

Analyzing Social Numbers: Guiding Students to be Critical Consumers of Information

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Introduction

“A bad statistic is harder to kill than a vampire”ⁱ

Unless you are one of the last holdouts from social media, your “feeds” are undoubtedly filled with attention grabbing headlines about groundbreaking studies and show-stopping claims. According to *Forbes* magazine,ⁱⁱ more people own a cell phone than a toothbrush! And I think it’s fair to assume that those cell phones are not mostly used for talking. Social media is securely imbedded in our culture and the messages they deliver are not easy to filter. In the past, reporters had to verify their sources before being published but that is no longer the case today. There is no longer a filter for what is published online or even what is delivered to our personal devices and into our homes. Anyone can write a blog that can be marketed and seen by millions of people. They needn’t be experts or hold any qualifications; they merely have to have a Twitter account. Even the government takes advantage of our hunger for social media, with every politician and pollster having accounts on Facebook and Twitter. We can follow celebrities and political leaders, including the President of the United States. However, it is increasingly difficult to discern the credibility of what we read online.

If it is hard for us as adults, imagine how it is for adolescents! This generation of “digital natives” is bombarded with more streaming information than ever before. Despite the fact that Facebook requires members to be at least 13 years of age, it is estimated that over five million are under age 10.ⁱⁱⁱ Perhaps even more surprising is that 95% of the parents were aware of their children using Facebook, and 78% assisting them in creating the accounts! Putting the dangers of unsupervised social networking aside, consider the advertisements and postings that children are exposed to this way. I have created this unit to help my students begin to filter this steady stream of information and learn to think more critically about the claims they hear every day.

Background

I teach elementary school in the Christina School District at Thurgood Marshall Elementary. It is a large suburban school in Newark DE. In the fall of 2013, we had 681 enrolled students from kindergarten through fifth grade. Our demographics are diverse, with approximately 31.1% of students reporting their race as African American, 40.5% as

white, 14% as Asian American and 8.7% as Hispanic (DE Department of Education, 2014). Other characteristics include 8.7% of students are English Language Learners, 36.7% are from low income families and 7.2% are identified as Special Education students. Our connections to the community are strong and we have significant parent involvement. Teachers work diligently to strengthen this bond and building a positive school environment is a key part of our School Improvement Plan. We have consistently been rated a “Superior” school as a result of strong overall performance on state tests.

I am responsible for challenging our brightest students as the school Enrichment Teacher. This means that I work with the students who perform in the highest 10% in the areas of Math and Reading. Most of my students, despite their tender age, are extremely adept with the use of media and technology. Thus they are exposed to more advertising and streaming news and information than ever before. And although they are very intelligent, they can be very vulnerable to claims made by media and authoritative people that they may consider experts.

Rationale:

This year, my District has made a commitment to expand the Enrichment program and a task force has been created to take a critical look at the curriculum across the grade levels. We have also been evaluating it for alignment with the Common Core. I strongly feel that our kids today need more experience with independent thinking and the development of their own opinions, based on sound facts and figures. The Common Core also requires students to be adept at clearly expressing their viewpoint, along with supporting evidence. Although my students are not yet middle schoolers, I expect them to be active participants in discussions and Socratic Seminars, and consistently perform above their grade level. This year, we will also be introducing the basics of debate to our fifth grade, in order to prepare them for more intense argumentation and debate in middle school. I think this dovetails beautifully with the content of this DTI seminar. Not only will this unit teach the basics of argument, I will combine it with the critical thinking skills required to “identify dubious data”.^{iv}

Connections to the Standards

This unit has the potential to incorporate standards in Reading, Writing, Language, Math, Speaking and Listening, and Technology. The ELA shifts required by the Common Core include regular practice with complex texts with a focus on academic vocabulary, an emphasis on the use of *evidence* in order to present *careful analysis* of a problem, to *defend* claims well and to *present* clear information on an issue. Every single Speaking and Listening standard will be covered by debate, along with most of the standards for Writing. But first, we must begin with the basics of social numbers.

What is a Social Problem?

