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Teaching Digital Information Literacy with Logical Fallacy Instruction

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Teaching Digital Information Literacy with Logical Fallacy Instruction

Mr. Derek Malone, University Librarian, University of North Alabama

Dr. Robert Koch, Director of the Writing Center, Merrimack College

First-year Information/Library Instruction at UNA

Pre-2014

- Orientation/library resource awareness integrated for instruction requests from three courses - FYE, EN 111, EN 112

First-year Information/Library Instruction at UNA

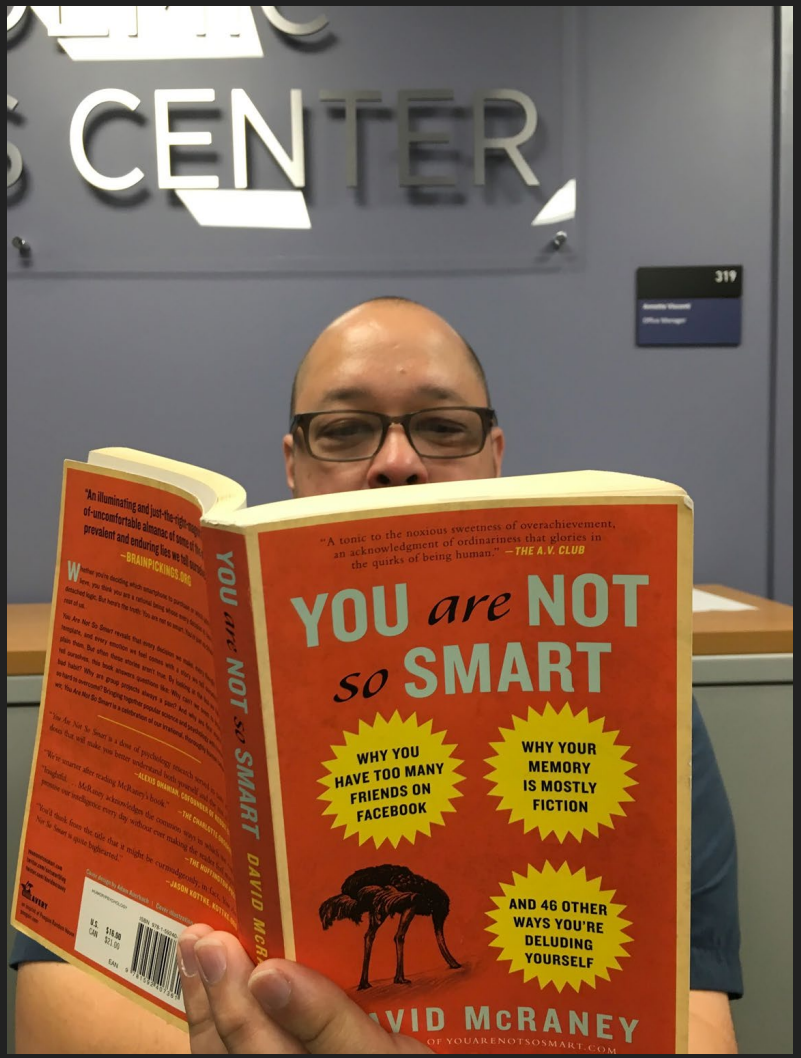
Post-2014

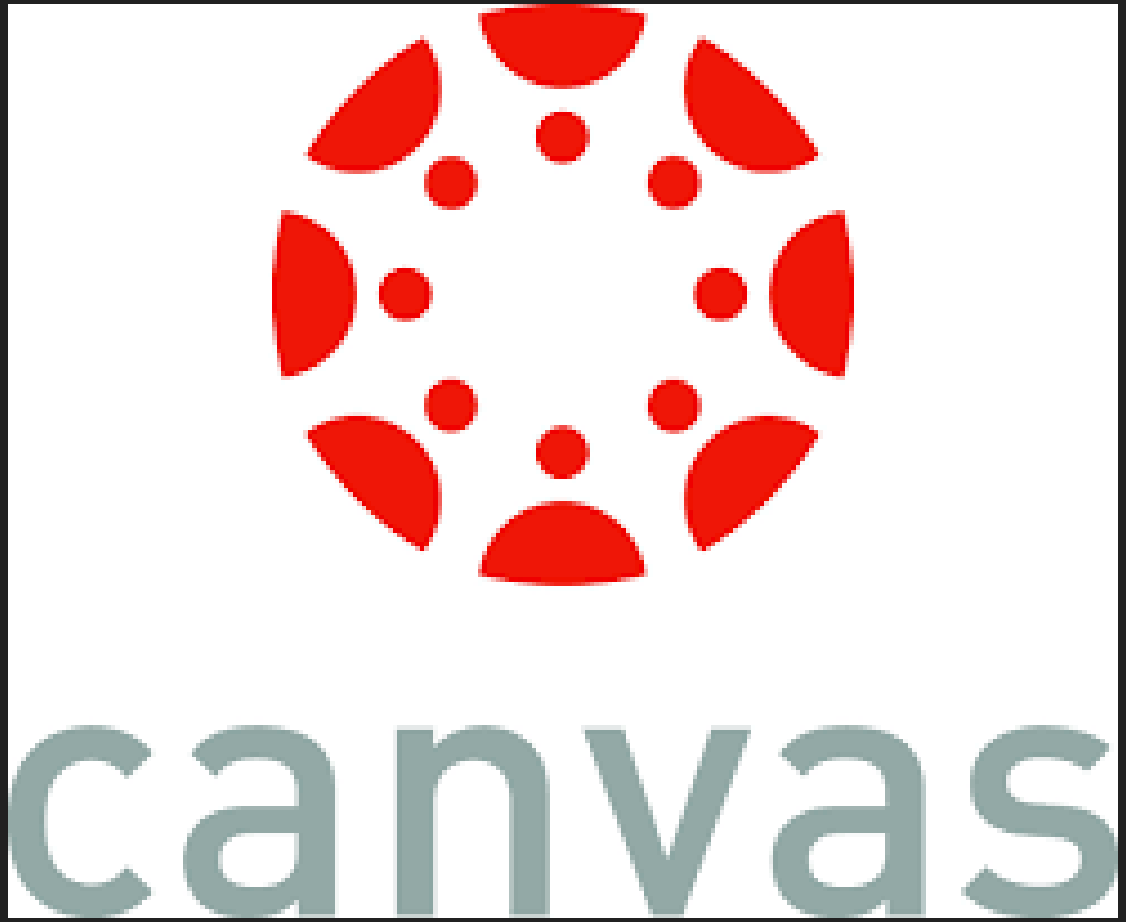
- FYE - Library Awareness/Familiarity (we play an escape room game)
- **EN 111** - Critical thinking with information
- EN 112 - Information Literacy (Part 1 - Information Evaluation/Part 2 - Information Retrieval)

More about this at the end...

