Reading

The student will use background knowledge of subject and related content areas, pre reading strategies, graphic representations, and knowledge of text structure to make and confirm complex predictions of content, purpose, and organization of a reading selection.

The student will use information from the text to answer questions related to the main idea

or relevant details, maintaining chronological or logical order.

SCIENCE

- a. Describe and investigate the process of photosynthesis, such as the roles of light, carbon dioxide, water and chlorophyll; production of food; release of oxygen.
- b. Define a problem from the eighth grade curriculum using appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.

Strategies/Activities planned for our goals to be met:

Target 1: Preparation level

Students, staff and volunteers will clean, weed out and prepare garden area. The area is already established from a previous garden project.

Hydroponic Towers assembled and seedlings started.

Students will receive gardeners' duties checklist.

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- Designers- students will brainstorm ideas on how to set up pocket planters, watering towers and raised beds. They will use garden design software to create overlay of designated area. As the garden grows, this group will create ideas of keeping the plants healthy by using different devices such as wood fan, stakes and frames.

Using garden diagram, students will set up pocket planters, clean bed gardens and prepare soil for planting, assemble of hydroponic towers with the support of parents and volunteers. After garden is set up, and students know their duties, we will continue with activities in target 2.

Target 2- Rotations and Ongoing activities:

Mondays-students will receive their rotation schedule and the area in charge. They will gather in respective groups to brainstorm a working plan for the week, including generating data templates.

Tuesday-Thursday- students, in their respective areas, will perform their daily duties indicated on their checklist; generate daily data, graphs and journal writing and picture journal book.

Friday- All students will gather together to complete their weekly journal/data collection and to share their findings to other gardeners group.

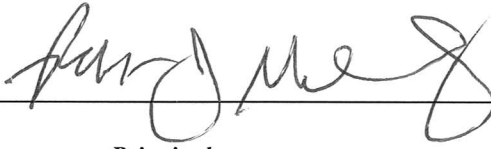
Weekly rotation strategy will support step by step process for our special needs students. All students will rotate in all areas to receive real life experiences at different levels.

Evaluation Plan: The Cropping Number project will be evaluated in:

- A. Student performance/progress-
We will be using student pre- post assessment forms/ Unique Learning System evaluation, student work samples and teacher observation checklist. Student data comparison graph will show students gains in all tested areas and State blueprints for learning goals.
- B. Student Pictorial Garden Journal and Oral Presentation to parents and staff.

Budget			
Category of Expenditure		Dollar Amount	Related Activity
Computer Hardware			
Computer Software			
Other Equipment (not computers)			
Competition Registration Fees			
Program supplies		\$40.00 Garden Blend (3)=\$120.00 Tower timer \$19.95— (2)=\$39.90 Submersible tower pump- \$19.95— (2)=\$39.90	Nutrients to be provided to water for plants to grow For timing feeding times To pump water from reservoirs

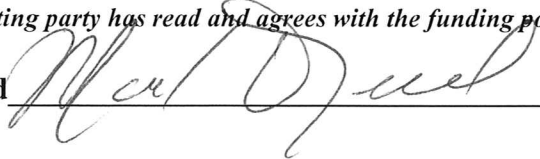
	PH test tower kit \$19.95—(2)= \$39.90 Rock wool cubes- \$11.95—(3)= \$35.85 Net Pots - \$11.95(3)=\$35.85 Support vegetable cage \$60.00 (3)=\$180.00 Tower Garden(1) \$545.00 Vigoro soil-- \$3.90— (8)=\$31.20 Taylor Precision Thermometer, Lilac \$11.99 AcuRite Wireless Weather Station \$169.99	To test water PH weekly basis To plant seeds To place rock wool nets To support tomatoes and runner vegetable plants Hydroponic tower To use raised bed gardens To collect temperature data To collect all weather soil data
TOTALS	\$1069.18	

Program Approved By: 
Principal

Funds Payable to: **Clermont Middle School**
Address: **301 East Avenue, Clermont Fl 34711**

Phone: 352-243-2460 Email: Oneillm@lake.k12.fl.us

Requesting party has read and agrees with the funding policies of the Educational Foundation.

Signed  Date 9/12/18

To be completed by foundation staff/board

Program meets Duke Energy Foundation's Mission/ Funding Policy _____ **Y** _____ **N**

Director Recommendation: _____

Executive Board Recommendation: _____