## <u>Title of Project</u>: Down the Drain <u>Subject(s)</u>: Science/Language Arts <u>Grade Level(s)</u>: Sixth Grade

#### Abstract:

This project is based on the "Down the Drain Project" at http://www.ciese.org/curriculum/drainproj/overview/.

First, students will collect real data about family or school water use, and upload it to the project website. They will compare their usage with the other places on the website, asking questions about the differences in data between locations. Students will research places in the US or the world where water is scarce, to find out how people deal with the problems this causes. Additionally, students will research, and report on solutions for reducing water use. They will create campaigns to encourage the reduction of water use in school and at home. The campaigns will last a month; there is an option to collect another round of data to see if there was a change in water use. Students will have choices regarding the type of media product they want to create, and whether they will work individually or in groups. They will reach out to administration and faculty to get permission to air their ads and display their posters. This project is a partner strand to the "Footprints" project by Cheryl Watts. After an introduction, students will have the option of choosing the water strand "*Down the Drain*" or the soil strand "Footprints."

#### **Learner Description/Context:**

Sixth-grade students in our district may not remember the drought we had in Georgia several years ago. We have had a few very wet years; our lakes are full from consistent rainfall. In fact, there have been problems with flooding in many areas. But this is not true in some parts of the United States and other parts of the world. Nor was it true here in Georgia as recently as 2012. This project will allow students to see that resources which are plentiful here are scarce elsewhere, and that there are environmental impacts of these shortages for people and animals. It may generate discussions on cultural differences relating to conservation. Students will have previously completed lessons about earth's water, including oceans, tides, and water cycle. The project can be adapted for elementary grades that have similar standards.

**<u>Time Frame</u>**: This project will take 4 to 6 weeks in Science Class. There is an option for follow-up if desired. Collaboration with English Language Arts would increase class-time available for working on products.

#### Standards Assessed:

## Georgia Performance Standards, Science, Sixth Grade:

S6E5j: Describe methods for conserving natural resources such as water.

S6CS3a: Analyze scientific data by using, interpreting, and comparing numbers in several equivalent forms, such as integers and decimals.

S6CS3d: Draw conclusions based on analyzed data.

#### Common Core GPS, English Language Arts, Sixth Grade

ELACC6W7: Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.

ELACC6SL5: Include multimedia components (e.g., graphics, images, music, and sound) and visual displays in presentations to clarify information.

ELACC6W6: Use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others.

#### NETS-S:

- 1. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.
  - b. Students create original works as a means of personal or group expression.
- Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.

   a. Students interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media.
- Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
   c. Students evaluate and select information sources and digital tools based on the appropriateness to specific tasks.
- 4. Critical Thinking, Problem Solving and Decision Making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.
  - b. Students plan and manage activities to develop a solution or complete a project.

- 5. Digital Citizenship: Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
  - a. advocate and practice safe, legal, and responsible use of information and technology
  - b. exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity
- **6.** Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems, and operations. Students:
  - a. understand and use technology systems
  - b. select and use applications effectively and productively

# Learner Objectives:

At the end of this project, students will

- know how they use water in their home or school
- know how the data compares to some other places in the United States and the world
- formulate questions about why this information is important and relevant to them
- communicate with experts locally and in other cities about ways to improve water conservation
- communicate the importance of water conservation to others in the school through the creation of a product of their choice (suggestions will be provided)

# The "hook" or Introduction:

While watching the Introduction Videos listed below, take the following notes:

- **1 thing** you already knew,
- 2 things you want to know more about, and
- **3 things** you didn't know.
- Students will share their notes in small groups
- Each group will share 1 from each category with the entire class

## Process:

## Instructor Preparation and Materials:

- Review the Down The Drain Project lesson plans and resources contained on the website
- Create a Project Rubric with columns for all areas assessed
- Prepare worksheets and/or mural for *Down the Drain* data collection
- Research district and school permissions for all online participation and publication
- Review and edit criteria for acceptable products (may need specifics on size, length, numbers of pages, etc.)
- A class wiki or Edmodo unit may be useful for collaboration and display of products
- Review sources for outside collaboration and make initial contacts if needed
- Secure cameras, recorders, software or other tools needed for projects (throughout project)

**Week 1:** (*Down The Drain* data project) This is the introduction and discovery section of the project. Students will work through the activities in the *Down the Drain Project*, which culminates in students uploading their water usage data to the project's website. They will have the opportunity to compare their data with other cities and schools that have participated.

## Teacher:

- 1. Review the timeline and project choices with the class
- 2. Guide students through lessons 1a through 1e of Down the Drain
- 3. This includes collecting data as specified on the website
- 4. Guide students in comparing their data to other data on the project website (worksheet or large mural)
- 5. Create small groups based on student preferences and 2 *Things* questions (above)
- 6. Individual projects will also be allowed
- 7. Advise students on quality of projects to ensure balanced efforts from all students

#### Students:

- 1. Participate in introductory activities of the "Down The Drain" Project
- 2. Participate in lessons 1a through 1e, collecting data on water use as outlined in the project
- 3. Compare school data with other data on the project website and ask questions about the differences
- 4. Communicate project choice preferences and 2 Things questions with teacher
- 5. Assessment: Down the Drain Participation column on rubric

## Week 2

Draft Water Conservation Campaigns

- 1. Explore resources on water scarcity and conservation
- 2. Communicate with experts about water scarcity and conservation
- 3. Work on the Project Draft with peer groups (project draft due at the end of the week)
- 4. Meet with science teacher daily for guidance
- 5. Assessment: Draft Project column on rubric

