



Applied Learning Department

STEM and Computer Science with Environmental Stewardship

October 11, 2019

Sheryl Arriola, Rebecca Malones, Cindy Griffin
Instructional Facilitators

STEM+CS: Pathways to a Future Ready Graduate

Compassion for the Earth through lessons in sustainable living

Critical Thinking Skills developed through coding and robotics

Place-Based Learning with a focus on Citizen Science

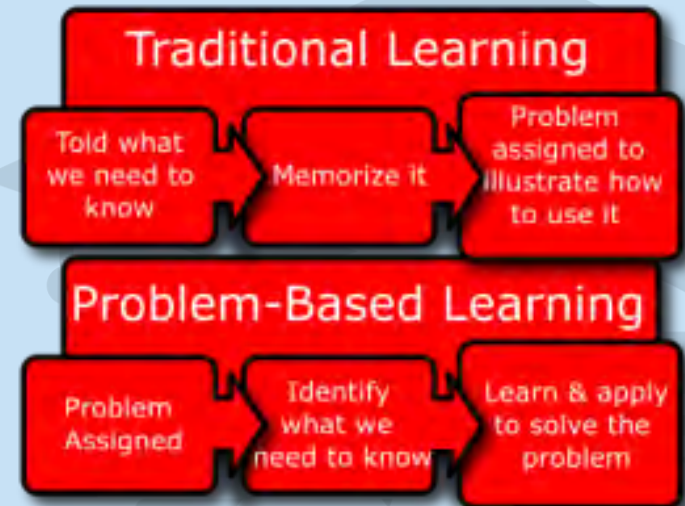
Empathy taught through Design Thinking



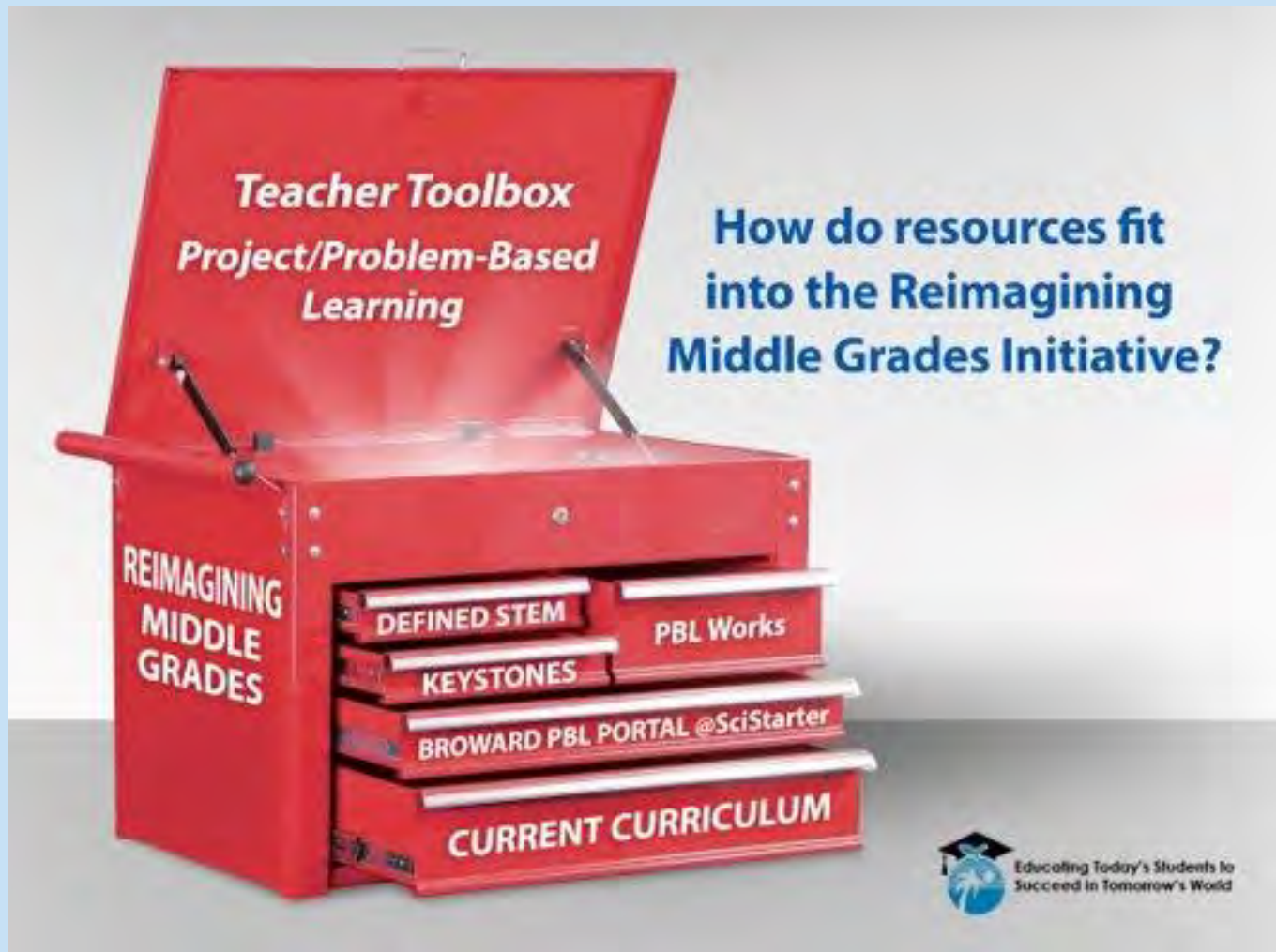
What Is Problem-Based Learning

Problem-Based Learning is a student-centered approach that facilitates research, the integration of theory into practice, and the application of course content to discover and provide suggestions for solutions to a specific defined problem.

Savery, 2006



PBL Toolbox



#STEMpathy PATHWAY



United Nations Sustainable Development Goals



STEM + CS PATHWAY

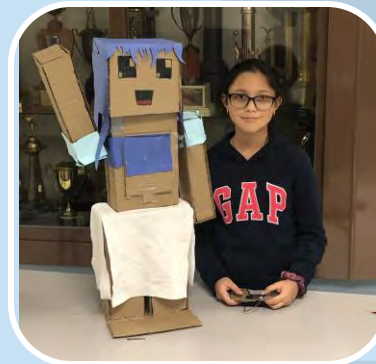
K-2



3-5



6-8



9-12



Hour of Code during CS Ed Week is December 9-15, 2019

This year theme is Computer Science for Good #CSforGood.



SAVE THE DATES: UPCOMING EVENTS IN 2019-2020

Nov. 20 Panthers STEM Day

Dec. 9-15 CS Ed Week/Hour of Code

Jan. 10 Broward Youth Climate Summit

Jan. 25 SECME AASHTO TRAC Bridge Breaking/FPL Generator

Jan. 18 VEX IQ Robotics (elementary/middle) @ Nova Middle School

Feb. 1 VEX VRC Robotics (middle and high) @ Nova Middle School

April 4 SECME STEM Olympiad + CS Fair @ Nova Middle (tentative)

April 22 Earth Day – 50th Anniversary Celebration

May 6 P3 Eco-Challenge Awards Ceremony



For our future



STEM+CS ADVISORY BOARD



