

CS 4001: Computing, Society & Professionalism

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Week 6: Evidence
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Term Paper Assignments

- Proposal (discussion of the assignment in this class)
 - Due: 2/28
 - Grade: 4%
- Presentation
 - Due: 3/2
 - Grade: 2%
- Outline
 - Due: 3/16
 - Grade: 4%
- Full Paper
 - Due: 4/11
 - Grade: 12%
- Final Paper Group Discussion
 - Due: 4/11, 4/13
 - Grade: 3%



Writing Arguments

The argumentative essay is a genre of writing that requires you to:

1. investigate a topic;
2. collect, generate, and evaluate evidence;
and
3. establish a position on the topic in a concise manner.

What is Evidence?

- “Evidence” | all the verifiable information a writer might use as a support for their argument, such as facts, observations, examples, cases, testimony, experimental findings, survey data, statistics, etc.
- Evidence is part of the “grounds” and “backing” of an argument in support of reasons and warrant respectively

The Persuasive Use of Evidence

- Consider a target audience of educated, reasonable, and careful readers who approach an issue with healthy skepticism, open-minded but cautious. What demands would they make on a writer's use of evidence?
- Apply the STAR Criteria to Evidence (by Richard Fulkerson)
- *Ex: Working full time harms a high school student's GPA*
- **Sufficiency:** Is there enough evidence?
- **Typicality:** Is the chosen evidence representative and typical?
- **Accuracy:** Is the evidence accurate and up-to-date?
- **Relevance:** Is the evidence relevant to the claim?

General principles for the persuasive use of data (class exercise)

Claim: Testing computer software is very expensive and can consume enormous resources.

Evidence: It is estimated that the cost of developing the Boeing 777 is \$10B. 35% of this cost is for software and half of those costs were for testing (published reports and Boeing Senior Research Fellow). Thus, the estimated cost of testing software in the Boeing 777 was \$1.8B.

Sufficiency
Typicality
Accuracy
Relevance

Discuss with respect to general principles: STAR

General principles for the persuasive use of data (class exercise)

Claim: Software maintenance is the most expensive activity of software development

Evidence: Software maintenance can account for as much as 2/3 of the overall cost of software production (Pressman 1992, Schach 1994).

Sufficiency
Typicality
Accuracy
Relevance

Discuss with respect to general principles: STAR

Rhetorical Understanding of Evidence

- Kinds of evidence
 - Data from personal experience
 - Data from observations or field research
 - Data from interviews, questionnaires, surveys
 - Data from reading and research/library/internet
 - Testimony
 - Statistical data
 - Hypothetical examples, cases and scenarios
 - Reasoned sequence of ideas

Understanding of Evidence (examples)

Claim: Testing computer software is very expensive and can consume enormous resources.

Evidence: It is estimated that the cost of developing the Boeing 777 is \$10B. 35% of this cost is for software and half of those costs were for testing (published reports and Boeing Senior Research Fellow). Thus, the estimated cost of testing software in the Boeing 777 was \$1.8B.

Discuss the kinds of evidence provided to support the claim.

Understanding of Evidence (examples)

Claim: Software maintenance is the most expensive activity of software development

Evidence: Software maintenance can account for as much as 2/3 of the overall cost of software production (Pressman 1992, Schach 1994).

Discuss the kinds of evidence provided to support the claim.

Data from personal experience

- Despite the recent criticism that Ritalin is overprescribed for ADHD, it can often seem like a miracle drug. My little brother is a perfect example, Before he was given the drug, he was a terror in school... (tell the before and after story)
- Strengths?
- Limitations?

Data from observation or field research

- The intersection at Fifth and Montgomery is particularly dangerous because pedestrians almost never find a comfortable break in the heavy flow of cars. On April 29, I watched 57 pedestrians cross the street. Not once did cars stop in both directions before the pedestrian stepped off the sidewalk onto the street... (continue with observed data about danger)
- Strengths?
- Limitations?