New social problems arise every day. Currently, it is concerns over the spread of Ebola in the United States. But just what makes a situation a social problem? The definition is nebulous, depending on whom you ask. Is suicide a social problem or an individual one? What about global warming? When an individual or group calls attention to an event or occurrence, it starts people thinking about it. Perhaps they were unaware of it before, or didn't realize its frequency or lack thereof. The media sensationalizes it, and it becomes a hot button topic. People begin to form opinions about it, talk about it and it becomes a social problem. And thus, we might consider that social problems are actually a *process* by which concerns come to public attention. The bigger the numbers, the more shocking the problem, the better for the story. And the competition for our attention is fierce!

Social Statistics: Where Do the Numbers Come From?

Whenever we encounter a discussion about a social problem, the issue is undoubtedly accompanied by some statistics to support it. In order to fully understand the issue, we must first be able to understand the numbers behind it. Although you might first consider this mathematics, being able to think critically about the statistics is actually called numeracy--the ability to comfortably think about and use numbers. Numbers are available because someone, somewhere, decided that it was important to count something, and people therefore, can have influence on the results.

Early on in seminar, we discussed Dr. Best's article "Birds—Dead and Deadly: Why Numeracy Needs to Address Social Construction."^v We began to talk about where statistical numbers come from and the human willingness to believe claims that are accompanied by supporting data. We agreed that in general, we tend to believe that numbers don't lie, and that numbers are facts. However, if we recall that all numbers are created by people, we realize that they are a social construction, built by people.

So what is this term "social construction?" With its roots in sociology, the term is relatively new but has since spread amongst the humanities. It refers to the notion that people depend on language and communication to make sense of the world around them and thus all knowledge has a social aspect. Given this perspective then, even science and math have histories with a social basis. "All numbers—tallies, but also rates, inferential statistics and all other figures—are the results of peoples' activities."^{vi} However, this is not to say that the numbers are false, but rather we do need to remember that they were the product of a person's choices about what to count and how to count it.

Best used reports of the high death rate of birds from window collisions as an example. One such report claimed that 1 billion birds were killed by fatal window collisions annually. One billion? Numbers such as this certainly grab your attention, but perhaps you should dig a little deeper before you start cushioning all windows! Close inspection revealed that this case is a good example of what happens when the advocates begin with an estimate of how often the event occurs. An estimate, by definition, is not exact, but any big, round numbers should throw up a red flag. The second point that can

be taken from this example is that, much like the old “fish tale”, the numbers can grow as time goes on. Each time the story is shared, the numbers tend to get rounded up and the numbers get much larger. The source and scope of the study can also get “fuzzy” in the process.

His second bird example was regarding the bird flu “epidemic” in 2005-2006. Every few years, the public’s fear is raised about how severe the flu season will be. That year the prediction was frightening. Add to this the idea that it can be spread by animals over which we have no control, and that fear escalated. A look back in history provides instances of great human loss due to various strains of flu and this further increases the concern. Back in 2005-2006, the media reported that experts suggested that the loss of life from the Bird flu could be “in the range of 1 billion”^{vii} worldwide. Could this expert’s educated guess really be true? These two examples clearly illustrate the need for numeracy education. This means having the ability to not just understand the statistics, but how to apply the knowledge to a social context. Numeracy is being able to actually use the math!

Other Problematic Issues with Social Statistics

Aside from huge, round numbers and faulty estimates, there are other things to watch for as you think critically about a social problem or claim. A good starting point is with the mathematics itself. For instance, if the study reports information about an “average,” you must first be sure about which “average” the researchers are referring to. Is it the mean (all numbers added up and divided by the total number of values)? Or did they use the median (the middle value). This can make a big difference!

You must also be clear about the variables in a given study being reported. Make sure that you know which is the dependent variable, because if you mix them up, the data can tell an entirely different story! This is often a problem when the statistics are presented in graphic form. Graphs can look very attractive and seem to present information in a straightforward way—unless the image is not telling the “story” correctly or the data are manipulated. The ease of creating eye catching visuals with Microsoft Excel and PowerPoint can be addictive, but they don’t always portray the facts accurately. Intentionally or not, graphs can be misleading!