Background on our project

- Involved two of Dr. Koch's EN 111 courses for four semesters (eight courses)
- Six sessions were presented by Mr. Malone instead of the typical one (for EN 111 which for librarians was searching for its library identity)
- Sessions were strategically placed within the course and in groupings of two (two early, two middle, two toward the end of the semester)
- Included supplemental textbook - *You are Not so Smart*
- Discussion boards focused on chapters in the book
- Discussion was a key component of the instruction too (chapters read prior to instruction on topic)
- Pre and post information literacy assessment (constructed by Dr. Koch and Mr. Malone based on concepts covered in text)


CENTER
319
"A tonic to the noxious sweetness of overachievement, an acknowledgment of ordinariness that glories in the quirks of being human." —THE A.V. CLUB
YOU are NOT so SMART
WHY YOU HAVE TOO MANY FRIENDS ON FACEBOOK
WHY YOUR MEMORY IS MOSTLY FICTION
AND 46 OTHER WAYS YOU'RE DELUDING YOURSELF
VID McRANEY
OF YOUARENOTSOSMART.COM


canvas

EN 111 Structure: The Essays

- Theoretical Influences
  - Bartholomae & Petrosky
  - Bizzell, Trimbur

- Essay Sequence
  - Burning Issue
    - Communicate personal message
  - Media Critique
    - Evaluate popular media
  - Social Issue
    - Get informed & take a stand
  - Define an Abstraction
    - Explain an idea (not an emotion)

EN 111 Structure: The Reflections

- Theoretical Influences
  - Schön
  - Yancey
- Reflection sequences
  - Changes between essays
  - Diagnostic, Midterm, and Final

Discussion Boards

- 20% of the course
- Agree or disagree
- Source Integration
  - Summarize
  - Paraphrase
  - Quote

Example reading assignments

	Read McRaney Ch 4 – Hindsight Bias Read McRaney Ch 12 – Apophenia Reflection #1 Due
	Read McRaney Ch 5 – Texas Sharpshooter Read McRaney Ch 21 – Subject Validation
	Read McRaney Ch 15 – Argue… Ignorance Read McRaney Ch 16 – Straw Man
	Posts for McRaney 4, 12, 5, 21, 15, & 16 Due

Information/Library Instruction Sessions

- The following slides will review what was covered in the **six library instruction sessions**
- Specific book chapters were tied to information instruction
- Logical fallacies and their relation to information literacy at the crux of conversations (everything was presented via through a logical fallacy lens)
- Instruction included a variety of formats - discussions, games, reflection, videos, and more

Logical Fallacy

Logical Fallacy: a concept within argumentation that commonly leads to an error in reasoning due to the deceptive nature of its presentation.

Outlook toward this instruction:

- We’re all predispositioned to lean toward logical fallacy reasoning
- Bias is going to occur, our instruction aimed at awareness of that bias (particularly with information)

Library Session 1

- General overview
- Overview of information literacy
- Overview of the research expectations in college
- Discussion of determining a need for information
- Logical fallacies covered
    - Priming - when a stimulus in the past affects the way you behave and think or the way you perceive another stimulus later on
    - Confabulation - production of fabricated, distorted, or misinterpreted memories about oneself or the world, without the conscious intention to deceive
    - Confirmation Bias - the tendency to interpret new evidence as confirmation of one's existing beliefs or theories.

“You are unaware of how unaware you are.”

Determining the need for information

When you are given a paper or project for a class, how do you determine what you are going to use?

Why do you make those decisions?

Determining the need for information

Do you as a researcher innately show a preference for certain information when researching?

Priming

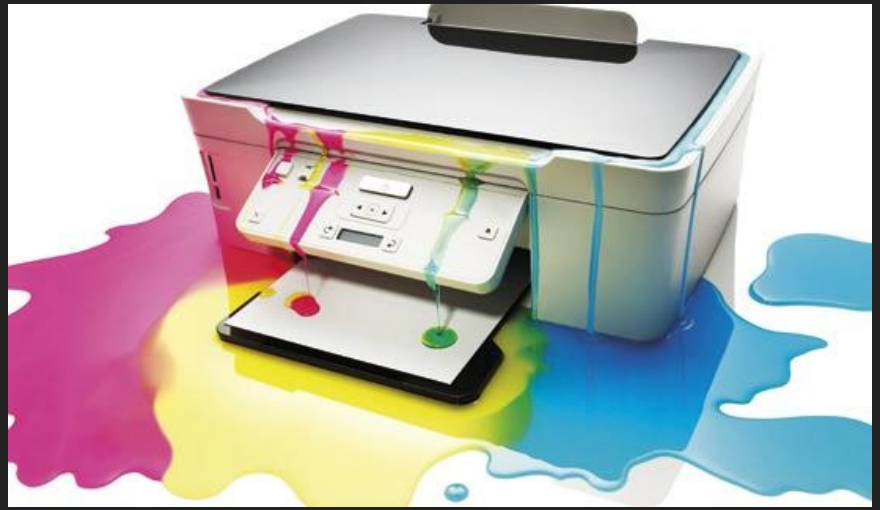
Priming

Where are you primed?

How does priming influence your information practices? (retrieval, evaluation, usage)

Confabulation

Think of memories



Confabulation

Confirmation Bias

To start determining a need for information

Analyze the assignment

Write out **needs**

Then, formulate a **question**

Library Session 2

Recap of Session 1

Additional focus on confirmation bias

New logical fallacies introduced:

- Dunning-Kruger Effect - cognitive bias in which people mistakenly assess their cognitive ability as greater than it is

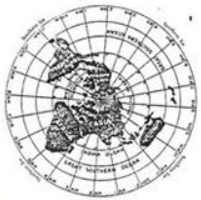
www.theflatearthsociety.org/cms/

THE FLAT EARTH SOCIETY

HOME | FORUMS | FLAT EARTH LIBRARY | GALLERY | FLAT EARTH WIKI | ABOUT THE SOCIETY | SHOP | PODCAST

Welcome to the Flat Earth Society.

Our new website includes **the Flat Earth Society forums (a thriving online community since 2004)** as well as a number of new features including:



The Flat Earth Society Library - This online library contains a growing selection of Flat Earth resources. We have interviews, newspaper and magazine articles as well as the largest collection of Flat Earth Society newsletters in the world (online or otherwise!). The Flat Earth Society Library also includes hard-to-find writings from members of the 19th and early-20th Century Flat Earth movement and Universal Zetetic Society.

The Flat Earth Wiki- This extensive Wiki is based on a FAQ originally compiled by forums user cheesejoff. It aims to answer any questions visitors might have about Flat Earth Theory or the Society. Because there are different schools of Flat Earth thought, the Wiki should not necessarily be taken as the "official" view of the Society. The specific beliefs of our members are widely varied, as should be expected from such a group of free-thinkers!