@BCPSAppLearning
@BrowardSTEM

ENVIRONMENTAL PATHWAY

K-2

3-5

6-8

9-12



ENVIRONMENTAL PATHWAY



So what environmental initiatives do we have in the district?

- P3 Eco-Challenge
- Broward Youth Climate Summit
- How Low Can You Go? Challenge
- The Food Recovery Program
- STEM in the Parks
- Florida in the Ag Gardening PDs
- Broward PBL Portal @SciStarter



ENVIRONMENTAL PATHWAY



K-2

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P3 Eco-Challenge: Preserving Our Planet for Posterity

For schools, teachers, students, custodial, and non-instructional staff.
Rewards for environmental stewardship.

Top Prizes:
\$2,000 School
\$500 Teachers
\$250 Custodial
and Non-
Instructional Staff
\$200 Students

Application open from
Oct. 1, 2019 – April 3, 2020

browardschools.com/p3



ENVIRONMENTAL PATHWAY



For our future

6-8

9-12

Broward Youth Climate Summit

- Students create a PBL (actionable plan) to mitigate the effects of sea level rise.
- Summit is on January 10, 2020 at the Museum of Discovery and Science
- 2020 Theme: Sea Level Rise
- Application until October 31, 2020 at:
<http://bit.ly/2ndBrowardYouthClimateSummit>
- More info:
<https://www.browardschools.com/Page/45330>

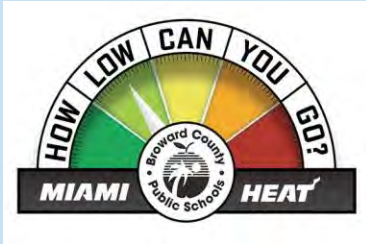


STEM+CS PROGRAMS



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ENVIRONMENTAL PATHWAY



How Low Can You Go? Challenge



In partnership with Miami Heat is challenging all Florida K-12 schools to find innovative ways to reduce energy consumption (percentage decrease) at each school campus from November 1, 2019 through March 1, 2020 as compared to the school usage from the same period last year.