Surveys and polls are another source of social numbers that became popular in the 1930s in an attempt to predict the outcome of elections. They can be a valuable source of information, but they have weaknesses as well. Because they can be expensive to conduct, surveys often sample a small number of respondents. Consider telephone polls and surveys. People who are home, with a landline, and are willing to take the time to respond just might not be representative of the general population! You might think that this cannot produce reliable results, but actually the sample size is not the important factor: it is whether or not it is a representative sample that counts. It is the quality, not the size of the sample that is most important.

The other crucial part of a survey lies in the wording: it matters what and how the questions are asked. Vocabulary is very important, depending on the desired results. Political campaign polls are a great example of this. Conflicting polls are rampant during an election. For example, in NRA sponsored surveys of the general public, 75% oppose gun control; in surveys sponsored by anti-gun advocates, 75% favor tougher laws. This issue is not who is polled, but how the questions are worded.

Analyst Nate Silver has made his career out of statistics and opinion poll analysis. He created his website FiveThirtyEight^{viii} in 2008 during the presidential primaries and general elections. Using his expertise with baseball statistics, he examined political polling data and made predictions about outcomes. He was surprisingly accurate, and correctly forecast the winners in all but one state.^{ix} Today, his site has won many awards and is a very interesting site for commentary on social problems, all based on statistical polling analysis.

The educated consumer of information should also see red flags when presented with extremely large, round or extremely small numbers. This should suggest something amiss. The media loves to grab the public's attention with the worst possible scenarios such as horrific car accidents or murders. Although these things unfortunately occur, the ones that grab and sustain the headlines are not as likely to happen as the media suggests. In his book, Dr. Best used the example of teen suicide to illustrate of this. We discussed the following: "Today a young person, age 14-26 kills herself or himself every 13 minutes in the United States."^x This is both dramatic and horrifying to anyone who reads it. However, with just some common sense and basic calculation, one comes to the realization that this just cannot be, because it works out of 40,430 teen suicides annually, which is more than the total number of suicides for the entire country! (about 38,000) Watch out for research results that make use of time and announce frequency of an occurrence in minutes! Remember, populations grow but the number of minutes in a year stays the same. Even if a rate is constant, whatever you are measuring will occur fewer minutes apart.

Official Statistics

When looking at public issues, a good place to start is with official statistics. The U.S. government collects huge amounts of data and statistics that are sorted and analyzed. Let's take crime rate statistics, for example. Let's say your high school senior is looking at college towns. You are interested in the crime rates, because you want your child to be safe. The formula that is generally used to generate this data is the number of reported crimes divided by the population, times 100,000. Seems simple enough, but you might want to consider the factors that could skew this type of statistics. You will find that in fact, the "reported crimes" recorded only include murder, rape, robbery, aggravated assault, burglary, larceny, motor vehicle theft and arson. Now these are, no doubt, the worst crimes, but they don't say anything to a parent about theft of personal property like bikes and laptops, underage drinking, drug arrests or other things a parent might be

worried about. These numbers might in fact be high, while the official crime rate is low. Other issues with official statistics include changing definitions and under and over reporting of crimes.

A historical example of this type of official statistics error can be found in New York City's crime rates. Before the 1950s, NYC was reported to be a very safe city, with a surprisingly low burglary rate. However, shortly after a change in police reporting procedures, the rate of reported burglaries skyrocketed 1500%! What could possibly have caused this drastic change in data? Upon close inspection, it was the change in procedure. Before, a crime was directly reported to a cop "on the beat". However, when the changes came about, calls went directly into the central police station and THEN were assigned to the police on the street. Prior to that, it was up to the officer which crimes he reported (and probably many went unrecorded, contributing to the earlier low crime rate).

Where Did the Claim or Study Originate?

The motivation of people bringing attention to a given social issue will often affect the outcome. Reasons might include seeking media attention, or to profit financially or personally. On the other hand, their reasons might be humanitarian; fighting for justice or they simply want to end up becoming the face of their cause. For example, the woman who became the figurehead for Mothers Against Drunk Driving (M.A.D.D.) was named Candy Lightner, whose own daughter was killed by someone who was driving under the influence. I doubt that she was interested in the fame; rather it was her unfortunate circumstances that motivated her tireless work and made her famous.