About the Society - A short history of the Flat Earth Society from its roots in the 1800s through its incarnation under Charles K. Johnson and finally to the modern Flat Earth Society of today.

Official Membership - After much planning, we are now ready to officially accept new members to the Society. Becoming an associate member of the Society is free and is as simple as sending a postcard. For those who wish to take on a more committed role in the Society, full membership (including a signed certificate, membership card and hand-numbered Flat Earth Society medallion) is available for a small donation.

The Flat Earth Shop - A small selection of Flat Earth Society merchandise is available. At the moment, it's t-shirts and sweatshirts.

WDS TWITTER WIDGET

Flat Earth Today
@FlatEarthToday

FlatEarthToday It might be less dangerous if they had a clue what they were doing. Or do they? http://t.co/2E3BMOd2ZT
Dec 01 • reply • retweet • favorite

FlatEarthToday @Earth_Avenger_ @syd_og0 @PC_Spirit As I've said many times before, the Earth may be infinite.
Dec 01 • reply • retweet • favorite

FlatEarthToday RT @drgrist: Awesome. RT @KevinOfMI: @drgrist http://t.co/1aaYIWdSCE
Dec 01 • reply • retweet • favorite

FlatEarthToday @drgrist @KevinOfMI I'm a big fan!
Dec 01 • reply • retweet • favorite

FlatEarthToday @crispmp @brewer_lar I believe that climate change is anthropogenic.

Guess my rule:

Divisibility Rules Chart

A number is divisible by. . .		Divisible	Not Divisible
2	if the last digit is even (0, 2, 4, 6, or 8).	3,978	4,975
3	if the sum of the digits is divisible by 3.	315	139
4	if the last two digits form a number divisible by 4.	8,512	7,518
5	if the last digit is 0 or 5.	14,975	10,978
6	if the number is divisible by both 2 and 3	48	20
9	if the sum of the digits is divisible by 9.	711	93
10	if the last digit is 0.	15,990	10,536

Confirmation Bias - the most highlighted fallacy

- the tendency to interpret new evidence as confirmation of one's existing beliefs or theories
- this is done often with research/personal lives

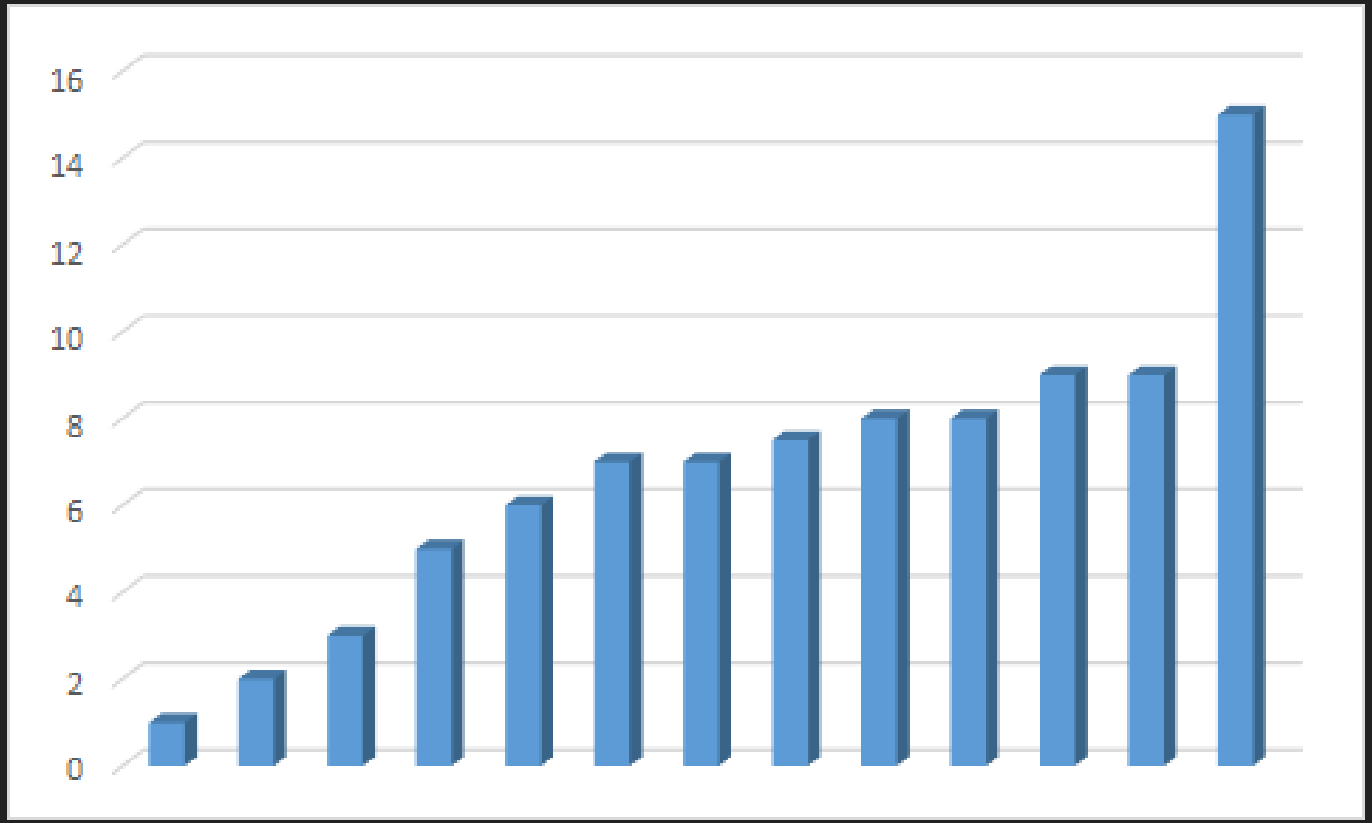
Dunning-Kruger Effect - prompt

Write down these on a sheet of paper:

Scale of 1-10, how good of a cook you are

Scale of 1-10, how good you are at finding information

Dunning-Kruger Effect - results



MOST
AWKWARD!
Idols

Dunning-Kruger Effect - Discussion Topic

After discussing the Dunning-Kruger Effect, students are prompted with the question below for homework and reflection moving forward.

So, how good of a researcher are you?

