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Laboratory Educational Authority Website Development

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Abstract

The article presents ways by which an authority site can be developed and maintained as a reputed source of specific, including educational, digital information. For the Internet sustainability of a laboratory educational authority website, the search engines' work should be taken into account in the entire website's framework design in general, as well as its webpages in particular. While the informative value of the site is paramount, the strategic use of keywords, even phases on the pages can enhance the visibility. Fragmentation of the material on pages is beneficial. The composition of the website can use hyperlinks to draw attention to previous posts. The article is based on our more than a decade expertise of maintaining the" Grossing Technology in Surgical Pathology" (www.grossing-technology.com) website. The methodology of building a specialized authority website can be expended to further development of educational websites, including website's aggregation in portals. The principles of the development a sustainable laboratory niche website are discussed in the article "Development of a Laboratory Niche Website" published in Annals of Diagnostic Pathology in 2013. The current article is a continuation of it. There has been no similar work in the accessible literature.

Keywords

Authority Website, Niche Website, Search Engine Optimization, Web Crawlers

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1. Introduction

This technical note explores the methods of maintaining a laboratory website's sustainability as an authority site on the Internet. Our goal is considerably modest: we want to presents some personal experience that is definitely limited but supported by the Internet longevity and visibility of our "Grossing Technology in Surgical Pathology" (GTSP) website (www.grossing-technology.com), which is used as an example. (Figure 1.)

The site developed an evolution from a static to a dynamic website by using WordPress platform. There are particularities in the design of a laboratory website. The principles of the development a laboratory niche website are discussed in the article "Development of a Laboratory Niche Website" published in Annals of Diagnostic Pathology in 2013. [1] This technical note is a continuation of the article. There has been no similar work in the accessible literature.

2. Methods of Developing an Authority Laboratory Website

The definition of an authority website reflects the visibility of a niche website. On this subject, a website development blogger posted: "In layman's terms, it is a popular site that people frequent, that gets linked to on the basis of its merit, or that others willingly refer to when the topic of that site comes into play." [2] The dispute between niche website vs. authority website is analogous to whether it is better to be

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rich and healthy or poor and ill. The problem is how to transform a niche website into an authority site.

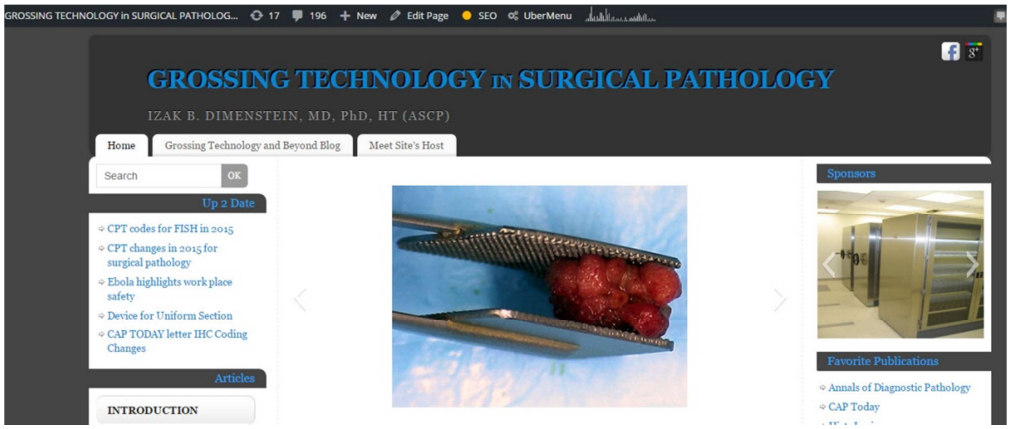

Figure 1. Grossing Technology in Surgical Pathology website's home page.

An authority laboratory website can follow the methods for marketing niche websites in order to gain visibility on the Web and to attract the desirable attention of laboratory practitioners. Many formal methods of building a marketing website cannot be applied to a laboratory authority website due to the relatively rigid laboratory methodology and the standardization requirements.

Figure 2 presents the work pattern of a search engine on the background of the modified "A simple spider" diagram in the Michael Schenk's book (p.174). [3] The diagram is accompanied with GTSP website illustrations. The diagram displays the Web crawlers work as a perpetual process when the maximum penetration is only a transitional step to the next maximum penetration. This understanding opens opportunities for tactical considerations in the placement of material on the site.