Prizes include: Miami Heat “How Low Can You Go?” Championship banner, plaque, tickets and recognition at a Miami Heat game, and Miami Heat pep rally with mascot Burnie.

Register <http://bit.ly/HowLowCanYouGoChallenge>

Find tips for reducing energy use at www.howlowcanyougochallenge.com.



ENVIRONMENTAL PATHWAY

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STEM in the Parks

Florida Ag in the Classroom PDs
Gardening for Nutrition
PBL STEM and Gardening

Contact: Cindy Griffin
cindy.griffin@browardschools.com



What is Citizen Science and SciStarter?

6-8

- Citizen science is a way for everyday people to help scientists do research. When scientists need a lot of **data**, they ask for the **public's** help.
- People sign up to collect data by doing activities such as taking photos of clouds or streams, documenting changes in nature, or counting visible stars for light pollution.
- They then send their data to the scientist to be analyzed and used to better understand the world.
- SciStarter is a data base consisting of over 3000 projects that connects scientists and their projects to citizen scientists.



SciStarter and Citizen Science: Power of the People



Broward PBL Portal @SciStarter

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- The Broward PBL Portal @SciStarter connects teachers and students with authentic, curated research projects from SciStarter. Students can join projects and become active participants in a global citizen science community.
- The information students collect and share with scientists and researchers will help answer important questions and better understand our world.
- The Broward PBL Portal @SciStarter is part of the Reimagining Middle Grades initiative.



ENVIRONMENTAL PBL PATHWAY

K-2

3-5

6-8

9-12



[Projects](#) [Project Planner](#) [Resources](#) [Learn More](#)



Science

STEM | Grades K-12

Making Space for Change

How can we redesign a public space to make it more environmentally sustainable?

Project Description

In this project, students are charged with the task of creating an environmentally sustainable redesign for a community space, such as a park, library, public square, empty lot, or community center. Students visit the space, research the local context, needs, resources, and constraints, and investigate principles of environmentally sustainable design. They engage in critique and revision processes that involve local community members, and then they present their solutions to key stakeholders.



STEM+CS PROGRAMS



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Implementing Problem-based Learning

Goal: Choose a project or initiative to design a PBL opportunity for your students. You may work in groups to build your PBL.

Activities

- SciStarter/PBL - going outside!
- P3 Eco-Challenge, Broward Youth Climate Summit, **The Food Recovery Program**
- Environmental PBL – ideas for your classroom



GLOBE Observer App - Download



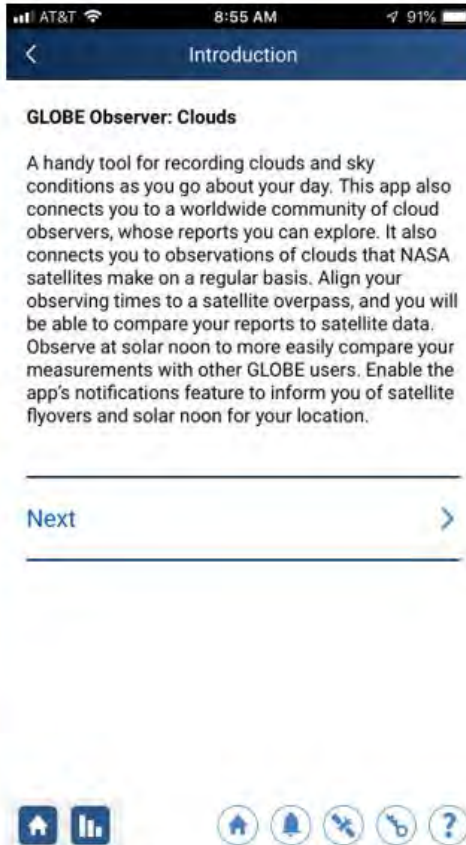
You can download the GLOBE Observer app for iOS via the App Store, and for Android via Google Play.



