Making Your Gateway Easy to Find—
An Introduction to Search Engine Optimization (SEO)

By
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Omni Marketing Interactive

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If you are tweeting:

#sciencegateways
@sharithurow
About me:

@sharithurow

sthurow@search-usability.com

- SEO professional since 1995, pioneering search-engine friendly website design.
- Website usability & UX professional since 2002.
- Information architect since 1990.
Webinar agenda:

- 3 key principles to know about web search
- Defining search engine optimization (SEO)
- 4 SEO building blocks
  - Keywords, content, & labels
  - Accessibility: architecture & navigation
  - Link development & social signals
  - Searcher goals & behaviors
- Other tips, tools, & resources
- Questions & answers
Thank you to volunteers:

QUBES

CIPRES

HYDROSHARE
If you check out some of the sample pages shown in this webinar, they might look different, or they may no longer exist.

The principles & guidelines that these examples illustrate are relevant long after a they have changed.
This is a good idea, or this gateway website (or application) implemented an SEO best practice.

This is a bad idea; don’t do this; or this gateway did not implement an SEO best practice well.

This is really important. Try to remember this SEO guideline &/or best practice.
Making Your Gateway Easy to Find—An Introduction to SEO

3 KEY PRINCIPLES TO KNOW ABOUT WEB SEARCH
3 key principles to know about web search:

- Aboutness (context)
- Information scent
- Inceptor’s pyramid
1. Aboutness

“...basic assumption is that [people] are able to state what a document is 'about' by formulating an expression which 'summarizes' the content of the document.”

1. Aboutness (cont’d):

“The process is generally seen to involve the selection of 'key' words or phrases from the text, expressions which are 'significant' indicators of content and which together sum up the message of the document.”

Intentional aboutness describes the meaning of a document (such as a web page, PDF, graphic image or video) from the author’s perspective.
Top-level category page:

Browse our many open education resources created by the QUBES community

Discover our Resources

FMN & Partner Products
Discover resources created by our Faculty Mentoring Networks (FMNs) and partners - all based upon the foundation of Open Education Practices

Collections
Browse community driven collections of resources or create your own collection around your topic of interest

Software
Create your own customized activities and datasets which students can run using free software without having the need to purchase and install locally
Stem Cells in Planaria Regeneration and Wound Healing

By Aylin Marx¹, Jennifer Buntz², Susan Meiers³
1. Norfolk State University 2. Dine College 3. Western Illinois University

Discussion questions to help guide students examining a graph of number of mitoses vs time for planaria injured or had amputations of their tails.

Listed in Teaching Materials | resource by group: HHMI BioInteractive FMN (2017)

Description
A graph of the number of mitosis following an incision or amputation in planaria is provided. The biological content covered is stem cells, mitosis, regeneration, and wound healing. A student handout is provided and contains a link to the original manuscript for the
Google search listing:

![Google Search Results](image)

About 8 results (0.52 seconds)

1. **Stem Cells in Planaria Regeneration and Wound Healing** - QUBES
   - Publication date: Feb 20, 2018
   - QUBES Hub - The Power of Biology, Math, and Community.
   - [Link](https://qubeshub.org/publications/362/)

2. **Stem cell systems and regeneration in planaria** - NCBI - NIH
   - Author: JC Rink
   - Published: Nov 9, 2012
   - NCBI - NIH
   - [Link](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3552358/)
   - The accumulation of Neoblasts at regenerating wounds and their rapid loss after regeneration-inhibiting doses of irradiation linked Neoblasts to regeneration (Wolff and Dubois 1948). The observation that all cell divisions in planarians occurred exclusively in cells meeting the above morphological criteria...
   - Missing: qubeshub
2. Scent of information:

- **Information scent** consists of textual and graphical cues that:
  - Facilitate navigation (Where can I go? How can I get there?)
  - Orientation/placemaking (Where am I?)
  - Assessment of content value (Should I click on this link?)