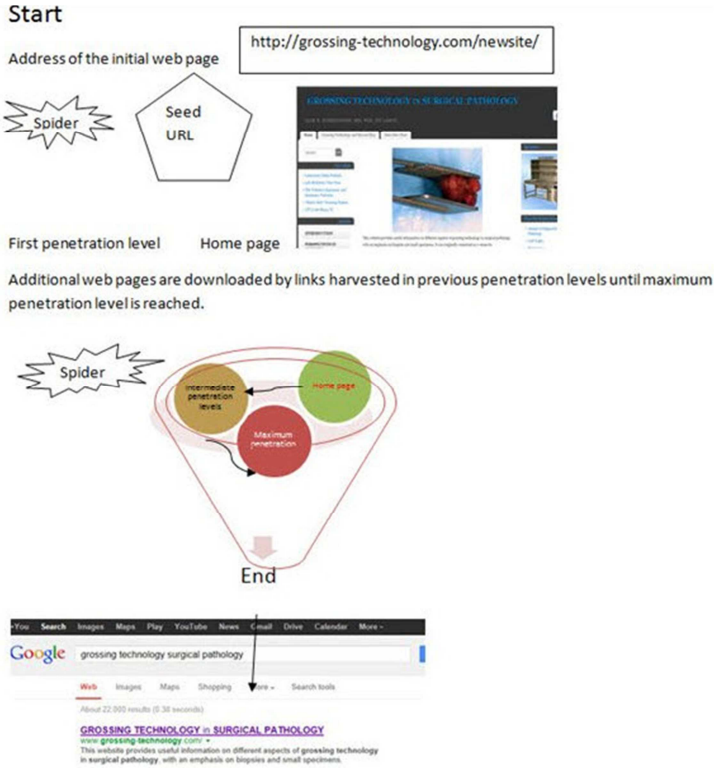

Figure 2. Search engines work pattern.

Actually, this is only a part of how search engines work as they incorporate harvested information into databases through indexing. Then they analyze such information through complex algorithms on link ranks and relevance to the search keywords. The diagram illustrates the multistep process of a Web spider's work to highlight the issue that although designing different parts of a laboratory website (home page and its components) necessitates individual

approaches, these elements are permanently interconnected. The ultimate goal is for the website to land on query results pages.

Although Web crawlers (e.g. spiders, crawlers, web walkers, robots, webbots, and simply bots in computer science lingo) are a central part of search engines (in common perceptions synonymous with them), details on their algorithms and architecture are kept as business secrets or discussed in high-level computer science literature [3]. Google, however, placed online very useful Webmaster Guidelines to help search engine to find, index, and rank a site. [4] The major search engine companies (Google, Yahoo, Bing- Big Three) and others use their own spiders for identification of the wide range online content. In a broader approach, web pages should be designed with the aim of maximizing the extraction of relevant information by a specialized Web crawler, e.g., academia-focused crawlers, which work according to specific algorithms.

Owning to the discrete characteristics of laboratory procedures, a reasonable fragmentation of the material, such as differentiation or reorganization of online content, would be a specific method in the laboratory niche website design (the "nested doll principle). [1] It can provide additional leverage of key words placement for search engines. When creating a page, one should visualize the multiple legs of robotic spiders on the body of text. In the fragmented articles/pages and posts, hyperlinks enhance the "link juice" (PageRank) of the niche website material. This opens a chain reaction of additional links and drags attention to previous articles that inevitably age and wane from attention. Thus, the laboratory niche website can maintain its authority through the life cycle of its archives. Without informative content, however, which generates visitor's interest, all the efforts of search engine optimization are useless. A golden cage cannot make the canary sing.

The pages and posts of niche websites ostensibly differ from papers in peer-reviewed journals. While constructing the initial fragmented files, it must be noted that apart from the hopefully numerous visitors ("peer review experts" in the field) to the website, a robot will scan through the text. We have to realize as a fact of our Internet life, that a Web crawler is unappreciative of attempts to embellishing the page/post but is appreciative of redundancies, and partial to formal language.

Many components of search engines work are obscure and beyond the realm of the host of a laboratory niche website. We should, at the least, use recommendations that we understand. The question of how to leverage the website authority is described in more detail in many online materials (see, for example, an excellent post on this subject.) [2]