Library Session 3

Filter Bubbles

Formulating a Research Question Introduced (eliminating bias, recognizing bubbles)

CRAAP Test Introduced with Application Toward Logical Fallacies

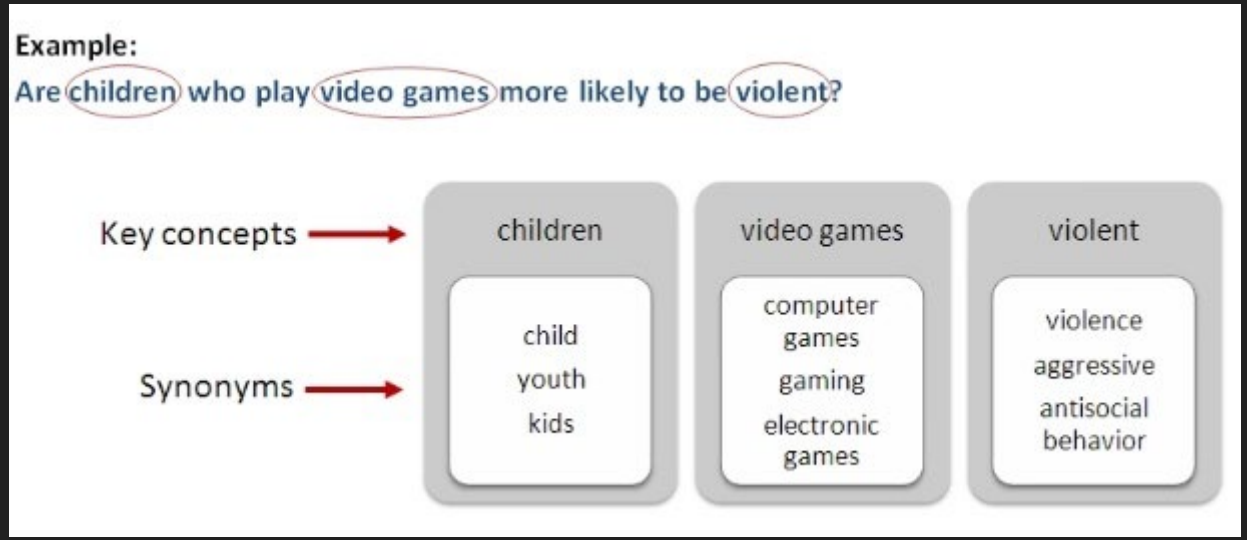
New Logical Fallacies:

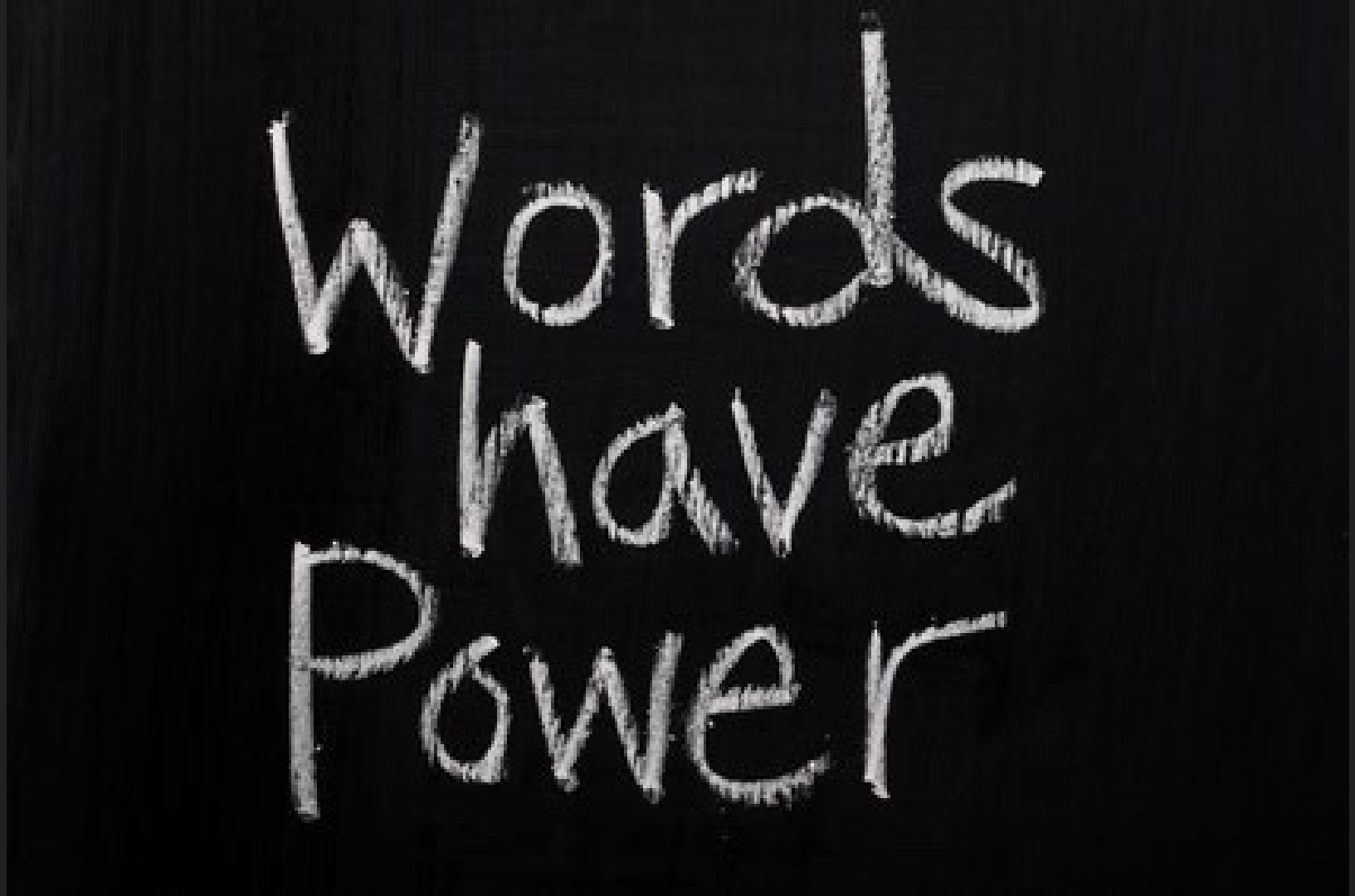
- Hindsight Bias - common tendency for people to perceive events that have already occurred as having been more predictable