Another example that we discussed in seminar is the conservative movement's impact on the U.S. climate change policy. Conservatives prefer the term "Change" rather than "global warming", perhaps because it sounds less alarming and sounds more natural. This difference in defining the issue can have a significant impact on the way people feel about it. This type of claim can be made to procure corporate funding for projects and research, to create new foundations, to secure political connections and even perhaps to provide a forum to share results and viewpoints.

Delivery of Social Claims

Much of our news is now delivered wirelessly via smart devices or television. Newspapers have been forced to offer digital editions to retain subscribers. While this is great news for the trees and environmentalists, it allows for confusion about the credibility of sources. The competition for our attention is great and one way to grab it is by using an infographic. Infographics are a visually engaging, quick way to learn about a topic without a lot of in-depth reading. They are a way to "show, not tell" the desired information and engage the consumer. This type of visual information tends to stick with

us, accurate or not. Media specialists make use of images that are cute, (think puppies!) colorful, and attractive to persuade and convince us.

The Vocabulary of Social Numbers

Sociology has a specific vocabulary that is used when discussing social problems and their numbers and both you and your students will need to become familiar with them. Here are some of the key terms that are important.

Numeracy: the ability to think or express quantitatively

Innumeracy: the equivalent of illiteracy, only in mathematical terms

Social analyst: one who watches and comments on current social trends

Social statistics: the use of statistical measurement methods to study the way humans behave in a social environment

Correlation: the relationship between things that happen or change together

Statistical milestone: an important point in the progress or development of something that is expressed with statistics

Causality: the notion that one thing can cause another

Hyperbole: exaggeration

Credibility: the quality of being believable or worthy of trust

Of course, there will likely be a range of other words that will arise as you delve into the world of social problems with your students.

Why Teach Debate?

“It is the mark of an educated mind to be able to entertain a thought without accepting it.”^{xi}

As I mentioned, I am introducing my 5th grader Enrichment students to debate. It is an excellent way to teach several skills and integrate skills across the curriculum. First, it begins with independent research and learning. With the teacher as guide, debate encourages students to conduct independent research, evaluate information, to think critically and to formulate alternative solutions to problems. Secondly, as a result of this guided experience, students will have the opportunity to show growth in the four essential keys of debate: listening, speaking, reading and writing—all Common Core Standards!

Since my students will be analyzing the content of popular media and claims found therein, they will be developing creative and critical thinking abilities in a structured

format. They will engage in informed discussions which make them grapple with more than one side of an issue. They will attempt to come up with explanations and perhaps solve authentic problems where there is the possibility of more than one reasonable solution. Additionally, in order to clearly explain their evidence and position on a study or claim, students will need to have solid communication skills to capture and hold their audience.

For young people, it is important that they have opportunities to explore their beliefs and consider those of others. Debate is a perfect vehicle for this because it provides a chance to examine moral and social issues. Of course, my topics will be tailored to my students' age group but, by laying the foundation this year, they will be primed for bigger issues in middle school that will serve them well both academically and personally. The middle school years are often turbulent ones, and the ability to think critically about an issue is important.

As mentioned, debate and numeracy can go hand in hand. Students need to be able to read and interpret quantitative information—surveys, graphs, and charts are often encountered in research and used to support or refute claims. They need to be able to read, analyze and assess this type of data as they prepare to debate. In addition, student debaters often hone their technology skills because so much information is available online. They must evaluate the validity and authenticity of their sources and again, this is a very important skill.

The Basic Vocabulary of Debate

Debate: an oral contest where two teams or individuals argue against each other and try to present the best argument

Affirmative team: the team that is FOR the argument

Negative team: the team that is AGAINST the argument in the debate

Rebuttal: the response to an argument that argues against a point, and gives evidence against it

Judge: this person decides who wins the debate

Teaching Strategies

Obviously at the start of this unit, students will need to be taught to look for, analyze and evaluate popular claims and social numbers. They will need structured opportunities to use the proper vocabulary, think deeply about the issues, organize and share their thoughts and build on the thoughts of others.