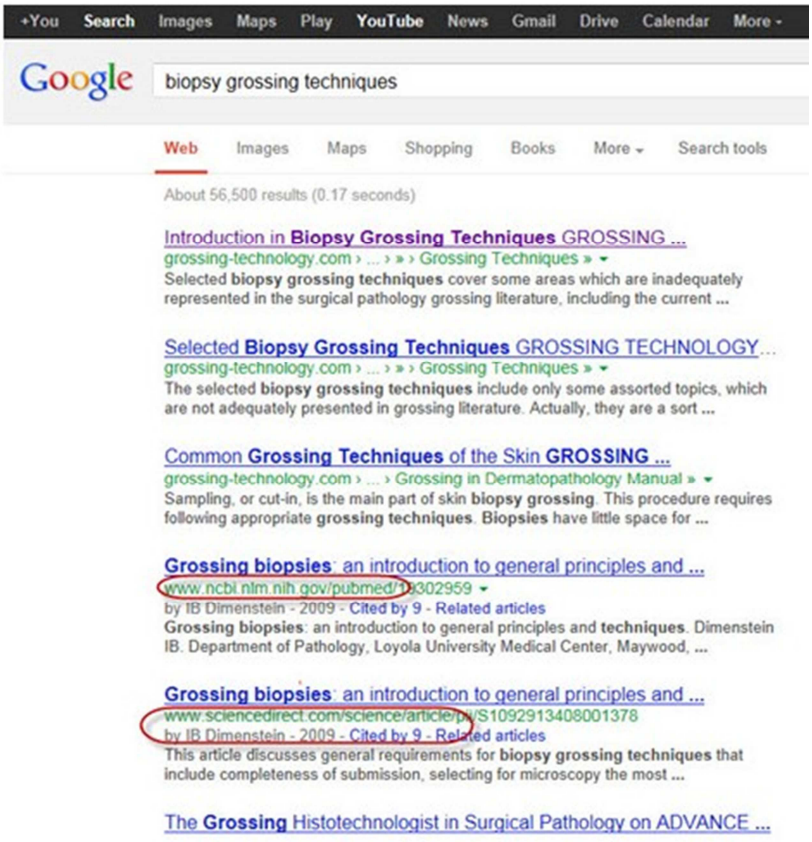

Figure 3. An example of Google's query results page on 'biopsy grossing techniques' topic.

3. Publications

Publications in preferably peer-reviewed periodicals are a significant part of transforming a laboratory niche website into an authority laboratory website. Peer-reviewed publications, indexed by some online entities, such as PubMed and Science Direct, provide links to the website and other related publications. Printed publications are by definition less fragile and more or less permanent, as opposed to websites, which are a dynamic but fluent part of the information media. Here an example from our "Grossing Technology in Surgical Pathology" website experience.

Let us take "biopsy grossing techniques" on the query topic. The first three results on the first page of Google's search engine are followed by two results of an article published in Annals Diagnostic Pathology in 2008 (Figure 3). [5]

It looks that publications preferably should precede the placement of website's materials (articles/pages, posts and others.) The synchronization is important. It is understandable that publications in press are not manageable by the host, but posts are. Publications often have some leftovers which for many reasons were not included in the printed material. They can be placed as posts on the website with appropriate links.

4. Recycling and Updating

The sad truth is that the websites fade from visibility with age. Recycling is the favorite concept for environmentalists, but in the intellectual sphere the same term is considered negative, especially in the arts. Recycling is, however, a necessity to maintain visibility on a laboratory methodological website that is considered to be an authority website. Website's pages and posts should be dynamic, but changes in laboratory methodology may be too minimal to be visible to Web crawlers. Sometimes, these changes are only adjustments in approach, which cannot be recognized by crawlers. The best methods to refresh these pages would be by connecting through links on a particular topic.

Are we satisfied with our articles, pages, and posts? Of course not. Recycling is an opportunity to revisit these pages and make changes to the posts. Updating can be incremental, but is significant both in terms of making the site more relevant to current trends in methodology and contributing to visibility on the Internet. This is the advantage of a website

5. Composition of the Authority Website

The composition of the laboratory niche website itself is also important to make it an authority website. Three optimal components of a laboratory methodological website, namely, the basic component, the blog, and the ancillary component, can contribute to the sustainability of the website.

These three components can overlap like in a Venn diagram, and they share a dynamic relationship. The interaction of the internal links of the basic component's pages and the blog posts are a definite advantage for the laboratory niche website (Figure 4.)

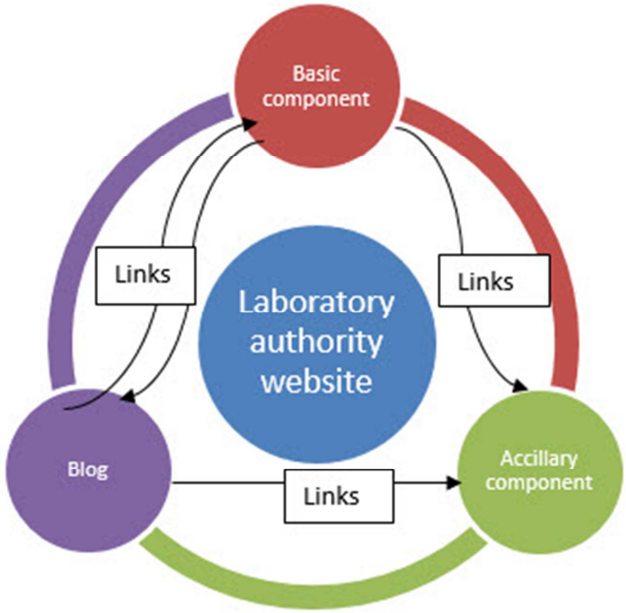

Figure 4. Interaction among the components of a laboratory niche website.

