

GATHERING STATISTICS FOR RESEARCH LESSON PLAN

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Grade Level: 9-12

Rationale: Statistics are often incorporated into articles and books students use for research purposes, but students tend to happen upon statistics without actively seeking them out to support research. This lesson is designed to provide students with a foundation that they need to locate valid statistics to support their research.

Objectives:

- Students will evaluate reliability of websites which provide statistical information.
- Students will plan and execute searches specific to locating quality statistics.

Pre-assessment:

Hand the following pre-assessment out to students a few days prior to conducting the lesson.

Please answer the following questions:

Name:

Question #1: If you “happen upon” a statistic while researching and it sounds incorrect, what do you typically do? How do you determine whether a source you are using to gather statistics is valid and reliable?

Question #2: If you are seeking a specific statistic to support your research, what search techniques do you use to find it?

Motivation:

Locate an example of an article posted online that includes statistics that claim that world population is in a decline. (I have one but do not want to post a site I consider a poor site as such online – contact me if you want the URL: khornberger@palisadessd.org)

Discuss students’ thoughts on article.

Elicit resulting question from article...

Is the population of the world projected to grow or decline?

Discussion:

A. Evaluation of the internet source:

- Who is the author?
- What is the domain?
- When was this published?
- Are there typos or incorrect grammar usage?
- Did they cite the sources of their statistics?
- Do they appear to have an agenda?
- Can you verify this information using other resources?

What do more “valid” resources say about population outlooks?

From the United States Census:

<http://www.census.gov/compendia/statab/tables/08s0014.pdf>

From the United States Central Intelligence Agency:

<https://www.cia.gov/library/publications/the-world-factbook/fields/2002.html>

From Nation Master:

<http://www.nationmaster.com/encyclopedia/Human-population>

From the United Nations:

<http://esa.un.org/unpp>

B. How do I find quality sites such as these?

Use your library...

Let's look at the page I created for researchers of statistics:

<http://www.palisadessd.org/606342315154648/blank/browse.asp?a=383&BMDRN=2000&BCOB=0&c=53154>

(Guide students through page...)

Activity/Assessment:

Assign groups of two based upon pre-assessment responses and teacher input. Hand out the activity sheet to each group. You will need to **scroll down** to see the Activity Sheet:

Statistics Lesson Activity Sheet

Questions you may choose from:

- Is the death penalty executed in Texas much more often than in other US States?
- Are Caucasian Americans a minority? If yes, when did they become one? If no, when might they become one?
- Is childhood obesity becoming much more prevalent in the US?
- Is the gap between rich and poor increasing in the US?
- Are small businesses thriving as well as they were during the 20th Century in the US?
- Which is the greater threat to the US – Middle Eastern countries or North Korea?
- What is the greatest indicator of post secondary achievement in the US?

Note: you will need to open a Word Document to answer the following questions:

1. List at least three supporting statistics you need in order to answer the question.

example: if you have chosen “Is the gap between rich and poor increasing in the US?”, one thing you will need to find out is the number of Americans who are currently “affluent” compared to the middle class and the lower class.)

note: Note: you can get creative with your scope of coverage but make certain that the supporting statistics at least answer the question given.

(3 points)

2. Using the statistics sources linked to the High School Library website:
 - locate, copy, and paste statistics (graphical or numerical) from at least three reliable resources
 - cite the sources consulted.

(3 points)

3. Write a paragraph answering the question (5 sentence minimum)

(8 points)

4. Using Microsoft Excel, create a pie chart or other graph to synthesize and display the data that you gathered in a visual format.

(6 points)

Reminder: Did you remember to put your names on your papers?

Pennsylvania Assessment Anchors:

Mathematics

- M11.D.2 Represent and/or analyze mathematical situations using numbers, symbols, words, tables and/or graphs.
- M11.E.1 Formulate or answer questions that can be addressed with data and/or organize, display, interpret or analyze data.
- M11.E.4 Develop and/or evaluate inferences and predictions or draw conclusions based on data or data displays.

Reading

- R11.A.2 Understand nonfiction appropriate to grade level.
- R11.B.3 Understand concepts and organization of nonfiction text.

Pennsylvania Academic Standards:

Mathematics

Mathematical Reasoning and Connections

- 2.4.11.A. Construct valid arguments from stated facts.
- 2.4.11.B Determine the validity of an argument.

Statistics and Data Analysis

- 2.6.11.B Use appropriate technology to organize and analyze data taken from the local community.

Reading, Writing, Speaking and Listening

Reading Critically in All Content Areas

- 1.2.11.A Read and understand essential content of informational texts and documents in all academic areas.
- 1.2.11.B Use and understand a variety of media and evaluate the quality of material produced.