The Effect of Intriguing, Informative, and Generic Hyperlink Wording on Web Browsing Behavior

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Overview

• Background
• Relevant Literature
• Research Question and Hypotheses
• Study Design and Methods
• Results, Discussion, and Conclusions
Background

• Links signal readers...
  ➢ Targeted content
  ➢ Document structure

• ...if labeled effectively
Relevant Literature

- Informative link labels improve search accuracy
  - if not too long
  - if clearly worded

- Labels that cue content aid learning
  - “Section 3 of 6”
  - “Section 3 of 6: Causes”
More Relevant Literature

• Seductive details divert readers from main points
  - Interfere with understanding the main topic
  - May lead to misinterpretation
  - May lead to wider exploration of content
Literature Gaps

- Data comes primarily from print (offline) or library database studies
- Previous Web studies limited:
  - Focused on targeted searches
  - Linear content
Research Question

- What is the effect of generic, informative, and intriguing link labels on Web users’ browsing behavior and comprehension?
Hypotheses

• Browsers will **visit** more pages if links are intriguing

• Browsers will **learn** more if links are informative
Method

- Fall 2003/Winter 2004
- 327 undergraduate engineers, averaging:
  - 21.2 years old
  - 7.5 years using Web
  - 1.5 hours/day searching Web
  - 2.4 hours/day browsing Web
Ancient reef-dwellers

This is hard to believe—an 18 year old alogo was caught in American Samoa. That's old enough to get a drivers license. And I ate that elderly fish (instead of the neighborhood tasty worms, which are an acquired taste). All that remained of that fish were the little bones that scientists use to determine the age of the fish. These bones, when looked at under a microscope, have concentric circles, one for each year, just like tree rings. You just count the rings and that's how old the fish is.

What's even more astonishing is that an alogo caught in Australia's Great Barrier Reef was 44 years old. I am not kidding. Reputable scientists determined the age of that fish. There were also other alogo in the Australian sample that were 20-40 years old, so the record age of 44 is believable. It turns out that this is not unusual for coral reef fish. Recent studies show that several other species of surgeonfish (pene), unicornfish (ume), groupers (gata/ga) and snappers (mu) can also live up to 20-40 years.

These findings are beginning to reshape the understanding about the ecology of coral reef fishes and their vulnerability to overfishing. Coral reefs are like underwater strangler figs, giving shelter and food to a wide variety of creatures. The occurrence of many long-lived fish in a population indicates that the reef fish community is fairly stable, with a low replacement of individual fish. Young fish may live on snow-dusted reefs for decades, if given the right conditions. These conditions can be affected by Samoa's fiery past.
<table>
<thead>
<tr>
<th>Generic</th>
<th>Intriguing</th>
<th>Informative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local History</td>
<td>The Samoan Saga</td>
<td>American Samoa’s History</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>Tropical Menagerie</td>
<td>Native Animal Diversity</td>
</tr>
<tr>
<td>Volcanoes</td>
<td>Samoa’s Fiery Past</td>
<td>Samoa’s Volcanic Origins</td>
</tr>
</tbody>
</table>
## Link Conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Navbar links</th>
<th>Embedded links</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Generic</td>
<td>Generic</td>
</tr>
<tr>
<td>2</td>
<td>Generic</td>
<td>Intriguing</td>
</tr>
<tr>
<td>3</td>
<td>Generic</td>
<td>Informative</td>
</tr>
<tr>
<td>4</td>
<td>Intriguing</td>
<td>Intriguing</td>
</tr>
<tr>
<td>5</td>
<td>Informative</td>
<td>Informative</td>
</tr>
</tbody>
</table>
Giant clams

Giant clams (faisua) are magnificent animals and it's always a pleasure to see one of these beauties on the reef; you might see them in the Fagatele Bay Marine Sanctuary. They are large, colorful and, surprisingly, the clams are part animal and part "plant." That's because giant clams, like damaged coral reefs, have plant-like cells (zoanthellae) in their tissues that produce free food for the clams. When a clam opens its shell and spreads out its pretty mantle, it exposes these solar panels (the zoanthellae) to the sun to make food, like a plant unfolding its leaves.

At the same time, the clam also gets some food by drawing water through its siphon and filtering out any tiny food particles (zooplankton). Perhaps that's why giant clams grow so large—they have two very different ways to get food.

We have two native species of giant clams in our local waters, Tridacna maxima and Tridacna squamosa, which look fairly similar. They grow to about 12-15 inches in shell length, although most found today are much smaller because the larger ones have been over-harvested. The largest and most famous species of giant clam (Tridacna gigas), which grows as big as a large suitcase, does not occur in our waters, perhaps because, unlike some non-native pest species, it has not yet found its way here.
4) Why are sea worms so easily caught?
   - The worms are attracted to light.
   - The worms are phosphorescent.
   - The worms swim slowly.

5) Coral bleaching has resulted in:
   - decreased reef size.
   - increased calcium carbonate deposits.
   - overgrowth of barnacles.

6) You can protect yourself from dengue by:
   - boiling tap water before you drink it.
   - getting a shot before traveling.
   - using insect repellent.

7) Mosquitos on American Samoa can:
   - be larger than those found on the mainland.
   - be used for fish bait.
   - carry diseases for which there is no cure.
Procedure

- Participants went to URL at their convenience
- Scenario: You’re a new park ranger...
- Browsed site for ~15 minutes
- Completed questionnaire
Some Dependent Variables

- Number of unique pages browsed
- % embedded links clicked
- Comprehension scores (% correct questions)
  - Factual
  - Inferential
Results: Number of Links Clicked

- Generic-Informative
- Generic-Intriguing
- Informative-Informative
- Generic-Generic
- Intriguing-Intriguing

Number of links clicked
Results: Number of Links Clicked

- Generic-intriguing
- Generic-informative
- Informative-informative
- Generic-generic
- Intriguing-intriguing

Bars represent the number of clicks for each category, with different colors indicating different conditions.

Legend:
- Nav
- Embed
Results: Embedded Links Clicked

- Generic-intriguing
- Generic-informative
- Informative-informative
- Generic-generic
- Intriguing-intriguing

Number of embedded links clicked
Results: Comprehension

- No significant differences among the five conditions on overall comprehension scores
- A trend towards significance for inferential comprehension
The key differences were between “matched” and “unmatched” conditions.

<table>
<thead>
<tr>
<th>Matched</th>
<th>Unmatched</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generic-generic</td>
<td>Generic-intriguing</td>
</tr>
<tr>
<td>Informative-informative</td>
<td>Generic-informative</td>
</tr>
<tr>
<td>Intriguing-intriguing</td>
<td></td>
</tr>
</tbody>
</table>
Subjects in **Unmatched** Conditions

- Visited more pages
- Revisited pages more often
- Correctly answered more comprehension questions, overall
- Correctly answered more inferential comprehension questions about visited pages
- Believed they learned more from visiting the site
Conclusions

- Use more detailed embedded links to encourage browsing and learning
  - Intriguing OR informative
- More detailed navbar links don’t affect browsing behavior or learning