Assessing Students’ Critical Thinking about Digital Information via Statistical Analysis

Kim L. Ranger

Available at: https://works.bepress.com/rangerk/29/
Assessing Students’ Critical Thinking about Digital Information via Statistical Analysis
Welcome!

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Maybee:

• informed learning design
• informed learning outcomes
Statistical analysis 1
<table>
<thead>
<tr>
<th>Statistic</th>
<th>Value</th>
<th>95% Confidence Limits (range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odds Ratio (likeliness)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Website fit criteria: company &amp; product reliable</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Relative Risk (probability)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>incorrect answer: incorrect answer</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>
Statistical analysis 2
Students do better critical thinking when fact checking.
Improve your course activities: Teach students to fact check.
Fact check means verify externally—

- Plan
- Search in tabs
- Skim
- Double-check
THE NATURAL SHAPE OF ENERGY

Saving the world with the Energy Tree, a natural-looking, energy generator that looks like a real tree.
Think of yourself as a professional fact checker from the [X] field/discipline.

Before exploring an information source when you're inexperienced in that discipline, make a plan.
Fact check means verify externally—

- What to fact check?
- Open tabs for searching
- Skim before clicking
- Double check
60 seconds
libguides.gvsu.edu/cap115/eval

Truthworthy?  Reliable?  Reputable?

Yes  No
libguides.gvsu.edu/cap115/post-activity

Truthworthy?  Reliable?  Reputable?

Yes          No
62% correctly answered last question in post-test

<table>
<thead>
<tr>
<th>McNemar’s test for agreement</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Exact Pr &gt;= S</td>
<td>0.0018</td>
</tr>
</tbody>
</table>

Students treated 2$^{nd}$ & 3$^{rd}$ questions as dependent (scaffolded)

<table>
<thead>
<tr>
<th>Monte Carlo Estimate for the Exact Test</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pr &lt;= P</td>
<td>0.0034</td>
</tr>
</tbody>
</table>
“Source criticism: start somewhere....”
Adapt for your discipline: Think/pair/share

- Plan, search in lateral tabs
- Skim: practice click restraint
- Double check (verify)
To evaluate is to question!

<table>
<thead>
<tr>
<th>Question</th>
<th>Lateral tabs</th>
<th>Click Restraint</th>
<th>Double check</th>
</tr>
</thead>
<tbody>
<tr>
<td>Search</td>
<td><img src="image" alt="Search" /></td>
<td><img src="image" alt="Search" /></td>
<td></td>
</tr>
<tr>
<td>Skim</td>
<td><img src="image" alt="Skim" /></td>
<td><img src="image" alt="Skim" /></td>
<td></td>
</tr>
<tr>
<td>Verify</td>
<td><img src="image" alt="Verify" /></td>
<td><img src="image" alt="Verify" /></td>
<td><img src="image" alt="Verify" /></td>
</tr>
</tbody>
</table>
Critical thinking about digital information:
• Teach students to fact check
• Use statistical analysis to assess learning
• Improve teaching
Questions?

Thanks!

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GVSU Statistical Consulting Center. Director Sango Otieno and collaborators (Statistics Majors/Graduate Students in Biostatics/Data Science Aubree Batchelor, Forrest Chase, and Abigail Zysk: 1st analysis) (Graduate students Dan Weglarz and Kylie Springer: 3rd analysis)

Credits 2


Special thanks to those who made and released these resources for free:
- Presentation template by SlidesCarnival
- Plant illustrations from Köhler's Medizinal-Pflanzen in naturgetreuen at BHL