**Title:** [Water Pollution in West Virginia: A Knowledge Intervention](https://www.wvgazettemail.com/news/energy_and_environment/its-go-time-state-reveals-pfas-exceedances-of-proposed-epa-standards-in-drinking-water-in/article_b4cb4321-8b6f-590b-a158-72696361db1c.html)

**Project Introduction:** This news article from the Charleston Gazette provides insight into the water pollution crisis currently happening in West Virginia - chemicals linked to cancer have been found in 27 of the 37 water systems in the state of West Virginia (Tony, 2023). The specific chemical that was found, known as “PFAS (perfluoroalkyl and polyfluoroalkyl substances)” (Tony, 2023, para. 2) were found in 19 of the 27 polluted water systems. PFAS are “industrial chemicals that don’t break down in the environment and can build up in the human bloodstream” (Tony, 2023, para. 9). Water pollution is obviously an issue in West Virginia, meaning that it impacts HSTA students and other residents of the state. The purpose of this project is for HSTA students to provide a knowledge intervention to their high school/middle school peers that will use a pre-post test format to determine if the intervention affects participant knowledge.

**Project Overview:** HSTA CRA’s will provide a PowerPoint presentation for high school students to use for their intervention with high school or middle school students. This PowerPoint presentation will give HSTA students a guide for their intervention to run smoothly so they can perform a more sufficient statistical analysis of the data that will be collected from this project. HSTA CRA’s will also create a pre- and post-test for students to use for data analysis.

**Materials and summary of procedures:**

* **Materials**
  + PowerPoint presentation for guided intervention as provided by HSTA CRA’s
  + Pre- and post-test as provided by HSTA CRA’s
  + Printed copies of the pre-test (one for each participant)
  + Printed copies of the post-test (one for each participant)
  + Manilla folder/envelope labelled “Pre-Test”
  + Manilla folder/envelope labelled “Post-Test”
* **Populations**
  + Middle school students (10-14 years old)
  + High school students (14-18 years old)
* **Data comparisons**
  + Differences among gender
  + Differences among age group
  + Differences among students at different schools
* **Possible controls**
  + Gender
  + Grade level
  + Using students from a different school

**Recruitment/Cover Letter Script:**

Hello! My name is [insert name here]. I am a [insert school year here] at [insert high school here] who is working on a project for [insert HSTA region here] Health Sciences and Technology Academy (HSTA). The project I am conducting this year is an intervention exploring water pollution in West Virginia. I will be providing an intervention to [middle school or high school students] at [insert school name here]. This intervention will include a pre- and post-test in order for me to collect data to see [make the research question you selected into a statement and insert here]. The intervention should take around 30 minutes, with each survey taking around 5-10 minutes each. No personal data will be collected, and each participants’ identity will be protected. Any participant may back out of the intervention at any time. Thank you for your participation - this research project will allow me to educate my peers about water pollution in West Virginia.

**Draft Procedures:**

1. Read through the project outline, pre- and post-test, and supplemental PowerPoint provided by your CRA.
2. Recruit 30 participants for the intervention. Use the recruitment/cover letter script when recruiting folks to participate in your intervention. Be sure to record how you recruited these participants (social media, word of mouth, online survey sent via text, etc.)
3. Practice presenting the supplemental intervention PowerPoint with your HSTA teacher before attending the intervention session.
4. Print a copy of the pre-test for each individual participant and place them in the appropriately labelled “Pre-Test” manilla folder/envelope.
5. Print a copy of the post-test for each individual participant and place them in the appropriately labelled “Post-Test” manilla folder/envelope.
6. At the intervention session, present the supplemental PowerPoint slides to your participants.
   1. **(Slides 1-7)**: When all of your participants are gathered, introduce yourself and begin presenting the supplemental PowerPoint until you get to the “Pre-Test” slide (slide 7).
      1. Remove the printed pre-tests from the manilla folder/envelope labelled “Pre-test”.
      2. Provide each participant with one copy of the pre-test.
      3. Give your participants 5-10 minutes to complete the pre-test.
      4. Collect the completed pre-tests and place them in the manilla folder/envelope labelled “Pre-Test”.
   2. **(Slides 8-13)**:The educational content to be included in this intervention are provided on slides 8-13. Slide 13 contains a video that must be played for participants.
   3. **(Slide 14-15)**: When you reach slide 15, participants will complete the post-test.
      1. Remove the printed post-tests from the manilla folder/envelope labelled “Post-test”.
      2. Provide each participant with one copy of the post-test.
      3. Give your participants 5-10 minutes to complete the post-test.
      4. Collect the completed post-tests and place them in the manilla folder/envelope labelled “Post-Test”.
   4. **(Slide 16-17)**: After collecting the post-tests, allow your participants to ask questions, make comments, and clarify any confusion they had during your presentation. Be sure to thank the participants for participating in your study and the teacher(s)/school administrators for allowing you to conduct your study in their classroom(s).
7. Following the completion of the intervention, use the answer key (provided as the last page of the pre-test/post-test template) to score participants’ pre-tests and post-tests. Enter your results in your data collection table.

**Possible research questions and data analysis**

* After an educational intervention on water pollution in West Virginia, will there be a statistically significant difference in knowledge among females in fifth grade who attend ABC Elementary School?
  + Independent Variable
    - Educational intervention
  + Dependent Variable
    - Change in test scores
  + Control
    - No control group
  + Inclusion Criteria
    - Gender (female)
    - Grade level (fifth grade)
    - School (ABC elementary school)
  + Data Analysis
    - T-test to compare post-test scores with pre-test scores for those who participated in the intervention
* After an educational intervention on water pollution in West Virginia, will there be a statistically significant difference in knowledge between male and female students attending ABC Junior High School?
  + Independent Variable
    - Gender
  + Dependent Variable
    - Change in test scores
  + Control
    - No control group
  + Inclusion Criteria
    - Gender (male/female)
    - Grade level (7th-8th grade students)
    - School (ABC Junior High School)
  + Data Analysis
    - T-test to compare the change in pre-test and post-test scores between male and female students attending ABC Junior High School who participated in the intervention
* After an educational intervention on water pollution in West Virginia, will there be a statistically significant difference in knowledge between 6th, 7th, and 8th grade students attending ABC Middle School?
  + Independent variable
    - Grade level (6th, 7th, and 8th grade)
  + Dependent variable
    - Change in scores
  + Control
    - No control group
  + Inclusion Criteria
    - Grade level (6th, 7th, and 8th grade students)
    - School (ABC Middle School)
  + Data analysis
    - ANOVA to compare change in scores across 6th, 7th, and 8th grade students who participated in the intervention

**References:**

Tony, M. (2023, May 15). *“It’s go time”: State reveals PFAS exceedances of proposed EPA standards in drinking water in 19 public water systems*. Charleston Gazette-Mail. <https://www.wvgazettemail.com/news/energy_and_environment/its-go-time-state-reveals-pfas-exceedances-of-proposed-epa-standards-in-drinking-water-in/article_b4cb4321-8b6f-590b-a158-72696361db1c.html>