Google search for "illustration stem cell".
Testing the 3-Click Rule
https://articles.uie.com/three_click_rule/

User Experience Myth Or Truth: The Three-Click (Or Tap) Rule
3. Inceptor’s pyramid:

- When searchers arrive on a website from a commercial web search engine, such as Google, they usually land on a page in the middle of the site, not the home page.
DEFINING SEARCH ENGINE OPTIMIZATION

Making Your Gateway Easy to Find—An Introduction to SEO
Search engine optimization (SEO) is **not** optimizing a website for search engines only.
Search engine optimization (SEO) is optimizing a website for people who use search engines.
Search engine optimization (SEO) is...

- ... designing, writing, organizing, formatting, coding, and programming digital documents so that there is an increased chance that these documents will **appropriately** appear at the top of web search results.

- The optimization process also includes how one can improve the appearance of individual search listings on search engine results pages (SERPs).

- **Web-only definition:** SEO is the process of making web documents easy to locate/discover, interpret, and possibly rank on the commercial web search engines (such as Bing and Google).
Search engine optimizers are concerned with:

- **Labeling website content** so that it is easy to find
- **Organizing website content** so that it is easy to find
- Ensuring search engines **have access to desired content**
- Ensuring search engines **don’t have access to undesirable content**
- Applies to both:
  - Web search engines
  - Site search engines
SEO is part of the user/searcher experience:

- useful
- desirable
- valuable
- accessible
- credible
- findable
- usable
UX factors citations:

**User Experience Design**
Peter Morville
[http://semanticstudios.com/user_experience_design/](http://semanticstudios.com/user_experience_design/)

**The 7 Factors That Affect User Experience**
Interaction Design Foundation
[https://www.interaction-design.org/literature/article/the-7-factors-that-influence-user-experience](https://www.interaction-design.org/literature/article/the-7-factors-that-influence-user-experience)
Findable:

- Browsing
- Searching
- Asking
Browse:
Navigation usage (browsing) is higher on mobile devices:

Mobile first is NOT mobile only
https://www.nngroup.com/articles/mobile-first-not-mobile-only/
Search:

Query words  Search  Results (SERP)
Ask:
Making Your Gateway Easy to Find—An Introduction to SEO

4 SEO BUILDING BLOCKS
## Periodic Table of SEO Factors:

### On-The-Page SEO
- **Cq**: Comprehensiveness
- **Cr**: Relevance
- **Ca**: Authority
- **Ac**: Content
- **Am**: Mobile
- **Ad**: Duplicate
- **Ag**: Fresh
- **Au**: Use
- **Vs**: Internal
- **Ht**: Title
- **Te**: Tags
- **Hs**: Structure
- **Nh**: Headers
- **Vh**: Version

### Off-The-Page SEO
- **Tq**: Trust
- **Tc**: Citations
- **Th**: Trust
- **Lt**: Trust
- **Ls**: Social
- **Pr**: Authoritativeness
- **Pt**: Location
- **Pn**: History
- **Sr**: Authority
- **St**: Authority

### Factors Work Together

[https://searchengineland.com/seotable](https://searchengineland.com/seotable)
Let’s simplify this:

Keywords, Content, & Labels

Accessibility & Navigation

Link Development & Social Signals

Searcher Goals & Behaviors
Web search engines:

1. Index text
2. Follow links
3. Measure popularity (authority)
4. Accommodate searcher goals & behaviors

{ All crawlers

{ Ranking factors
On-page criteria

- Keywords, Content, & Labels
- Accessibility & Navigation
- Link Development & Social Signals
- Searcher Goals & Behaviors
How are other sites linking to your site?

<table>
<thead>
<tr>
<th>#</th>
<th>Anchor Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>science gateways community inst...</td>
</tr>
<tr>
<td>2</td>
<td>science gateways</td>
</tr>
<tr>
<td>3</td>
<td>sciencegateways.org</td>
</tr>
<tr>
<td>4</td>
<td><a href="http://sciencegateways.org/bootcamp">http://sciencegateways.org/bootcamp</a></td>
</tr>
<tr>
<td>5</td>
<td><a href="http://sciencegateways.org/">http://sciencegateways.org/</a></td>
</tr>
<tr>
<td>6</td>
<td>sqc</td>
</tr>
<tr>
<td>7</td>
<td>science gateway</td>
</tr>
<tr>
<td>8</td>
<td>gateways 2017</td>
</tr>
<tr>
<td>9</td>
<td><a href="http://sciencegateways.org/upcom">http://sciencegateways.org/upcom</a>...</td>
</tr>
<tr>
<td>10</td>
<td><a href="http://sciencegateways.org/gatew">http://sciencegateways.org/gatew</a>...</td>
</tr>
</tbody>
</table>

94%
How are other sites linking to your site?