Vocabulary Development

Because my students will likely be unfamiliar with the content vocabulary, they will need repeated exposure and practice using the terms. It is important to begin with their prior knowledge and then provide many opportunities to become familiar with and use them. Large and small group discussion is important and teachers should encourage the proper use of new vocabulary.

Graphic Organizers and Foldables

These tools help scaffold information and “chunk” new learning in a meaningful way for students. In this unit, students will create an interactive notebook to assist them in their analysis of social numbers. These notes will be very useful in their group work and debates.

Collaborative Learning

Students need to learn to work effectively together. Through a variety of activities, they will practice their collaboration skills, learn to respect the views of others, how to respectfully disagree, and to consider a variety of viewpoints on a topic before arriving at their own.

Socratic Seminars are one way to work on this collaborative learning. It involves the whole group discussing a text. Before a Socratic Seminar, students can be shown a video example and will be taught the rules of this type of academic conversation. A reading (in this case an article about a recent study or claim) is distributed prior to the discussion. Students do a close read of the information and generate questions that will be discussed by their peers in seminar. The teacher begins the discussion with an essential question: a broad, open-ended question that begins the conversation. There are several formats that this can take and there are many resources readily available online. (see Resources for Teachers)

At the conclusion of this unit, students will participate in a structured debate regarding a current issue, claim or topic. These topics can either be teacher or student selected, depending on the class. A consideration might be to assign this for homework: bring in examples of social problems or claims taken from the current media. When several examples have been collected, the groups could either vote or self-select their topics.

Student learning can be evaluated in several ways in this unit. There are many opportunities for anecdotal and formative assessment as students participate in the discussions, collaborate with their peers and conference with the teacher regarding their research in preparation for the debates. Many rubrics are available for the purpose of assessing Socratic Seminars and debate (see annotated bibliography). A summative assessment could also be created, using available resources or independently to determine student understanding of the vocabulary and the ability to make an informed assessment of the potential validity of popular claims.

Integrating Technology

By providing the opportunity to use technology in the classroom, students get excited and quickly become engaged in any topic. By guiding students using technology, it provides current, authentic learning and allows for stimulating discussion. Try using [www.tweentribune](http://www.tweentribune.com) as a safe, appropriate site to explore topics for debate and presentation topics. It is broken down into categories to assist students as they browse articles. In this unit, students will use laptops to search for social studies, and to create presentations. Glogster.edu will be used to create infographics that will contain links to websites, videos and audio files.

Classroom Activities

Introductory Activity and Discussion:

Given that my students are in upper elementary school, it is important to pre-assess their prior knowledge on the subject. A great way to do this is to use an Anticipation Guide such as the one found in Appendix B. After completing the Anticipation Guide, students will share in partners and then in a whole group discussion. Teacher will note student misconceptions and students will include this guide in their interactive notebooks to revisit at the conclusion of the unit.

Carousel Activity: Learning the Basics

Using *Stat-Spotting* as a guide, and depending on the age group, introduce students to what to be aware of when initially considering cases of social numbers. Carousel Brainstorming is a strategy that my students enjoy. It allows them to get up, move about the room and work together. Set up a number of stations that include chart paper, markers, and an example of a study or social claim. Provide a set of guiding questions to assist students as they critically analyze the study in their article. In groups of four, students travel from station to station, reading the study and recording their thoughts on the chart paper as they try to determine the reliability and/or problems with the information provided. Topics might include:

School lunches: <http://consumer.healthday.com/kids-health-information-23/education-news-745/school-lunches-more-nutritious-than-home-packed-lunches-study-693475.html>

Year Round Schooling: http://www.huffingtonpost.com/matthew-lynch-edd/year-round-schooling-how_b_4622211.html

Benefits of Video Games?: <http://www.washingtonpost.com/news/to-your-health/wp/2014/11/13/want-to-boost-your-brain-power-a-new-study-says-video-games-are-the-answer/>

Recess vs Rigor: <http://www.cnn.com/2012/04/03/health/diet-fitness/parenting-recess-kids/>

Allow students to spend 15 minutes at each station. They should have the chance to visit them all. Whole group discussion will be conducted after students have visited all stations, reviewing the comments. Discussion will be guided toward identifying all considerations in the studies. In the next lesson, students will then create a foldable (see teacher resources for suggestions) with a page for each problem with the social numbers that is identified.