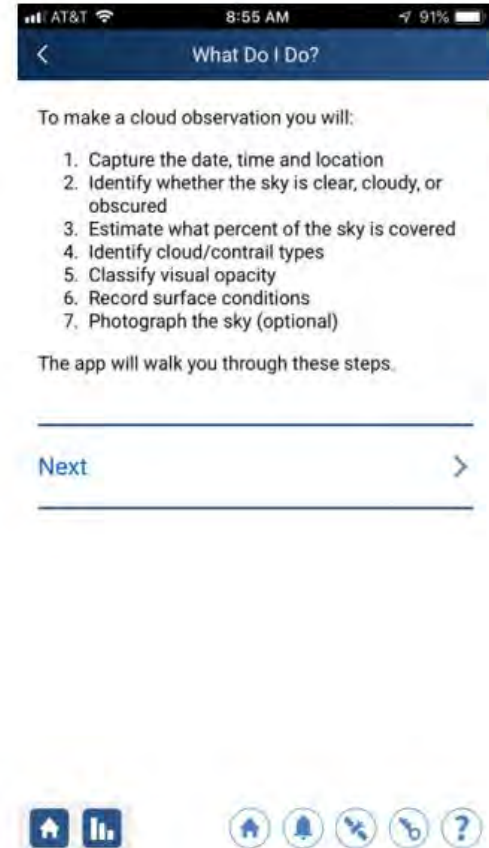
GLOBE Observer App



SCREEN 1



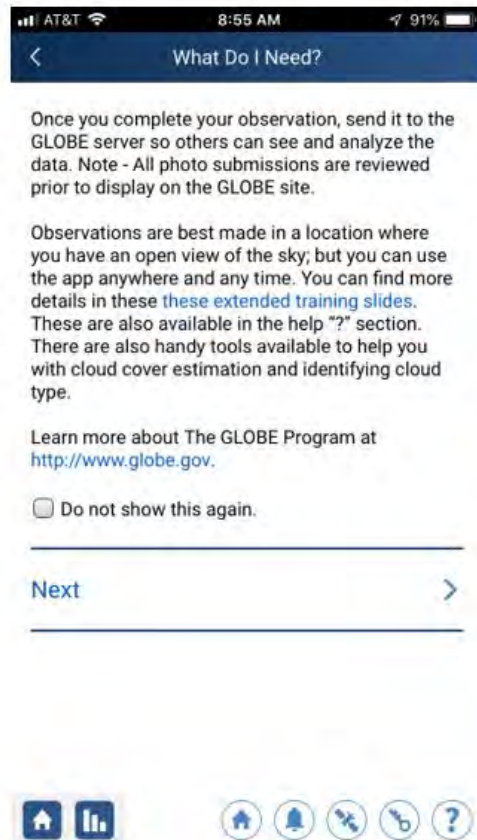
SCREEN 2



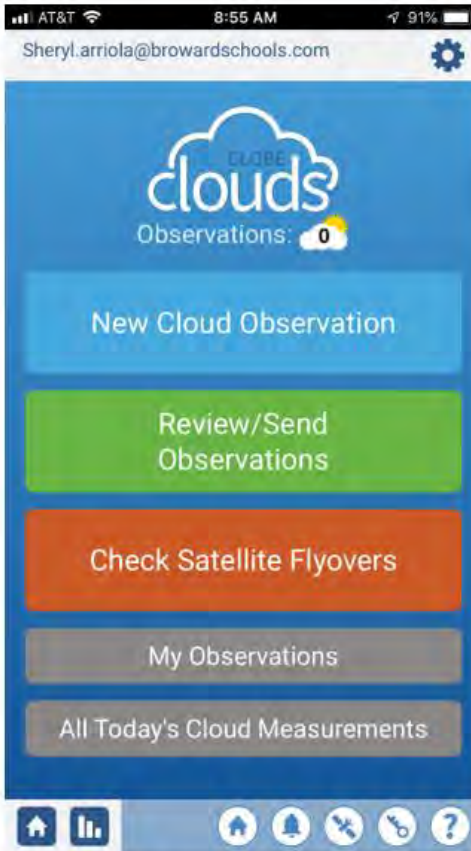
SCREEN 3



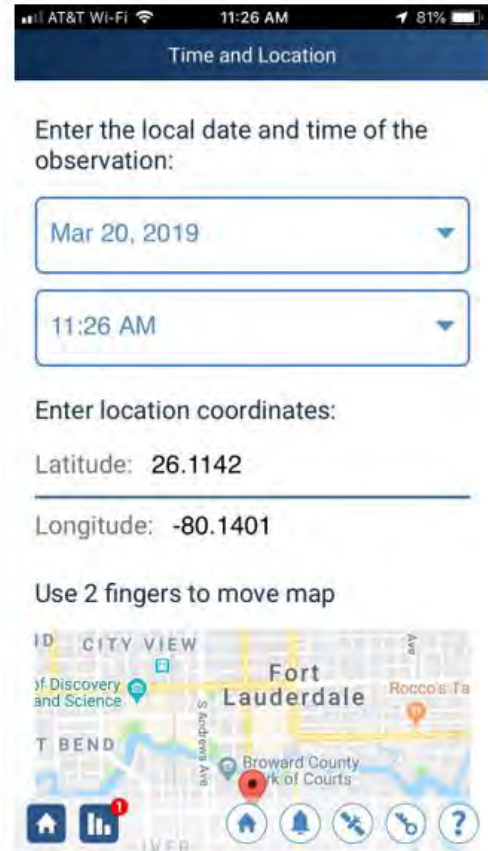