<table>
<thead>
<tr>
<th>#</th>
<th>Anchor Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>hydroshare</td>
</tr>
<tr>
<td>2</td>
<td>free shopping</td>
</tr>
<tr>
<td>3</td>
<td><a href="http://www.hydroshare.org">http://www.hydroshare.org</a></td>
</tr>
<tr>
<td>4</td>
<td><a href="https://www.hydroshare.org">https://www.hydroshare.org</a></td>
</tr>
<tr>
<td>5</td>
<td><a href="http://www.hydroshare.org">http://www.hydroshare.org</a></td>
</tr>
<tr>
<td>6</td>
<td>ok pay day loan</td>
</tr>
<tr>
<td>7</td>
<td>fast cash what you mad at</td>
</tr>
<tr>
<td>8</td>
<td><a href="http://www.hydroshare.org">www.hydroshare.org</a></td>
</tr>
<tr>
<td>9</td>
<td><a href="https://www.hydroshare.org">https://www.hydroshare.org</a></td>
</tr>
<tr>
<td>10</td>
<td>quick and loans arena events</td>
</tr>
</tbody>
</table>
4 SEO Principles

1. **Keywords, labels, & copywriting**
   Do your web pages contain the words and phrases that your target audience types into search queries?

2. **Site/page architecture, navigation & formatting**
   Do search engines have easy, user-friendly access to desirable content via site architecture, navigation, page layout, formatting, and URL structure?

3. **Link development & social signals**
   Does your gateway website get objective, high-quality, third-party links pointing to it (not only your home page)?

4. **Searcher behaviors**
   Does your website accommodate known searcher goals and behaviors?
Keywords, Content, & Labels
What kind of text?

- The words your target audience is typing into search queries are called **keywords** or **query words**.

- Your website should have a consistent labeling system that clearly communicates **aboutness** to both human users & technology.

- To validate the aboutness of your web content, search engines look at:
  - How you label & describe your content
  - Data outside of your website

- Use the **users’ language**.
Labeling system:

- An effective label must be representative of a page and/or section content on a website.

- Types of labels:
  - Content
  - Document
  - Navigation
Content labels include:

- Headings
- Subheadings
- Subject tagline
- Captions (if used)
People use the H1-formatted heading to:

- Get a sense of the page’s main topic
- Validate information scent
Mobile First Is NOT Mobile Only
by RALUCA BUDIU and KARA PERNICE on July 24, 2016
Topics: Mobile & Tablet  Navigation  Web Usability

Summary: Mobile-navigation patterns make navigation unusable on the desktop and decrease the use of this important UI element. Porting an unchanged UI to a different platform hurts UX.

In a recent study, we found that hiding navigation under a menu significantly decreases the use of the navigation and also degrades the overall user experience both on desktop and on mobile.

While hiding navigation under an expandable menu can be a necessity on a small mobile device, it is not a practice that is native to the desktop; rather, it is a trend inspired by mobile and reinforced by responsive design, a technology that allows the same content and functionality to be present on different screen sizes, but rearranged in layouts that are appropriate to the available screen spaces. Many responsive sites use a mobile-first approach to designing for multiple devices: they start with a design that is optimized for mobile and then port it to the desktop, under the assumption that simple is better across all devices, and a design that is simple and condensed enough so that it works for small screens will also provide a good user experience on large ones.

In this article we examine the consequences of porting mobile-first designs to the desktop, with a focus on navigation.

About Our Study
NN/g partnered with international remote-usability-testing firm, WhatUsersDo, to test 3 different types of navigation: hidden, visible, and a combination of hidden and visible navigation. As described in the study methodology, 179 users participated in our study; they completed tasks on 6 different websites, on desktops and smartphones.
“Moving keywords to the front of titles [headings] increases the likelihood that they get noticed.”

