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| Woodland S.T.E.A.M. Integrated Plan  Pollution Solution | |
| Grade Level: **3rd** | Time Frame: : March 15th—25th |
| Ask:  **STEM**: In the effort to preserve one of our nation’s natural resources, can we create a cost efficient device to depollute one of America’s most polluted river environments?  **Humanities:** How do the causes of pollutants in our rivers affect the population and the environment? | |
| **Focus Standards**  **Math: MGSE3.OA.**3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities,‡ e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.12 ‡See Glossary: Multiplication and Division Within 100.  **MGSE3.OA.8** Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.  **MGSE3.NF.1** Understand a fraction 1𝑏 as the quantity formed by 1 part when a whole is partitioned into b equal parts (unit fraction); understand a fraction ab as the quantity formed by a parts of size 1𝑏. For example, 34 means there are  three 1 4 parts, so 34 = 14 + 14 + 14 .  **Science: S3L2**. Students will recognize the effects of pollution and humans on the environment..  **ELA GSE3RI7**: TSW use information gained ( maps/photographs) and the words in the text to demonstrate understanding of the text ( where when why how, key events occurred)  R3: Describe the relationships of a series of historical events, scientific ideas, or concept, or steps in technical procedures in a text in relation to time, sequence,)  **Social Studies: SS3G1:** Tsw locate major topographical features. A) identify major rivers of the US. | |
| Big Idea:  How can we help conserve and protect freshwater?  Essential Question(s)  How is this research going to effectively solve our problem?  How do the causes of pollutants in our rivers affect the population and the environment?  What are the causes of pollution in the major rivers of the world?  What are the different types of pollutants found in our major rivers?  How can we identify beneficial characteristics a device needs to contain to effectively depollute the river?  What methods can be used to test the effectiveness of the device used to depollute the river?  How does your device prevent entanglement and harm to any living things inhabiting the river environment?  What are the different types of pollutants found in our major rivers?  How do the causes of pollutants in our rivers affect the population and the environment?  How is this research going to effectively solve our problem? | Key Vocabulary Terms   * Conservation * Reuse * Reduce * Contaminate * Pollutant * Natural resource * Water pollution * Population * Habitat * Environment * Renewable * Debris * Prototype * Ohio River * Mississippi River * Rio Grande * Hudson River * Colorado River * Environment * Boundary * Scarcity * threat |
| Technology Needed  *-Rio Grande Nearpod,*  *-Rivers of the World QR Codes*  *-Ipads for Stations*  *-Student computers*  *-Nearpod of USA river pollution*  *-Powerpoint of Rivers of World*  Websites:  Water Pollution-  <http://www.ducksters.com/science/environment/water_pollution.php>  Floating Trash Can-  <http://theodysseyonline.com/rwu/floating-trash-cans-introducing-the-seabin-project/260980>  <http://news.yahoo.com/surfers-invent-floating-trash-bin-clean-worlds-oceans-212348204.html>  How to Make a Water Filter-  <http://filterbutler.com/blog/make-homemade-water-filter> | Supplies Needed  *Anchor charts, sticky notes, Large classroom map, QR codes, Nonfiction texts*  *Pool noodles, fishing wires, pvc pipes, 4 plastic tubs for testing ,cups, netting* |
| |  |  | | --- | --- | | **STEAM** | **Humanities** | | *Day One:*  Power Point Introduction  (Hook: Video – Pollution Effects (2:18)  Big Idea, Vocabulary, Criteria, Constraints, Materials, Pictures) | Ask: How can we research causes of contaminations for major rivers in the United States (Rio Grande)?  Hook: Students will take a poll: Which major river of the USA do you think is the most contaminated with pollutants?  Introduce: Key vocabulary and Rivers of the World and locate on classroom map. Use the Rivers of the World Power point. Pose the essential question. | | *Day Two:*  Water Pollution Stations  Sink and Float (Teacher Demonstration)  Exploration Station  Research using computers | Review question: How can we research the causes of pollutions of the major rivers? TSW discuss with partners and place answers on the chart paper. Show the whole group Nearpod of different types of pollutions | | *Day Three- Four:*  Design Blueprint  Students work in small groups to brainstorm ideas, and begin to complete the Design Blueprint. | Rio Grande: Review the location on the map. Discuss the specific pollutants of the Rio Grande. Show the Power point of the Rio Grande. Students will write in their journals |  | | *Day Five*  Build Design  Students work cooperatively to build design. | TSW create a brochure providing information of causes of pollution and the effects to the environment. (Problem solutions) | | *Day Six*  Build Design  Students work cooperatively to build design. | TSW complete their research using the integrated stations. The teachers will facilitate | | *Day Seven:*  Build Design  Students work cooperatively to build design. | Essential Questions: Who should care for the environment?  TSW discuss interdependence of people and the environment and read the Reader’s Theatre- Who Should Care for the Environment. P. 46-49 Extension: TSW create a list of steps on ways they can clean the water (p. 45 in text book) | | *Day Eight:*  Test Design  Students test their design and record results in a data chart. | TSW continuing their plan for ways to clean water. | | *Day Nine:*  Improve Design  Students work in small groups to improve their design and reflect on successes and difficulties they faced during the challenge. | TSW take the rivers of the world test and reflect on the causes of the pollutions. | |  | Stations:  Writing Station: TSW read the two passages on recycling/trash. They will answer the extended response questions.  Computers: TSW will complete the Rio Grande Nearpod. They will take notes in their journals. When complete they will answer\_on the sticky note chart.  QR Codes: TSW use the graphic organizer.  RACE Questions: TSW use the leveled nonfiction books to answer RACE questions.  Comprehension station: Pretend you are from another planet. Write a first person narrative of the problems you see with the rivers of the USA. Explain to the earthlings how they can protect the fresh water. Be sure to include all the information we have learned in science and math. | | |
| Assessment: Rivers of the World Test  Pollution Solution Data Collection/Reflection | |
| Career Connection: A member of the Chattahoochee River Project will come to speak to all third grade students. | |