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SCREEN 3



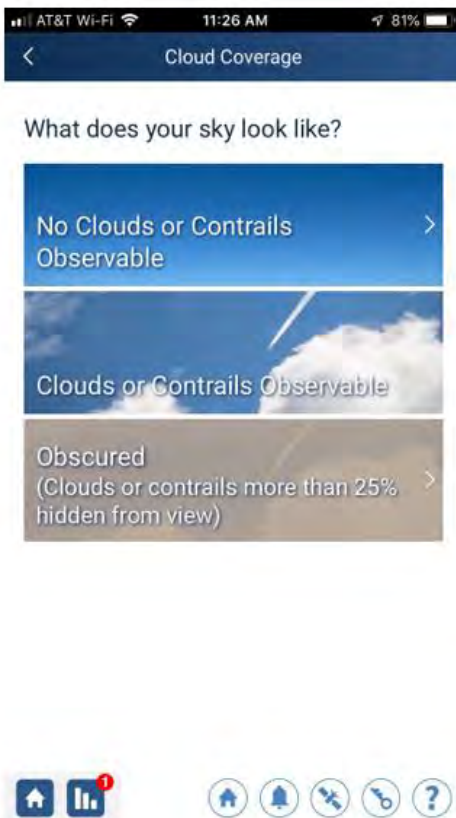
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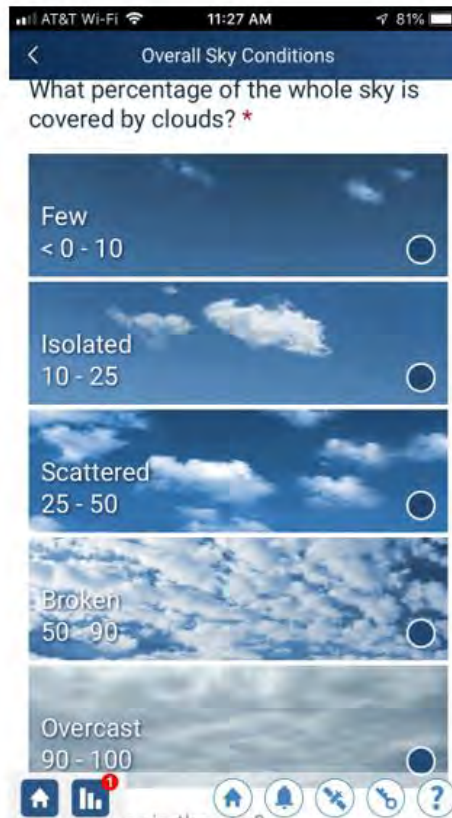
SCREEN 5