- Dr. Jakob Nielsen, Usability Guru & Author
http://www.nngroup.com/articles/headings-pickup-lines/
People spent more than twice as much time looking at the left side of the page as they did the right:

Left half of screen: 69% of viewing time  
Right half of screen: 30% of viewing time

https://www.nngroup.com/articles/horizontal-attention-leans-left/
Influenza (flu)

Overview

Influenza is a viral infection that attacks your respiratory system — your nose, throat and lungs. Influenza, commonly called the flu, is not the same as stomach "flu" viruses that cause diarrhea and vomiting.

For most people, influenza resolves on its own. But sometimes, influenza and its complications can be deadly. People at higher risk of developing flu complications include:

Overview

Influenza is a viral infection that attacks your respiratory system — your nose, throat and lungs. Influenza, commonly called the flu, is not the same as stomach "flu" viruses that cause diarrhea and vomiting.
Unclear navigation labels & user expectations:
Can you tell what this image is based on its URL?

...the page title?

![Graph showing jobs submitted per month over years](image)

Statistics | CIPRES
Keyword research & analysis resources:

- Field research
- User interviews
- Audio/video files from usability testing
- Customer surveys & focus groups
- Blogs, forums, Q&A websites, social media (if used)
Keyword research & analysis resources (cont’d):

- Google Keyword Planner
  https://adwords.google.com/home/tools/keyword-planner/

- Google Trends
  https://trends.google.com/trends/

- Google Webmaster Tools
  https://www.google.com/webmasters/

- Google Analytics
  https://www.google.com/analytics/

- Bing Keyword Research Tools
  https://www.bing.com/toolbox/keywords

- Bing Webmaster Tools
  https://www.bing.com/toolbox/webmaster
Keyword research & analysis resources (cont’d):

- Amazon Suggests
  [https://keywordtool.io/amazon](https://keywordtool.io/amazon)

- Answer the Public
  [https://www.answerthepublic.com](https://www.answerthepublic.com)

- MetaGlossary
  [http://metaglossary.com](http://metaglossary.com)
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Information architecture is the art & science of organizing, labeling, & connecting website content to make it:

- Easy to find
- Easy to use

Definition adapted from: The Information Architecture Institute
Information can be organized in the following ways:

- Alphabetical
- Attributes/facets
- Format
- Geography
- Organizational structure
- Target audience
- Social
- Task-oriented
- Time/date
- Topic/subject
- ...or combinations of the above
Broad-&-shallow is better than narrow-&-deep:


Figure 6-13. Balancing depth and breadth
Minimize or eliminate pogo-sticking:

**Pogo-sticking** (or pogosticking) is what happens when a user jumps from a category page (or a search results page) to an individual content page and back, constantly retracing their steps when navigating a website.
Pogo-sticking prevents success:

WITH POGO-STICKING

Failure 89%
Success 11%

WITHOUT POGO-STICKING

Failure 45%
Success 55%
Navigation systems:

- Help users move through a website.
- The purpose of a navigation system is to enable efficient task completion for both human users & technology.
- Answers the questions:
  - Where am I?
  - Am I in the right place? (arrival)
  - Where can I go? (information scent)
  - How can I get there?
Types of site navigation:

- (Universal)
- Global
- Local
- Utilities
- Supplemental
- Contextual

Make sure search engines can access content:

https://www.google.com/webmasters/tools/home
https://search.google.com/search-console/mobile-friendly
https://varvy.com/mobile/

✅ Mobile friendliness

Score: 99 / 100

- Text is legible
- Viewport configured
- 🙄 Tap targets are small
- Text fits inside viewport
- No plugins found
- No blocking interstitials

Mobile friendliness is measured by Google and has a place in determining how your page ranks.
Identify & fix content orphans, near-orphans, & silos:
### Internal Links

Find internal links to: 

