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Introduction
El Rio Grande translates to "the big river." El Rio Grande is an important factor in the lives of the people who reside around it. For thousands of years, people who live near the river have been asking questions like, "Is it going to flood this year? Will there be enough water this year?" The fluctuating river is a constant reminder that we do not have control over this important resource.

What affects the level of the Rio Grande? Is weather a factor in the changes of the river? Explore these questions and others while you build weather watching machines and measure the changes that affect the state's largest river.

Technology Use
• Internet
• Word processing program
• Database/Spreadsheet program
• PowerPoint or HyperStudio

Resources
Online
- The Weather Channel http://www.weather.com/homepage.html
- UM Weather http://cirrus.sprl.umich.edu/wxnet/
- Franklin's Forecast http://www.fi.edu/weather/
- Weather Underground http://www.wunderground.com/
- Make Your Own Weather Station http://www.fi.edu/weather/todo/todo.html
- Weather Resources http://www.fi.edu/weather/hotlist.html

Off-line
• Journal example

Process
Tips:
If possible allow the students to take a weekly reading of the river, or record the measurements yourself

Materials:
Will depend upon what weather devices you are going to build. Check the materials list of the devices.

Preparation:
• Begin collection of materials for weather devices a few months before creating weather devices.
• Contact local authorities to find out if you need permission to set up measuring devices at the river.
Tasks:
- Students will work in teams of three or four.
- Each group will build a different weather device.
- Students will take measurements from their devices and record them in a journal. See Example.
- Students will take measurements of the river.
- Students will chart the readings from their weather devices.
- Students enter their collected data into the database/spreadsheet template weekly.
- After printing out summary reports and distributing them to the class, students engage in a discussion about weather trends.
- Students discuss different ways the integrated software program can be used to analyze weather data. For example, have students identify the eight highest air pressure days and mark the cloud cover, wind speed, and wind direction; have them consider the connection between high pressure and other variables. This can be repeated for low pressure days, etc.
- Students will draw conclusions about how the weather at the river differs/is the same as weather at the school site and what implications this may have.

Assessment
Different rubrics can be used to evaluate the students. A rubric can be used two evaluate the overall accomplishment of the research teams. A peer rubric can be issued or students can develop their own to evaluate the members of their research team.

Extensions
- Students will explore major weather events in the last hundred years and compare them to what was happening with the river.
- Students will investigate what role the dams play in the fluctuations of the river.
- Use the collected data and its analysis to predict weather and what is happening with the river. Trade information with other schools and compare weather in different towns and states.

Outcomes
Upon successful completion of this unit, the learner will:
- be aware of different weather phenomena in New Mexico.
- be aware of how the weather affects the fluctuations of the river.
- create weather devices and keep databases of their findings.
- measure and chart the fluctuations of the Rio Grande.

Content Standards and Benchmarks

National Educational Technology Standards (http://cnets.iste.org/sfors.htm)
2) Social, ethical, and human issue
3) Technology productivity tools
4) Technology communications tools
5) Technology research tools

**New Mexico’s Standards and Benchmarks**

**Science**
1) Students will understand science concepts of order and organization.
2) Students will use evidence, models, and explanations to explore the physical world.
4) Students will understand the physical world through the concepts of change, equilibrium, and measurement.
5) Students will acquire the abilities to do scientific inquiry.
6) Students will understand the process of scientific inquiry.

**Language Arts**
1) Students will understand and use Language Arts for communication.
2) Students will understand and use Language Arts as a learning tool.
3) Students will listen and read for a variety of purposes.
5) Students will speak clearly and write effectively for a variety of audiences and purposes.
10) Students will use state-of-the-art computer and other technology to gather, use and synthesize information, and to create and communicate knowledge.

**Mathematics**
2) Students will understand and use Mathematics in communication.
4) Students will understand and use mathematical connections.
9) Students will understand and use measurements.