GLOBE Observer App



SCREEN 6



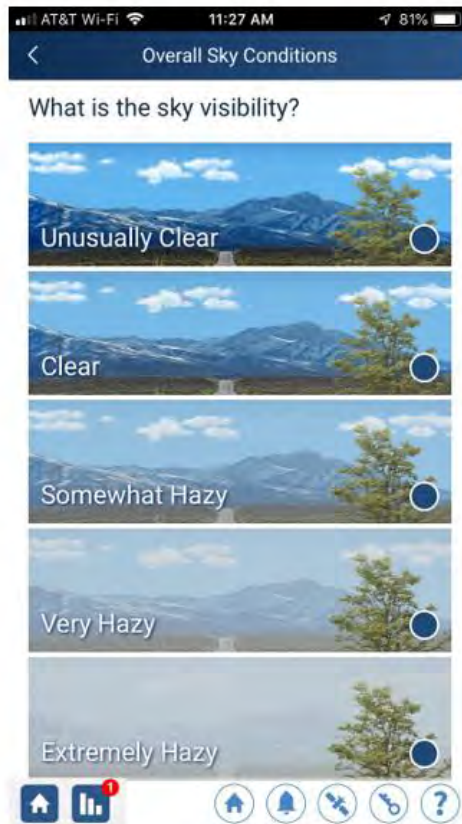
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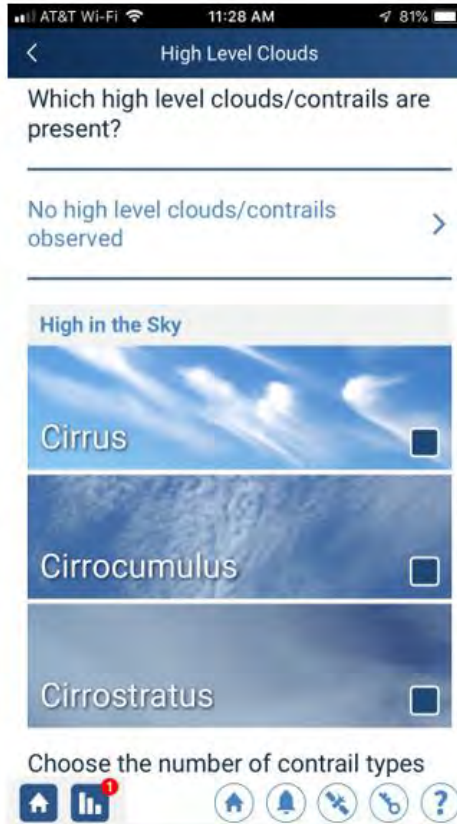
SCREEN 8



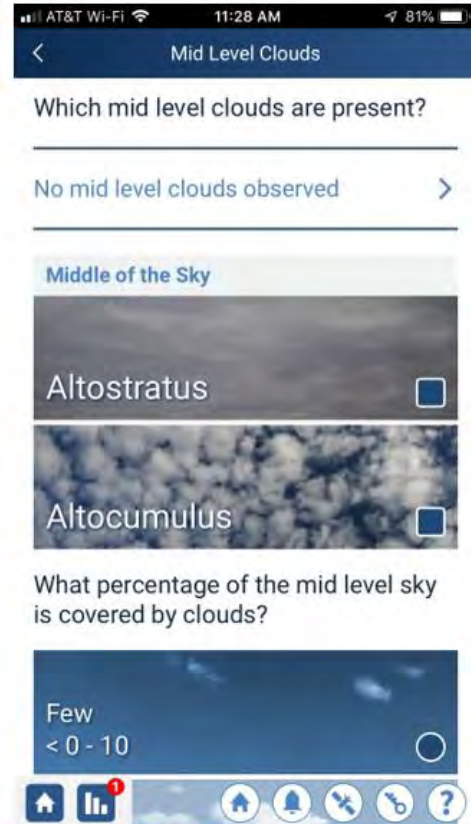
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SCREEN 9