Filter Bubbles

Formulating a research question

Specifically discussed with overcoming logical fallacies in mind




Words
have
Power

Library Session 4/5

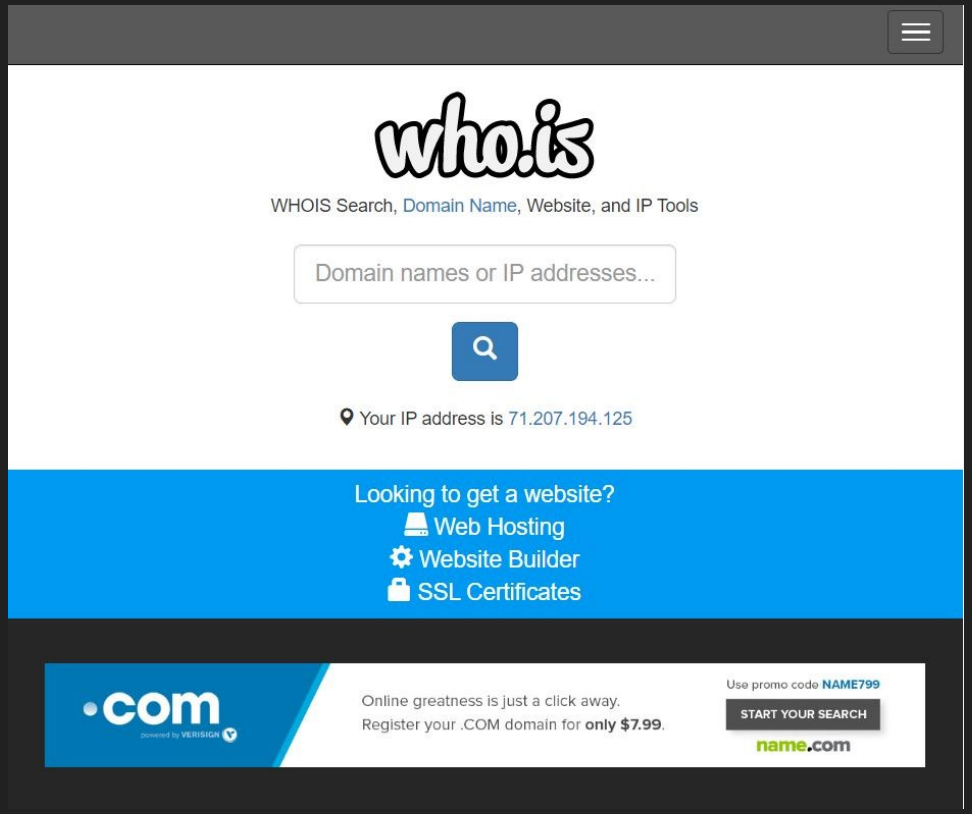
Website Evaluation

- who.is

Resource Evaluation

Searching for & Using Information

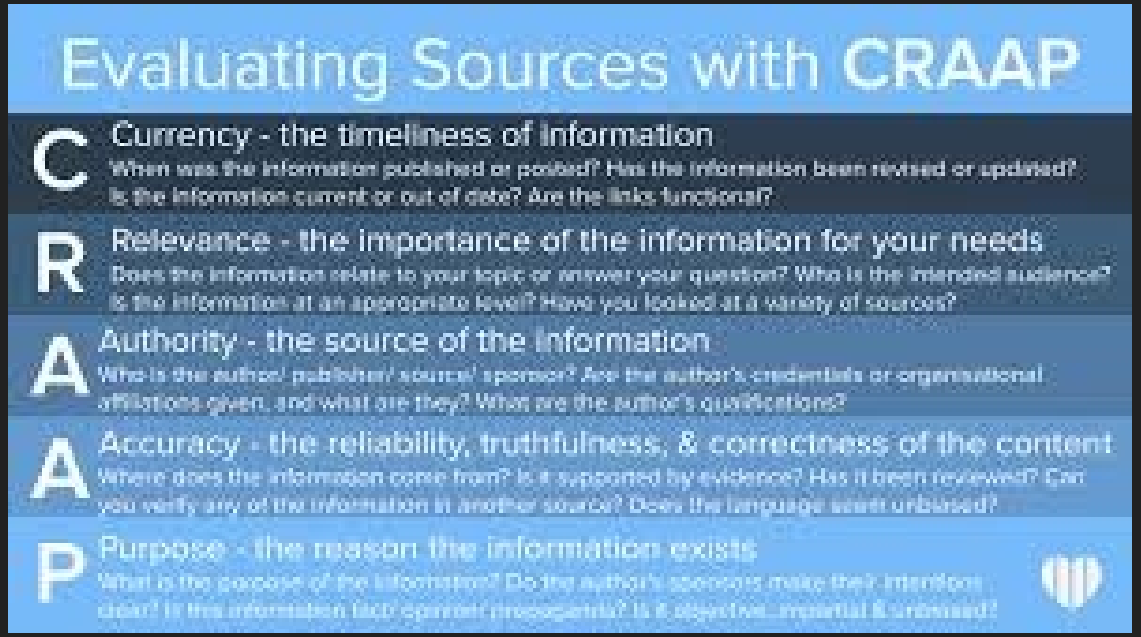
who.is


who.is
WHOIS Search, Domain Name, Website, and IP Tools
Domain names or IP addresses...
Your IP address is 71.207.194.125
Looking to get a website?
Web Hosting
Website Builder
SSL Certificates
.com
Online greatness is just a click away.
Register your .COM domain for only $7.99.
Use promo code NAME799
START YOUR SEARCH
name.com

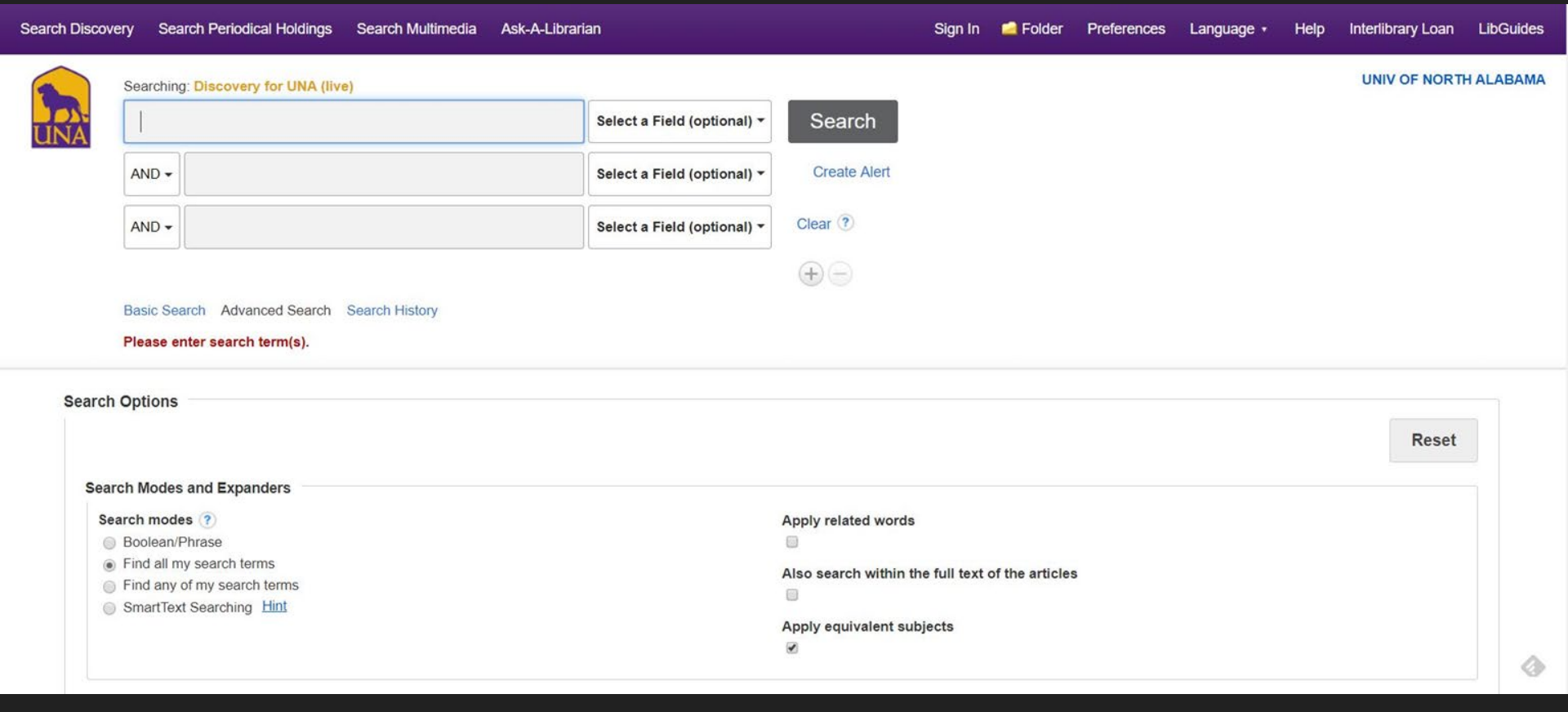
Resource Evaluation - CRAAP with logical fallacy focus