## Alternate Plan for Week 2

The <u>Water Savers Webquest</u> was created as a partner to this project. If students work through the webquest, they will have a completed Project Draft for this Engaged Learning Project. (Note: site is active and will be complete by 7/22/14)

#### Weeks 3-4

- 1. Students will work on projects during class
- 2. Students continue to research and communicate with experts if needed
- 3. Teachers will guide as needed, continue to provide tools and technical support

#### Week 4-5

- 1. Share projects with class, school, and beyond; based on type of project chosen
- 2. Students will secure permission for publishing products
- 3. Assessment: Group Participation column on rubric
- 4. Assessment: Final Project Rubric column on rubric
- 5. Self-Assessment rubric: Group Participation and Final Project

## At least 2 weeks later if desired

- Repeat data collection from *Down the Drain* Project
- OR: Survey those who have seen the campaign and see if they have changed their water use habits (Survey Monkey)

## **Product**

Students will create a Conservation Campaign to encourage people to be better stewards of water resources. There will be a list of suggested projects (see below), but students may also design something unique. The audience will be other students, faculty, administration, and possibly Parent Teacher Association. Students will need to communicate reasons that water needs to be conserved and give suggestions on how to do this.

## **Product Expectations**

- Product will demonstrate a compelling case for conserving water ("sell me" on this idea!)
- Product gives worthy, real reasons for conserving water (be careful to use truthful resources)
- Product gives the audience clear examples that can be used to change their water usage
- Product includes examples of what can happen if water is not conserved
- Finished product looks professional and very close to a similar product used or created by adults

## Product Suggestions & Technology Use

- Physical Poster/Graphic Design/Display high-quality printing not hand lettered (MS Publisher, GIMP)
- Video Advertisement/Public Service Announcement (Windows Live Moviemaker)
- Music Video (Windows Live Moviemaker, Audacity)
- Slide show presented to another class or to Parent Teacher Association (Powerpoint, Prezi, PowToon)
- Website or Wiki (Weebly, WikiSpaces)
- Brochure high-quality printing not hand lettered (MS Publisher, GIMP)
- Virtual Poster (Glogster)
- Students may propose other products which meet expectations for the project

## **Other Technology**

- Internet Video (such as YouTube): Engaging students in the project, research & exploration of the topic
- Computers/Internet: Communication with peers, mentors, experts; drafting and completing products
- Equipment as required by individual projects such as cameras, printers, graphics software, etc.

## This project supports the following Engaged Learning Indicators

- Standards-based, Challenging, Collaborative, Multidisciplinary
- Authentic/Meaningful tasks and products
- Student-directed, students are teachers, explorers, producers
- Teachers as facilitators, guides
- Performance-based Assessments

## Supporting Material:

#### Down the Drain Project

## • <u>http://ciese.org/curriculum/drainproj/</u>

Water Saver Webquest (note: site is active but will not be complete until after 7/21/14)

• <u>http://watersaverswebquest.weebly.com/</u>

# <u>Resource Links</u>

# **Introduction Videos**

- Severe Drought Plagues West: <u>http://youtu.be/OKVlgsRPu6s</u>
- US Drought Since 2011: <u>http://youtu.be/bmx336LQCtk</u>
- US Drought: 8 Surprising Effects: http://youtu.be/tmA18hFCyv4
- How Much Water Do We Really Use Every Day? <u>http://youtu.be/On9WRrFHVjY</u>
- Water, The World Water Crisis: <u>http://youtu.be/iRGZOCaD9sQ</u>

## Suggestions for Outside Collaboration:

- Television and radio meteorologists, both local and in drought-stricken areas far away
- University Extension Centers and Agricultural Departments
- Interview adults who can talk about droughts in our area

## **Research and collaboration links:**

- How Much Water Do You Use? <u>https://newsela.com/articles/water-usage/id/2942/#articles/water-usage/id/2942</u>
- Plants Supplant Grass: <u>https://newsela.com/articles/drought-lawns/id/3346/</u> (Note: Newsela requires a free account and log-in)
- Georgia Drought: <u>http://www.caes.uga.edu/topics/disasters/drought/</u>
- UGA Griffin Campus: http://www.griffin.uga.edu/aemn/drought.htm
- Water and Drought: http://www.caes.uga.edu/about/hottopics/water/
- Climate Prediction Center: <u>http://www.cpc.ncep.noaa.gov/</u>
- Down The Drain Resources: http://www.ciese.org/curriculum/drainproj/reference/
- Weather School: <u>http://www.weatherschool.org/</u>
- National Drought Mitigation Center: <u>http://drought.unl.edu/DroughtforKids.aspx</u>
- University of Georgia Extension Service <u>http://extension.uga.edu/environment/water/</u>
- U.S. Drought Portal <u>http://www.drought.gov/drought/content/resources/education</u>

## **Optional Web 2.0 and Software:**

- Publisher, Powerpoint: Microsoft Office Suite
- Gimp: <u>http://www.gimp.org/</u>
- Audacity: <u>http://audacity.sourceforge.net/</u>
- Windows Live Moviemaker: <u>http://windows.microsoft.com/en-us/windows-live/movie-maker</u>
- Weebly: <u>http://www.weebly.com/</u>
- Wikispaces: <u>http://www.wikispaces.com/</u>
- Glogster: <u>http://edu.glogster.com/</u>
- Survey Monkey: <u>https://www.surveymonkey.com</u>