<table>
<thead>
<tr>
<th>Target pages</th>
<th>Links</th>
</tr>
</thead>
<tbody>
<tr>
<td>/hl</td>
<td>378</td>
</tr>
<tr>
<td>/de/</td>
<td>17</td>
</tr>
<tr>
<td>/nl/</td>
<td>14</td>
</tr>
<tr>
<td>/cn/translations/</td>
<td>10</td>
</tr>
<tr>
<td>/documents/research/</td>
<td>4</td>
</tr>
<tr>
<td>/de/</td>
<td>4</td>
</tr>
</tbody>
</table>

1-6 of 6
Contextual links are EXTREMELY important:

The best links are 7-12 words

Note potential opportunities for cross referencing, alternative paths, & shortcuts:
OptimalWorkshop.com:
Popularity:

- Number of links
- Quality of links
- Number of times people click on links to your site
- How long end users visit your site
- How often people return to your site
Useful:

- Useful content encourages link development & social media sharing.
  - Tools
  - Tips (how-to)
  - Slideshows
  - Videos
  - Guides
What types of useful content does your site have?

- Reference
- FAQs, Q&As
- Knowledge center
- Articles/blog
- Checklists
- Fact sheets
- Guides

- Tools
- Slideshows
- Videos
- Infographics
- Audio files
- Spreadsheets (templates)
- Links & resources
Good link profile:

- **Information**
  - Crawled URLs: 441,324
  - Indexed URLs: 2,882,013
  - Educational Ref. Backlinks: 205
  - Governmental Ref. Backlinks: 1
  - Educational Ref. Domains: 20
  - Governmental Ref. Domains: 1
  - IP Address: 128.46.21.85

- **Charts**
  - Trust Flow vs. Citation Flow
  - Redirects: 8%
  - Text Links: 91%
  - Images: 0%
  - Frames: 0%
Needs a little improvement:

**INFORMATION**

- Crawled URLs: 45,508
- Indexed URLs: 53,191
- Educational Ref. Backlinks: 83
- Governmental Ref. Backlinks: -
- Educational Ref. Domains: 8
- Governmental Ref. Domains: -
- IP Address: 152.54.2.75

**LINKS**

- 0% Redirects
- 98% TextLinks
- 2% Images
- 0% Frames

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Link development resources:

- Majestic
  https://majestic.com

- Citation Labs
  https://citationlabs.com/tools/

- Linkdex
  https://linkdex.com

- Eric Ward articles
  https://searchengineland.com/author/eric-ward

- Garrett French articles
  https://searchengineland.com/author/garrett-french
Searcher Goals & Behaviors
Remember Go, Know, Do:

- **Go (Navigational)**
  Searchers want to go directly to a website, or go to a specific page on a website.

- **Know (Informational)**
  Searchers want to know or learn more about a topic.

- **Do (Transactional)**
  Searchers want to do or perform some web-mediated activity.

Navigational queries:

- If a searcher’s goal is to go to a specific website or a specific page on a website, then the keywords are considered to be navigational.

- If the searcher’s goal is navigational, then the page title, file name / URL structure, & domain name are important.

- Search engines provide information scent for some navigational searches....
| **Home - Science Gateways Community Institute (SGCI)** |
| https://sciencegateways.org/ |
| The SGCI serves the science gateway community. We provide NSF-funded, online and in-person resources and services. Our goal is to facilitate the sharing of experiences, technologies, and practices within this community at little or no cost to our community members. Read more about how we've supported gateway ... |

| **Gateways 2017** |
| The 12th Gateway Computing Environments Conference ... |

| **Our Team** |
| Name, Role, Service Area, Institutional Affiliation, Email ... |

| **About** |
| We connect people and resources to accelerate discovery by ... |

| **Bootcamp** |
| Our incubator-organized Bootcamp is a week-long ... |

| **Annual Conference** |
| A yearly opportunity to expand your knowledge and ... |

| **Gateways 2018** |
| Gateways 2018: The 13th Gateway Computing Environments ... |

| **More results from sciencegateways.org »** |
phylo

PHYLO | DNA Puzzles
phylo.ca.mcgill.ca
Phylo (Web) v1.1.7.7. Your browser does not support WebGL. OK.

des Spiels - PHYLO | DNA Puzzles
phylo.ca.mcgill.ca#mobile
English Español Français Deutsch Русский

PHYLO | DNA Puzzles
phylo.ca.mcgill.ca#mobile
English Español Français Deutsch Русский 中文繁體 中文簡體 한국어 한국어 Română Português. DONE. PHYLO | DNA Puzzles. Play: Tutorial • About • Ranking • Settings • History • x ...

