**Effective Use of the Internet for Science Research**

The Internet is like a giant, continuously growing library that contains any information that you want. But because this library is a little disorganized, researchers must use good judgment and evaluate sources carefully. Unlike textbooks that are reviewed and edited by professionals, content on Internet pages is not always reviewed; therefore there are no guarantees that the information one finds is accurate and objective. Also, some sites pay a fee so that their web pages will pop at the top of the list when you use different search engines; therefore sites on the top of the search list are not always the most relevant and important.

In order to gather information that is most relevant and trustworthy, please follow the following guide:

Begin your search using the following sites. Record what you learn using the provided format: <http://www.howitworks.net/how-cell-phones-work.html>- simple explanation about the technology that makes cellular phones work

<http://www.cancer.gov/cancertopics/factsheet/Risk/cellphones>– this government web page is a little lengthy, but it provides credible scientific evidence about the safety of using cellular phone.

<http://www.cancer.org/Cancer/CancerCauses/OtherCarcinogens/AtHome/cellular-phones>- another site that provides balanced information and tips of how to reduce exposure to RF emitted from cellular phones.

Continue your search by entering search terms related to the specific health effects of cell phone use that interest you:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Google | Yahoo | Safari | Firefox | Bing |

You may also wish to use portals such as Ask.com or AJkids.com Use the list below to assess the credibility of your sources:

* **.com** - commercial business site
* **.edu** - educational site (usually a university or college)
* **.gov** - U.S. governmental/non-military site
* **.mil** - U.S. military sites and agencies
* **.net** - networks, Internet service providers, organizations
* **.org** - U.S. non-profit organizations and others

As a rule of thumb, you can generally rely on the GOV and EDU hostnames to present accurate information. The NET, ORG, MIL, and COM domains are more likely to host pages with their own personal or organizational agendas and require additional verification. For each article you

choose, consider who owns the website and whether that has an impact on the credibility of the information provided. The owner of the website should be listed on the site, or you can go to the following link to the owner of the source <http://www.whois.net/>.

For more information about assessing the reliability of a source, check out “The ABCs of Web Literacy” at <http://gethelp.library.upenn.edu/guides/tutorials/webliteracy/weblitintro.html>or the second page of Kathy Schrock’s “Critical Evaluation of a Webpage” at <http://school.discoveryeducation.com/schrockguide/evalhigh.html>.

# The STS Research and Position Paper Tasks

In STS Position Paper tasks students will explore issues related to the impact of science and technology on society and the environment. Students will search the internet for relevant and credible scientific data. Based on the data they collect, they will make claims and support them with evidence. After taking a side on the issue under debate, students will participate in a class debate, in which they will argue their position and listen critically to other students’ presentations. A culminating activity of this project will be the writing of a short, five- paragraph position paper, describing and supporting their opinion on this issue.

# What is a Position Paper?

A position paper (also called an argumentation paper) is a genre of writing in which you take a position about an issue and write a concise argument to convince the reader to accept your position. Preparation for the writing includes investigating the topic, generating claims and counterclaims, and collecting relevant evidence to support your position.

A claim is a specific and debatable statement about an issue. For example, if you take the position that “Eating apples makes you healthy”, a supporting claim might be: “Apples have a high level of vitamin C”. Is this claim true? To find out, you will have to search for evidence, either by doing your own experiment or by collecting data from other scientific experiments. Most claims have counterclaims. In this example the statement “Apples are bad for you because they have high amounts of sugar” might serve as a counterclaim, which should also be validated through experimentation or research.

**What kind of claims are there?** A paper written for students in Purdue University (<http://owl.english.purdue.edu/owl/resource/588/1/>) has this description of claims:

* **Claims of fact or definition:** These claims argue about what the definition of something is or whether something is a settled fact. Example:
* What some people refer to as global warming is actually nothing more than normal, long-term cycles of climate change.
* **Claims of cause and effect:** These claims argue that one person, thing, or event caused another thing or event to occur. Example:
* The popularity of SUV's in America has caused pollution to increase.
* **Claims about value:** These are claims made about what something is worth, whether we value it or not, how we would rate or categorize something. Example:
* Global warming is the most pressing challenge facing the world today.
* **Claims about solutions or policies:** These are claims that argue for or against a certain solution or policy approach to a problem. Example:
* Instead of drilling for oil in Alaska we should be focusing on ways to reduce oil consumption, such as researching renewable energy sources.

**Online Resources:**

<http://www.howitworks.net/how-cell-phones-work.html>- simple explanation about the technology that makes cellular phones work

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<http://www.sc.edu/beaufort/library/pages/bones/bones.shtml>- a great tutorial on how to search the web. The site is written for college students and may be difficult for students. But it is an excellent site for teachers who want to guide their students in the use of the Internet.

<http://sites.google.com/site/medialiteracyworkshop/day-one>- information on media literacy in Science, created by KQED (a PBS affiliate).

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# Research Notes Page (use one page for each web site)

|  |  |
| --- | --- |
| What search engine did you use? |  |
| What keywords did you use in this web search? |  |
| What is the URL of the website? |  |
| Who is responsible for the content of this website?\* |  |
| In what date was the site/article uploaded or updated?\*\* |  |
| Does the site have a “mail-to” link for asking questions? |  |
| Based on the above, do you trust this website? Why? |  |
| List the main claims and supportive evidence that you learned from this website |  |

\*(usually found at the header, or bottom of the webpage, or can be researched at [http://www.whois.net/)](http://www.whois.net/)

\*\*If this information isn't volunteered, you can look at the file Properties (hold the mouse over the link, right click, Properties), which will tell you the size and date of the file at the end of the hyperlink.

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* **Claims about solutions or policies:** These are claims that argue for or against a certain solution or policy approach to a problem. Example: Instead of drilling for oil in Alaska we should be focusing on ways to reduce oil consumption, such as researching renewable energy sources.

# Graphic Organizer for Evidence-based Position

**Directions: Use this table to organize what you have learned in Sessions 1 and 2, with the purpose of creating an evidence-based position regarding cell phones.**

**My Position:**

|  |  |
| --- | --- |
| **Claims supporting my position** | **Claims supporting the opposing position** |
|  |  |
|  |  |
|  |  |
|  |  |