Activity: Academic Conversations

Before the research begins they can be given experience with academic conversations. Starting in pairs, students will engage in AB Discussions. One student is A, the other is B. Given a topic such as “School districts should provide their students with iPads/tablets for textbooks and school use” and with a timer set, Student A will talk on the topic for 30 seconds. At the buzzer, it is then Student B’s turn to address the prompt, but cannot merely repeat or agree with the first student.

Once they have practiced listening and building on the ideas of a partner, students need the chance to strengthen their communications skills in a larger group. To avoid one or two students monopolizing the conversation, students can be given a small token such as bingo or poker chips. As they contribute their viewpoints on a topic, they turn in a chip. Teachers can decide the number of markers, depending on the complexity of the topic. This is also a great activity for self-regulation, as it holds all students accountable for their participation and helps them stay on target. It allows for several discussions to be going on at once, increasing student engagement and allowing the teacher to formatively assess student progress.

Collaborative Activity: Socratic Seminar

Students will be provided with an article for Socratic Seminar. They will read critically and come to class prepared with questions for their peers that will stimulate conversation. Because my class is smaller, we can use a single circle, but if your class is larger, take a look at the “Fish bowl” strategy (see bibliography for resources).

Arrange chairs in a circular formation and review the ground rules for Socratic Seminar:

1. Speak so that all can hear you.
2. Listen closely
3. Speak without raising hands
4. Refer to the text
5. Talk to each other, not the teacher.
6. Ask for clarification of ideas when necessary.

7. Invite and give time for others to speak.
8. Keep an open mind to new viewpoints.
9. Remember that YOU are responsible for the quality of the seminar!

Following these rules, students will discuss their views on the article, citing the text, clarifying when necessary and communicating their viewpoints. The more often students participate in Socratic Seminars, the better they get at it! Texts can be content based, visual (like an advertisement), fiction or factual. The teacher is more of a guide in this activity, as students can take turns being the discussion leader.

The seminar will last for 30 minutes after which students will complete a self-reflection. See bibliography for resources.

Integrating Technology: Create Your Own Infographic!

Introduce students to infographics, using a site such as <http://www.creativebloq.com/graphic-design-tips/information-graphics-1232836>. There are several available for discussion. Students will then use www.glogster.edu to create their own infographic, integrating relevant video and or audio links. The finished product can then be shared with the class. Allow students to choose their own topic and encourage them to produce the most sensationalized “glog” they possibly can to gain and hold the viewer’s attention.

www.tweentribune.com can be accessed as a starting off point. It provides a wide variety of topics for students to choose from (such as technology, fashion, animals, science, entertainment, etc.)

Summative Activity: The Basics of Debate:

After having the opportunity to participate in Socratic Seminars and activities that have given students the tools to think critically about social claims, they will be ready for an elementary debate. This is a chance to practice communication and listening, research, critical thinking and collaboration. My students will work in pairs to debate topics that they will choose from a given list. Before getting to the debate part, give students the chance to see some debates in action. Examples can be found on www.teachertube.com or www.youtube.com. Many, many examples can be found with a simple Google search. There are a variety of sites that will also provide appropriate topics for any grade level. See bibliography for suggested sites.

Conclusion

This unit was designed for advanced fifth grade students. However, the topics, activities and resources can be used throughout high school. Its goal is to provide students with the knowledge and tools to help them make sense of the numbers and claims that they are exposed to each day, both today and in the future.

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Appendix A

This unit covers Common Core standards in the following areas:

Reading: Literature:

RI.5.1 Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.

RI.5.2 Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.

RI.5.3 Explain the relationships or interactions between two or more individuals, events, ideas or concepts in a historical, scientific, or technical text based on specific information in the text.

RI.5.4 Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area

RI.5.5 Compare and contrast the overall structure (e.g. chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in two or more texts.

RI.5.6 Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.

Speaking and Listening:

SL.5.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.

SL.5.1a Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.