Authority focus

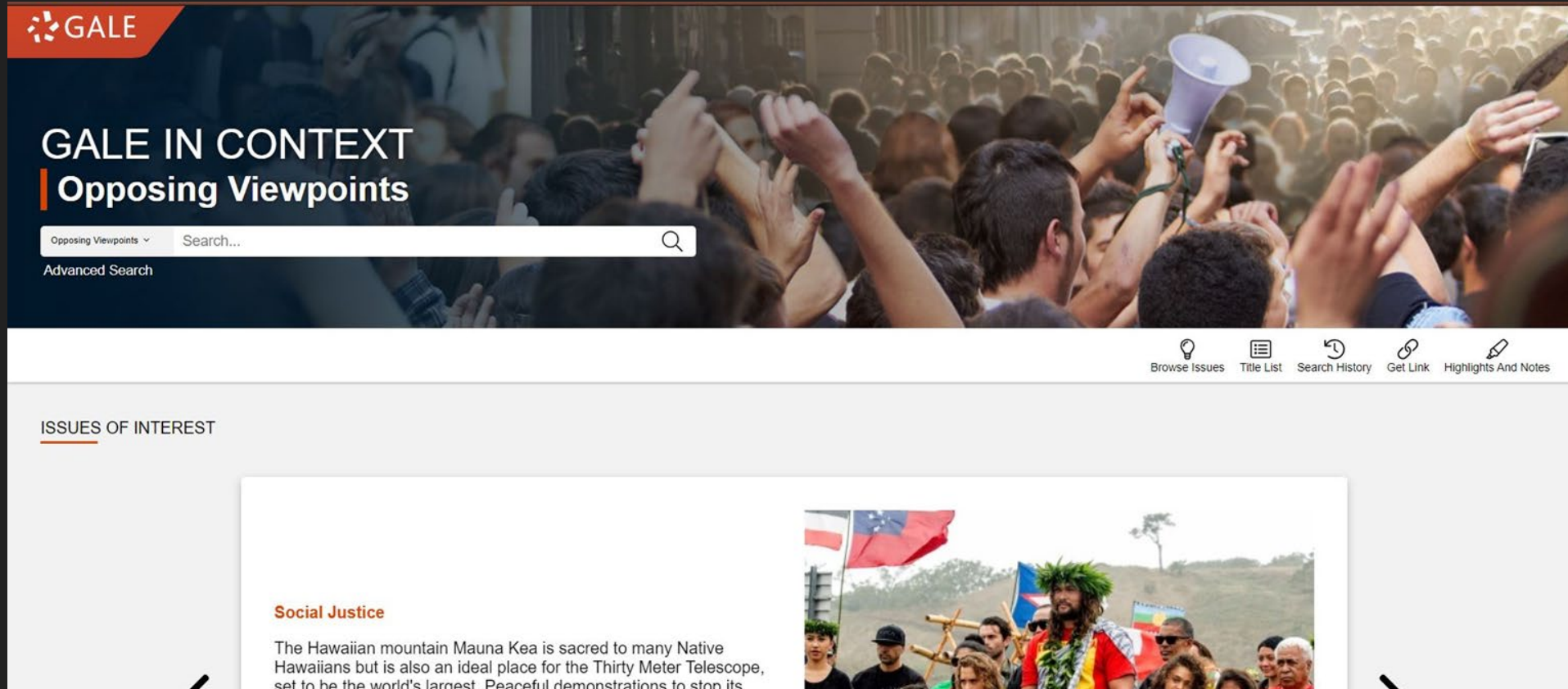
Purpose focus



Searching for & Using information



Searching for & Using information



Library Session 6

Take the exit exam (information literacy)

Recap

Discussion concerning logical fallacies and information literacy

Results

- Pre and post assessment (same assessment both times) - Eighteen questions
- Information literacy focus, not a logical fallacy focus
- Discussion board analysis

Results - Pre/Post Test

Pre/Post tests were 18 questions….the exact same questions

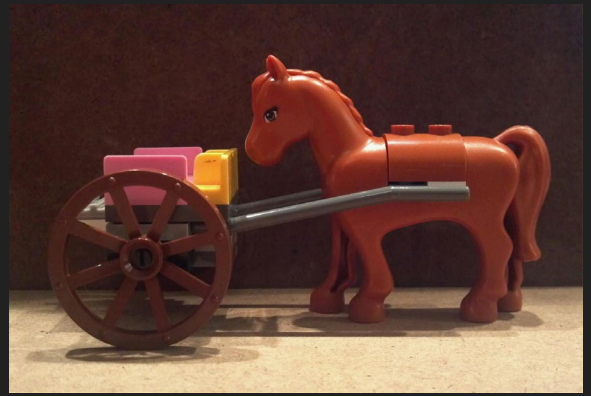
Asked before any library instruction

Asked at the conclusion of instruction in the last session

How do you search for sources? - pre

“In High School i would immediately go to google and type in the topic. Then I would chose the best looking website and learn as much about the topic as i could. Then I would begin putting the essay together.”