Data from interviews, questionnaires

- Another reason to ban laptops from classroom is the extent to which laptop users disturb other students. In a questionnaire that I distributed to 50 students in my residence hall, a surprising 60% said that they were annoyed by fellow student' sending email, paying their bills or surfing the web, while pretending to take notes in class. Additionally, I interviewed 5 students who gave me specific examples of how these distractions interfere with learning... (report examples)
- Strengths?
- Limitations?

Data from testimony

- Although the Swedish economist Bjorn Lomborg claims that acid rain is not a significant problem, many environmentalists disagree. According to David Bellamany, president of the Conservation Foundation, “Acid rain does kill forests and people around the world, and it is still going so in the most polluted places, such as Russia” (qtd. In BBC News)
- Strengths?
- Limitations?

Data from Statistics

- Americans are delaying marriage at a surprising rate. In 1970, 85% of Americans between the ages of 25-29 years were married. In 2010, however, only 45% were married (a statistical source).
- Strengths?
- Limitations?

Your angle of vision will help determine how you frame evidence



- It's like looking through a peep hole or camera lens.
- As a writer, “you maximize the reader’s focus on some data, minimize the reader’s focus on other data, and otherwise [guide] the reader’s vision and response” (pg. 96).
- What influences are angle of vision?
 - Who we are, our belief systems, perspectives, biases



Class Activity 1

Rhetorical Strategies for Framing Evidence

- Controlling the space given to supporting vs contrary evidence
- Emphasizing a detailed story vs presenting lots of facts and statistics
 - E.g., The story of the girl who was groped in a mosh pit; statistics of mosh pit sexual assault
- Providing contextual and interpretive comments when presenting data
 - E.g., statistics on the dangers of mosh pit; situate wrt other recreational activities
- Putting contrary evidence in subordinate positions
 - E.g., balancing the rarity of mosh pit accidents and the perceived dangers
- Choosing labels and names that guide the reader's response to data
 - E.g., "festive seating" versus "accident-prone crowded space"
- Using images -- evoke specific emotion from the audience
- Revealing the value system that determines the writer's selection and framing of data
 - E.g., belief systems/political ideologies; a rock musician supporting mosh pits

What is going on in this picture?



- Where is this happening?
- When is this happening?
- Why is this happening?
- What information do we still need?
- Is this a good trip or a bad trip?

Do you think the sailors are having a bad day?

Frames determine what is seen and unseen.



Framing Determines What Audience Perceives

- As you watch this video, note which statistics are used:
- <http://www.youtube.com/watch?v=Y7GGwg1949A> (AutismSpeaks ad)
- Why say 1 in 166?
- The odds of your child being diagnosed with autism? **.06 %**

Framing Statistical Evidence

- Raw numbers versus percentages
 - Small percentages may also be big numbers in absolute terms
 - People affected by mental illness and supporting funding for research and awareness
- Median versus mean
 - Distributional effects
- Unadjusted numbers versus adjusted numbers
 - Minimum wage increase versus subject to inflation
- Base point for statistical comparisons
 - E.g., change in stock price in 2008



Class Activity 2

Gathering Evidence

- Create a plan for gathering evidence.
 - What personal experiences have you had with this issue?
 - Relevant observational studies
 - What people could you interview?
 - What questions could be addressed through a survey or a questionnaire?
 - What useful information on this issue might be gathered from reference sources (e.g., journal)?
 - What useful information on this issue might be gathered from the library?
 - Can a search engine help?
 - Could any reliable statistical source provide you relevant information (e.g., Census Bureau, CDC)?

Gathering Evidence

- Gathering data from Interviews
 - Determine your purpose
 - Do background reading
 - Formulate well thought out questions but also be flexible
 - Come well prepared for the interview
 - Be prompt and courteous
 - Take brief but clear notes
 - Transcribe your notes soon after the interview
- Gathering data from Surveys
 - Include both closed-response questions and open-response questions
 - Make your survey or questionnaire clear and easy to complete
 - Explain the purpose of the questionnaire
 - Seek a random sample of respondents in your distribution of the questionnaire
 - Convert questionnaires into usable data by tallying and summarizing responses