SL.5.1b Follow agreed upon rules for discussions and carry out assigned roles.

SL5.1c Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others.

SL5.1d Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.

SL5.2 Summarize a written text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

SL5.3 Summarize the points a speaker makes and explain how each claim is supported by reasons and evidence.

SL5.4 Report on a topic or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

Appendix B

Anticipation Guide

Topic Identifying Dubious Numbers and Claims

Name:

Read each statement below. Respond in the left column whether you agree (A) or disagree (D) with each statement. Think about why you agree or disagree, and be prepared to share.

Before Agree/Disagree	Statement/Question	After Agree/Disagree
	1. I hear about studies and research claims all the time.	
	2. When I hear about a study in the news, I know that it is true.	
	3. Numbers don't lie.	
	4. When data includes large numbers, it really grabs my attention!	

	5. Studies are conducted for many different reasons.	
	6. Polling people is a good way to find out what they are thinking.	
	7. Government agencies are always an accurate source of information.	
	8. All information published on the internet is reliable.	
	9. It is important to evaluate the source of information found on social media.	
	10. Blogs are always written by experts,	

Notes

ⁱ Best, (2008), p.10

ⁱⁱ Forbes, <http://www.contentfac.com/more-people-own-cell-phone-than-toothbrush-10-crazy-social-media-statistics/>

ⁱⁱⁱ ibid

^{iv} Best, (2008)

^v Best,(2008)

^{vi} Best, (2008),p.2.

^{vii} Best (2008), p. 8

^{viii} FiveThirtyEight.com

^{ix} Wikipedia wikipedia.org/wiki/FiveThirtyEight

^x Best, (2008),p. 19

^{xi} <http://www.brainyquote.com/quotes/quotes/a/aristotle100584.html>

Curriculum Unit Title

Analyzing Social Numbers: Guiding Students to be Critical Consumers of Information

Author

Nancy Ventresca

KEY LEARNING, ENDURING UNDERSTANDING, ETC.

Social scientists gather, classify sequence and interpret information and visual data in order to recognize how people, places, ideas and events shape our world.
Effective communication and expression of personal viewpoints is important.
It is important to consider the viewpoints of others before reaching personal conclusions.

ESSENTIAL QUESTION(S) for the UNIT

How do readers engage in a civil debate?
What factors should be considered when analyzing social claims?

CONCEPT A

Critical thinking about social issues

CONCEPT B

Working collaboratively to analyze a social claim

CONCEPT C

Speaking and Listening

ESSENTIAL QUESTIONS A

What kinds of strategies are used when critically thinking about a social claim?
How can you determine if evidence is valid and reasonable?

ESSENTIAL QUESTIONS B

How do I effectively share my ideas in a group?
How do I evaluate evidence in a social claim?

ESSENTIAL QUESTIONS C

How can I express my ideas effectively?
How do readers engage in a civil debate?

VOCABULARY A

Sociology, social problem, media, numeracy, social construction, variables, survey, poll, official statistics, social analyst, correlation, causality, credibility, infographic

VOCABULARY A

Collaboration, reliable, validity, consensus, viewpoint, perspective, controversy, stakeholder

VOCABULARY A

Debate; refute, pro, con, affirmative, rebuttal, argument, consensus, persuade, "statement of value", bias

ADDITIONAL INFORMATION/MATERIAL/TEXT/FILM/RESOURCES

Best, Joel. *Damned Lies and Statistics: Untangling Numbers from the Media, Politicians, and Activists*. Berkeley: University of California Press, 2001.
Best, Joel. *Flavor of the Month Why Smart People Fall for Fads*. Berkeley: University of California Press, 2006.
Best, Joel. *Stat-spotting: A Field Guide to Identifying Dubious Data*. Berkeley: University of California Press, 2008.
Mandora, Sheetal. "Debate Topics for Kids." Buzzle. Accessed October 26, 2014. <http://www.buzzle.com/articles/debate-topics-for-kids.html>. Various topics for student discussion and debate
Shuster, Kate, and John Meany. *Speak Out! Debate and Public Speaking in the Middle Grades*. New York: International Debate Education Association, 2005.