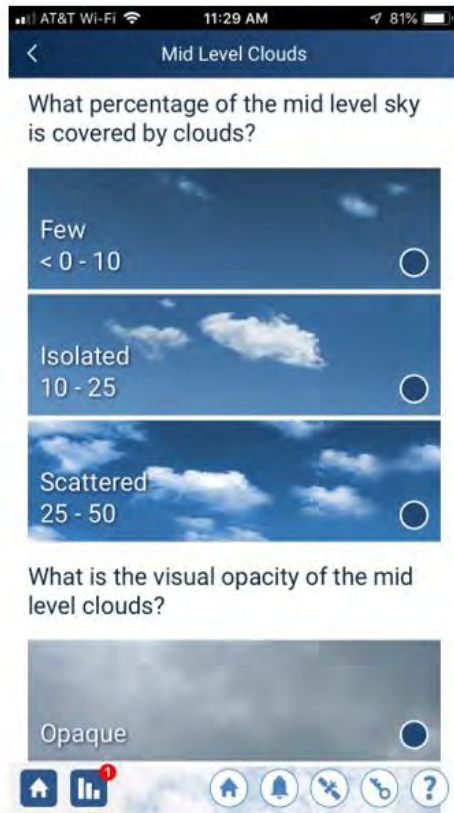
SCREEN 10



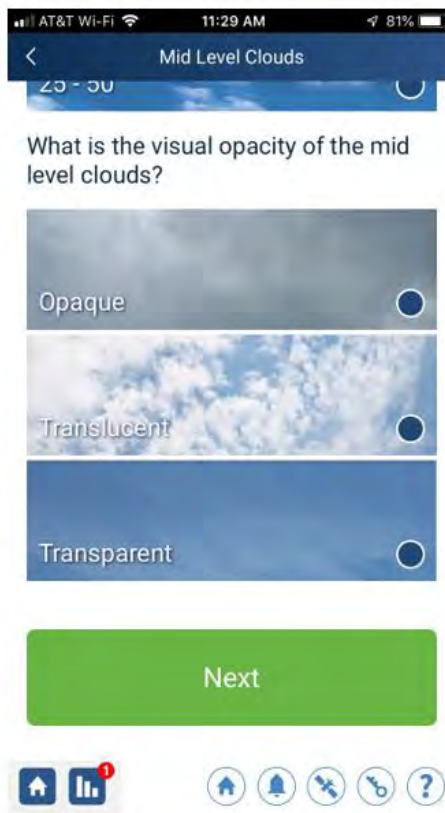
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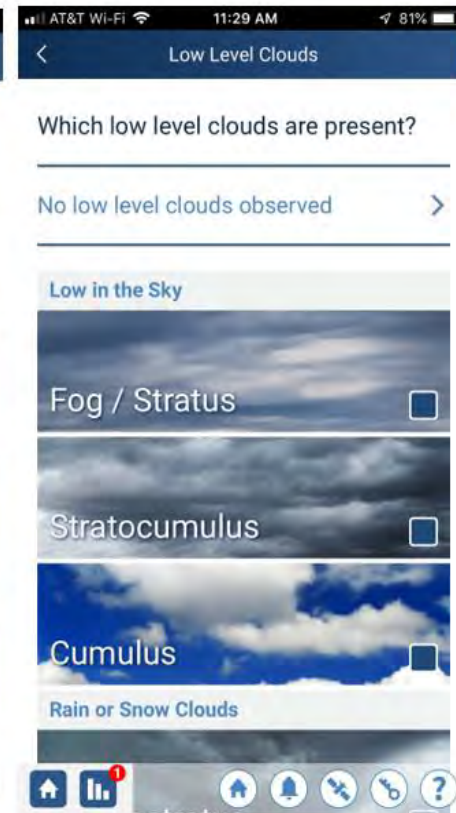
GLOBE Observer App