Phylo- I Define Phylo-at Dictionary.com
www.dictionary.com/browse/phylo-
Phylo-definition, a combining form meaning "race," "tribe," "kind": phylogeny. See more.

Phylo (video game) - Wikipedia
https://en.wikipedia.org/wiki/Phylo_(video_game)
Phylo is an experimental video game about multiple sequence alignment optimisation. Developed by the McGill Centre for Bioinformatics, it was originally released as a free Flash game in November 2010. Designed as a game with a purpose, players solve pattern-matching puzzles that represent nucleotide sequences of ... Background • Gameplay

Phylo- definition and meaning | Collins English Dictionary
Phylo-definition: tribe; race; phyllum | Meaning, pronunciation, translations and examples.
Informational queries:

- Most common type of search query.

- If a searcher’s goal is to read or learn more information about a topic, then the keywords are considered to be *informational*.

- Some types of informational queries:
  - Questions
  - Lists
  - Reviews
  - Quick facts

- If a searcher’s goal is informational, then the **title and description/snippet are important** in a search listing.
About HydroShare

What?
HydroShare is a system operated by The Consortium of Universities for the Advancement of Hydrologic Science Inc. (CUAHSI) that enables users to share and publish data and models in a variety of flexible formats, and to make this information available in a citable, shareable and discoverable manner. HydroShare includes a repository for data and models, and tools (web apps) that can act on content in HydroShare providing users with a gateway to high performance computing and computing in the cloud.

With HydroShare you can: share data and models with colleagues; manage access to shared content; share, access, visualize, and manipulate a broad set of hydrologic data types and models; publish data and models and obtain a citable digital object identifier (DOI); aggregate resources into collections; discover and access data and models published by others; use the web services application programming interface (API) to programmatically access resources; and use integrated web applications to visualize, analyze and run models with data in HydroShare.

Who?
HydroShare is freely accessible to everyone, but primarily was designed for water-resources professionals, researchers, educators, and others interested in water-resources data and tools.

Why?
The goal of HydroShare is to advance hydrologic science by enabling the water-resources community to more easily and freely share products resulting from their research and/or data collection. With HydroShare, one can integrate information from multiple sources; reuse data beyond the purpose for which it was originally collected, extending the value of measurement, monitoring and research investments; manage, archive, and publish data in a discoverable manner; increase transparency and support reproducibility of work.
Google

what is hydroshare

About 15,700 results (0.35 seconds)

HydroShare is an online, collaborative system for sharing and publishing a broad set of hydrologic data types, models, and code. It enables people to collaborate seamlessly in a high performance computing environment, thereby enhancing research, education, and application of hydrologic knowledge.

Introduction to HydroShare | HydroShare
https://help.hydroshare.org/introduction-to-hydroshare/

Introduction to HydroShare | HydroShare
https://help.hydroshare.org/introduction-to-hydroshare/

HydroShare is an online, collaborative system for sharing and publishing a broad set of hydrologic data types, models, and code. It enables people to collaborate seamlessly in a high performance computing environment, thereby enhancing research, education, and application of hydrologic knowledge.
Transactional queries:

- If a searcher’s goal is to perform some activity on a website, then the keywords are considered to be transactional.

- Some types of transactional queries:
  - Download
  - Videos
  - Listen (music, podcasts, etc.)
  - Look at pictures

- If a searcher’s goal is transactional, then the title and description/snippet are important in a search listing.

However, if searchers want to look at pictures or watch a video, they often expect information scent to contain more than text.
Key takeaways:

- SEO is optimizing digital documents for **people who use** search engines.

- **Search/findability principles**
  - Aboutness (context)
  - Scent of information
  - Inceptors pyramid

- **4 SEO building blocks**
  - Keywords, content, & labels
  - Accessibility: architecture & navigation
  - Link development & social signals
  - Searcher goals & behaviors
Thank you!

@sharithurow

sthurow@search-usability.com