When the blog links to your Web site's basic component, and vice versa, traffic flows to both, and visibility increases. The internal links provide methodological comprehension of information without interfering with the logical presentation of the material. On the other hand, they add to the visibility of the site by repetition of key words.

The internal links in the basic component's pages are the most obvious and easily accessible, while the interaction of links between the basic component and the blog are the most valuable. Both the basic component and the blog can provide relevant links to ancillary component.

The blog allows the website to react to current events and discussions as well as respond immediately to comments posted on the website. Visitors with real expertise in the field can be part of the website as peer-reviewers. This exchange

can transform the laboratory niche website into a panel discussion on a particular topic or even on general issues. As previously stated, the repeat visits are always a reward for a website. Every website wants to have a reference group. This is not, however, what in the popular website design lingo is called a sticky site.

The ancillary component of the website can include several categories, including links to different websites, publications, and manufacturer's advertisements. All the three components enhance visibility, increasing its authority. The structure of the website's basic component (the categories template) can have some influence on Web crawlers' attention. It has been shown that search engines "prefer" sites that are structured wide rather than deep. [6]

6. Discussion

A website is not created for eternity. A website is a dynamic, actually transitional, intellectual entity that exists on the Internet at the mercy of powers that are beyond the site host's ability to completely influence. Without visibility to the targeted audience, a website is an exercise in futility.

A marketing niche website and laboratory niche website emerge on the Internet from different standpoints. Due to fierce competition, the former aims to stand out from the crowd of similar websites as being unique, literally a niche that can give an edge. In contrast, the laboratory niche website, as a specialized entity, is empowered when it is part of a group of similar websites that confirm its relevance in the field. The laboratory methodological website's lifespan is different also from marketing niche website. The latter need permanent changes, "refreshing", but a laboratory website requires updates. Both, however, converge on the way to being authority websites by following the rules of Internet existence: the requirement of informative content, relevant keywords optimization, and link interconnections. Ignoring these rules would cause both types of websites to fade into oblivion. The development of a laboratory methodology portal/s requires a special discussion.

Publications in journals, especially with high impact factor, workshops, seminars, lectures, and poster presentations related to the topic can be used to promote the website. Printed abstracts should include the website's URL as an additional source of backlinks. These types of publications are very short lived on search engines' result pages, but everything is transitional on the Web. This is also a way of testing the website's materials. The website's visibility can be promoted by transforming word of mouth into mouse clicks.

Participation in a professional discussion group (e.g., HistoNet) can be a type of partially induced external link; when a question relevant to a website's subject is answered, a reference link to the website is placed. This approach promotes the website with the creation of a website reference group. A laboratory website, however, does not "suffer" from the 'traffic virus' that proliferates on popular social or marketing sites, because the potential audience is for understandable reasons limited.

The website's content and structure should also take into consideration modern multi-devices in the website's development. The information can now be accessed not only from desktop and laptop computers, but also from smart phones and tablets. These web-enabled devices open more opportunities for individual use of methodology websites; this can translate into changes in laboratory methodology websites' content to include more quick reference material. For example, the popularity of the Stains File website (http://stainsfile.info/xx) reflects the need for systematic reference sources. This website is designed completely differently than GTSP, giving evidence that diversity is beneficial for the distribution online information.

Finally, the methodological laboratory website's materials are too precious to leave their presentation only to amateur self-design. Periodic consultation, if not permanent care by a website structuring professionals, are desirable, perhaps even mandatory. Professionals have a strategy of timely placement of key words or fresh links due to experience collected in marketing niche websites. They can develop a search engine friendly sitemap that invisible for visitors but accepted by the major Web crawler's protocols (Google, Bing, Yahoo, and Ask). The most important point is that building an informative authority website depends on a solid content structure with semantic richness that helps search engines to crawl and comprehend the page data more easily. [7] The tactic of launching new materials (pages, posts, photos, etc.) also requires some professional experience. [8-12] However, the website's host must have control over the website components, especially web page structure.

These materials present predominately our personal experience in maintaining "Grossing Technology in Surgical Pathology" website for more than a decade. The site developed an evolution from a static to a dynamic website by using WordPress platform, Many deficiencies are apparent, but it is more difficult to fix them than to do right from the beginning.

7. Conclusion

The visibility and sustainability of a pathology niche website transforms it into an authority site. Apart from the informative content, which is paramount, the formulation of key phrases and the strategic use of keywords on the pages

can enhance the visibility of the site. Uniformity of authority websites components opens possibility of aggregating them in portals.

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