SCREEN 12



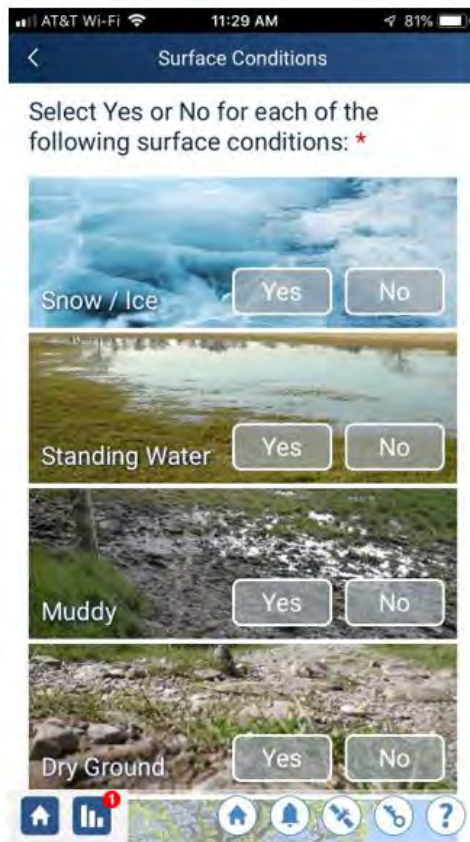
SCREEN 13



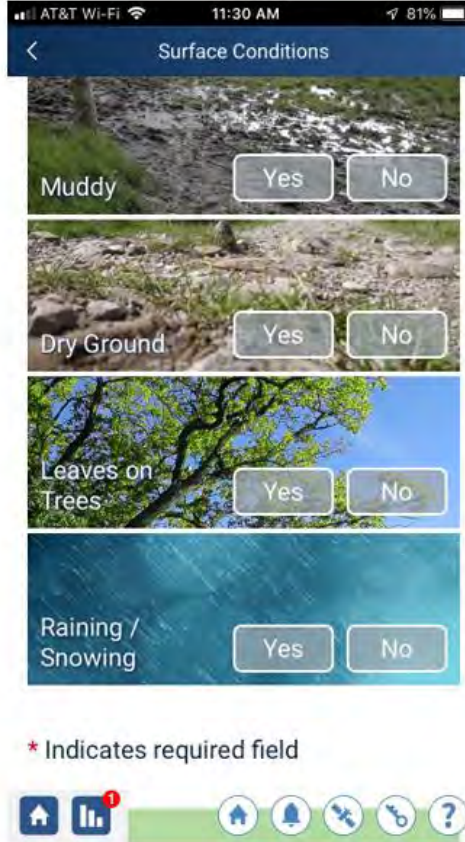
SCREEN 14



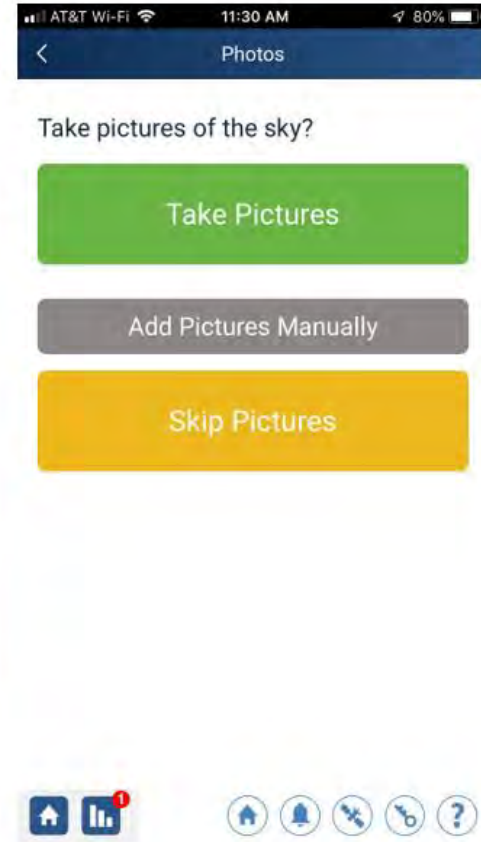
GLOBE Observer App



SCREEN 15



SCREEN 16



SCREEN 17



GLOBE Observer App

Observation Complete

Thank you, your data has been stored successfully on your device and is ready to send to GLOBE.

Send Observations Now

Share

Cloud App Home



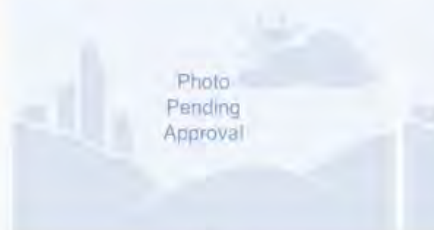
SCREEN 18

THE GLOBE PROGRAM

Citizen Scientist

Cloud Observations

10/17/2019 Clouds



North

Date/Time (UTC): 10/17/2019 18:08:00

Data Source: GLOBE Observer App

Latitude/Longitude: 26.2945, -80.1105 (26° 17' 40.2", -80° 6' 37.8")

Done

SCREEN 19

AT&T 2:25 PM 50%

North

Date/Time (UTC): 10/17/2019 18:08:00

Data Source: GLOBE Observer App

Latitude/Longitude: 26.2945, -80.1105 (26° 17' 40.2", -80° 6' 37.8")

Organization: United States of America Citizen Science

Site: 17RNK888086

Total Sky

Cloud Cover: Overcast (90-100%)

High Level Clouds (not observed)

Mid Level Clouds (not observed)

Low Level Clouds

Cloud Types: Cumulonimbus

Cloud Cover: Overcast (90-100%)

Opacity: Opaque

Surface Conditions: Dry Ground, Leaves on Trees

NASA Satellite View

Done

SCREEN 20