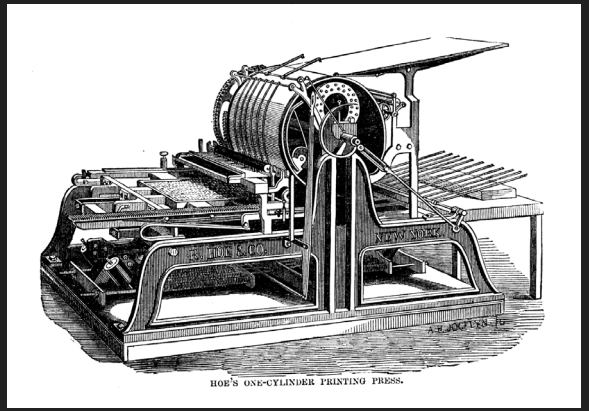
“I will figure out my topic and the point that I want to get across and then I will find books/websites that will **accompany my point**.”



How do you search for sources? - post

“By making sure I use the right wording that is not biased towards one way”

“I come up with non biased question and search from there. I try to use printed materials as much as possible.”

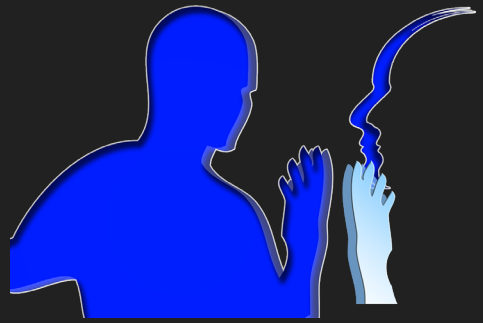


HOE'S ONE-CYLINDER PRINTING PRESS.

How do you evaluate sources and information? - pre

“I skim through them and see just what it consists of. If I don't like the first part of the source I normally move on to another one.”

“Find sources or information pertaining to the particular topic. Then, check to see if **the source or information is credible**. If so, use that source or piece of information for research.”



How do you evaluate sources and information? - post

“I make sure that the information is accurate, and I do a brief check on the author.”

Do you as a researcher innately show a preference for certain information (ex. taking a side of an argument) when researching, please explain (minimum 3 sentences)? - pre

“No I do not show a preferance, there is always at leastÂ two sides to everything. When I write it's I believe being biased toward one side canÂ changeÂ howÂ I see the facts. I think it is important to see both sides”

Do you as a researcher innately show a preference for certain information (ex. taking a side of an argument) when researching, please explain (minimum 3 sentences)? - pre

“If I understand the topic, then I will already have taken a side on the argument. If I do not know the topic, then I will research both sides of the argument. Then, I will form my opinion and find information that backs up the opinion.”

Do you as a researcher innately show a preference for certain information (ex. taking a side of an argument) when researching, please explain (minimum 3 sentences)? - post

“Yes, everyone is biased when they are researching because they have their own beliefs. I often times get to carried away with a certain side and focus on it. Then, I will catch myself and begin learning about the other side of the topic.”

Do you as a researcher innately show a preference for certain information (ex. taking a side of an argument) when researching, please explain (minimum 3 sentences)? - post

“Before learning about Information Literacy, I would have said yes because that is what I did all the time. But, as I learned about Information Literacy, I discovered that I needed to go in with an open mind when researching.”

Do you as a researcher innately show a preference for certain information (ex. taking a side of an argument) when researching, please explain (minimum 3 sentences)? - post

“By a person I always feel a little biased toward something. I do try to clear my mind when writing about a topic and search for facts not opinions that might be the same as mine.”

On a scale of 1-10, please rate your information seeking behavior effectiveness, please explain - pre

“i rate mine as a 8. Depending on the information I'm usually interested in learning new things, but searching the internet and finding sources can be a hassle.”

“I would give myself an eight. I constantly try to find legitimate information that will help me form an understanding or opinion of a topic.”

On a scale of 1-10, please rate your information seeking behavior effectiveness, please explain. - post

“i would rate myself at a 5.5. I am still not as thorough Â as I could be, but I believe I have gotten better.”

“5. I really don't seek information as seriously as i should. I tend to be a bit lazy with sources. Compared to the start of the year I'd say my skills have improved though”

Do you think you are biased when you look for information, please explain - pre

“No, I do not think I am biased when looking for information. I look for reliable and trustworthy information no matter what the assignment is about. I do not have any preferences, such as author or website”

Do you think you are biased when you look for information, please explain - post

“Yes, I think I could improve my information seeking behaviors. I could go even deeper when validating my sources and authors.”

The 18 questions (source background):

When you are given a paper or project for a class, how do you determine what sources you are going to use?

What is a source?

What is the difference between a good source and a bad source?

Where do good sources come from?

How do you search for sources?

The 18 questions (search/evaluation techniques):

When you’re given a topic for research (for a paper/project), what is your next step?

How do you search for sources and information?

How do you evaluate sources and information?

The 18 questions (Evaluation):

What does it mean for sources and information to be current?

What does it mean for sources and information to be relevant?

What does it mean for sources and information to be accurate?

What does it mean for sources and information to have good authority?

What does it mean for sources and information to be purposeful?

What does it mean for sources and information to be peer-reviewed?

Is there ever a good time to use user-generated sources like Wikipedia, explain?

The 18 questions (Habits):

Do you as a researcher innately show a preference for certain information (ex. taking a side of an argument) when researching, please explain?

Do you think you are biased when you look for information, please explain?

On a scale of 1-10, please rate your information seeking behavior effectiveness, please explain.

Do you think you could improve your information seeking behaviors, and if so, how?

Increased Skepticism

Results - Changes for library instruction

- Moved all “orientation” activities to FYE courses
- Rethemed EN 111 to “Critical Thinking with Information”
- Rethemed EN 112 to “Information Literacy”

EN 111 now “Critical Thinking with Information”

Implementations from this instruction include:

- Videos with reflection
- Who.is - website evaluation
- Social media evaluation (logical fallacy focus)
- Confirmation bias game - sequence
- pro/con activity - confirmation bias activity

...plus, this class constantly evolves

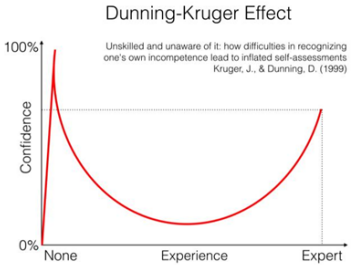
Similar Student Research Projects

Do they care? An investigation into attitudes toward misinformation awareness on Facebook in 18-19 year-old college students.

Joshua Brookover & Tia Crowder - Psychology
Faculty Mentor: Mr. Derek Malone, Collier Library
University of North Alabama

Dunning-Kruger Effect

"people who are unskilled in these domains (social and intellectual) suffer a dual burden: Not only do these people reach erroneous conclusions and make unfortunate choices, but their incompetence robs them of the metacognitive ability to realize it." (Kruger & Dunning, 1999, p.1121)



Those with more than 0 experience, but far less than expert experience are very unaware of their abilities. This is especially common in routine/everyday tasks.

ex. cooking

ex. driving

Facebook Statistics

Adult Americans between the ages of 18-29 have a **88% usage** adoption rate for Facebook. (Gottfried & Shearer, 2016)

Additionally, two-thirds of Facebook users indicate that they get **their news** from the social media outlet.

In 2016 a literature review was conducted that measured information literacy and the Dunning-Kruger Effect, the research concluded that people were overconfident when reporting information literacy skills. (Mahmood, 2016, p.205)

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Mahmood, K. (2016). Do People Overestimate Their Information Literacy Skills? A Systematic Review of Empirical Evidence on the Dunning-Kruger Effect. *Communications in Information Literacy*, 10(2). 199-213.

What if poor information practices were exposed? Would they care?

Participants were shown a cartoon video highlighting 5 facts:

1. 62% of adult Americans get news from social media, with around 44% obtaining news from Facebook. (Gottfried & Shearer, 2016)
2. News from Facebook comes from news outlets and from sharing by friends.
3. Around 59% of social media users do not read news to verify before sharing it. (Gabielkov, et al., 2016)
4. There are many biased news outlets that publish information that you see in your feed.
5. Research says that we overestimate our abilities to perform certain tasks. (Kruger & Dunning)

2 Questions were asked before the video, 5 questions were asked afterward. The pre questions were repeated as the first 2 of 5 questions afterward.

Pre:

Question 1 (second ask): On a scale of 1-10 (1=poor, 10 = excellent), how good are you at evaluating information that you see on Facebook?

Question 2 (second ask): On a scale of 1-10 (1=poor, 10 = excellent), how good is the information that you receive from your Facebook feed?

Post:

Question 1 (second ask): On a scale of 1-10 (1=poor, 10 = excellent), how good are you at evaluating information that you see on Facebook?

Question 2 (second ask): On a scale of 1-10 (1=poor, 10 = excellent), how good is the information that you receive from your Facebook feed?

Question 3: On a scale of 1-10 (1=none, 10 = extensive), after watching the video concerning misinformation on Facebook, how would you rate your overall concern for misinformation on your Facebook News Feed?

Question 4: On a scale of 1-10 (1=poor, 10 = excellent), how good is the information that you use (share, tell others, etc.) from your Facebook News Feed?

Question 5: On a scale of 1-10 (1=none, 10 = extensive), how much fact checking do you do before you use information from your Facebook feed?

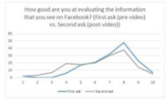
t-Test: Two-Sample Assuming Equal Variances

	Variable 1	Variable 2
Mean	7.192308	6.442308
Variance	2.659353	3.951489
Observations	156	156
Pooled Variance	3.305521	
Hypothesized Mean Difference	0	
df	310	
t Stat	3.643247	
P(T<=t) one-tail	0.000158	
t Critical one-tail	1.649784	
P(T<=t) two-tail	0.000315	
t Critical two-tail	1.967646	

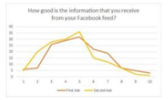
t-Test: Two-Sample Assuming Equal Variances

	Variable 1	Variable 2
Mean	4.935897	4.403846
Variance	3.918445	3.416501
Observations	156	156
Pooled Variance	3.667473	
Hypothesized Mean Difference	0	
df	310	
t Stat	2.453677	
P(T<=t) one-tail	0.007345	
t Critical one-tail	1.649784	
P(T<=t) two-tail	0.01469	
t Critical two-tail	1.967646	

Question 1, (n=156)



Question 2, (n=156)



We conclude that there is a significant correlation in caring about information received and more knowledge about poor information practices.

Similar Student Research Projects

Let's Go Live: Does presentation format influence perceived authority regarding social media posts?

Caitlin Crawford, Kristina McMahan, Falon Yates
Faculty Mentor: Derek Malone
University of North Alabama

Claim: McDonalds food never rots
Presentation format: meme/video

Perception of Authority - Believability

Meme | Video

Claim: Avril Lavigne is missing and using a body double for appearances
Presentation format: text(tweet)/meme

Perception of Authority - Believability

Text | Meme

Claim: Medicinal benefits of onions in socks
Presentation format: meme/video

Perception of Authority - Believability

Meme | Video

Claim: Kraft cheese doesn't melt
Presentation format: meme/video

Meme | Video

Claim: Aquafina doesn't freeze
Presentation format: video

Claim: Pets are harmful during flu season
Presentation format: tweet

Claim: Supermoon = 10x larger moon in one day
Presentation format: meme

Claim: Tequila is a cold/flu remedy
Presentation format: meme

Legend

Blue - unbelievable
Orange - slightly unbelievable
Gray - slightly believable
Yellow - believable

In summary:
All of the stories were entirely false, or extremely exaggerated.

Descriptives:
Number of Participants (N)=152
Average age=19.39
Average Gender= mostly female

Significant values found:
- Mcdonald's meme vs. Mcdonald's video
- Onion meme vs. Onion video
- Avril Lavigne meme vs. Avril Lavigne text

No significant value found:
- Kraft video to the Kraft meme

Male - majority of media formats did not show a significant effect on the believability of the topic given

Female - the ANOVAs showed that the majority of media formats did prove a significant effect on the believability of the topic given

Similar Student Research Projects

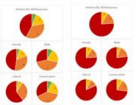
What you're reading is wrong! A look into exposed authority and its influence on information perception for college students.

Caitlin Crawford, Kristina McMahan, Falon Yates
Faculty Mentor: Derek Malone
University of North Alabama

Story: Jennifer Aniston is exploring the idea of creating a celebrity President Trump supporter organization.

Authority: Robot generated news site.

Pre-exposed authority

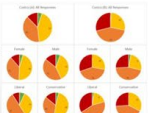


Post-exposed authority

Story: Costco toilet paper is non-biodegradable.

Authority: Post referencing unknown plumber on Facebook.

Pre-exposed authority

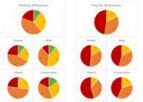


Post-exposed authority

Story: Nancy Pelosi scolded a fellow congresswoman for clapping during the 2018 State of the Union Address.

Authority: Anonymous posting website.

Pre-exposed authority



Post-exposed authority

Story: Crayola Bathtub Finger Paint Soap is burning the hands of children.

Authority: Doctor's office Facebook post.

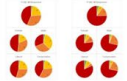
Pre-exposed authority

Post-exposed authority

Story: Justin Timberlake speaks out against vaccine schedules, considers them un-American.

Authority: News website known for clickbait production.

Pre-exposed authority



Post-exposed authority

Story: An ostrich was stolen from the Philadelphia zoo by a football fan, post Super Bowl.

Authority: Random Twitter user.

Pre-exposed authority

Post-exposed authority

Questions:

- Pre-exposed authority - How would you rate the credibility of this story as presented?
- Post-exposed authority - Based on this information, how would you rate the credibility of the story as presented?

Questions?

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Referencing & Links available upon request