

Search Engine Optimization for Effective Ranking of Educational Website

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Abstract: Search Engine Optimization plays a major role and by optimizing the content in our website we can rank well in Search Engines. To optimize the content we will be using the various factors and tools which help in ranking. It will take few months to get ranked well in Search Engine Result Page so that which makes our website popular among various websites. Mostly people won't move to second page of SERP itself. Reality is that we like to visit the first link of the result page only. So we can realize that optimizing the content is very much important and useful. Optimizing the website and ranking well in SERP is more important for E-Commerce websites. Students facing various difficulties in getting the proper contents from the internet. In order to provide the students with proper and easily understandable contents we created a domain named kprblog.in and applied some optimization based on SEO factors.

Key words: Search Engine Optimization • SEO tools • SEO factors • SERP

INTRODUCTION

Search starts with the web. It is made up of over 60 trillion individual pages. Search process was first started around 1990s. Then all the Web page administrators were informed to submit their page or URL to the search engines so that they are indexed in the search engine results. At first those webpages were ranked based on the hits of that page. The navigation between the webs is made using the Crawler. Search Engine optimization is the process of getting traffic from the free, organic search results on Search Engines. A webpage that is relevant enough for a query and trusted to rank it in a SERP (Search Engine Result Page).

Using some of the page ranking algorithm the search engine sorts the pages. Those things will be stored in the Index from which we getting the results in the SERP. There are various websites with better and efficient educational contents. But those websites were not optimized properly. Now we can understand the importance of optimizing the contents in our website. Search Engine Optimization helps us to rank well in search engines. The ranking will be based on the page rank, quality of the contents and various factors. One of the major factors involved in optimization is the page rank.

Types of Search Engine Optimization: Search Engine Optimization is classified into two broad categories based on the actions whether they are obeying the rules of search engine or not. They are White hat and Black hat SEO. White hat SEO follows all the rules and regulations of the search engines which help in long term ranking. But Black hat SEO which is against the rules of search engines which is focused only on search engines not on audience. Black hat SEO can be said to be short term ranking because if search engines finds it then it will block that website.

White Hat: White Hat SEO refers to simply implementing the SEO techniques, strategies and tactics that focus on human audience opposed to the search engines but comes under search engine rules and policies. Both the White hat SEO and Black hat SEO which is opposed to search engines but white hat SEO follows the rules of the search engine [1]. Main advantage of the Black Hat SEO is that it won't make our website to be blocked. Instead if we were practicing black hat SEO our website may be blocked temporarily or permanently.

Some examples of using this technique includes focus keywords, keyword analysis, back linking, link building to improve popularity and writing content for human readers without copying from other sites.

Black Hat: Black Hat SEO is opposite to previously mentioned method. Spamdexing is one of the black hat SEO techniques. Once if a search engine comes to know that a site following Black Hat SEO, then there will be an excellent chance of banning the website. Cloaking which comes under Black hat SEO techniques.

Cloaking is a spam indexing technique, which is used to trick any of the search engines that we are targeting. By this method we can make the users to visit a website that seeming different from the description provided. The content provided to the spider will be different from the content provided for the Users. The goal of cloaking is to boost a website's search engine rank on certain keywords in wrong way.

Spamdexing can be done by different methods, such as repeating irrelevant phrases, inconsistent with relevance of resource to index, etc.

Problem Statement: Nowadays students started depending on internet to satisfy their needs and to find solution for their queries. Students started depend on internet for their studies because by surfing in internet they can find lots of easy solutions for their mathematical problems and easily understandable notes which help them to gain more knowledge. There are various websites with good and efficient content the students started to study by searching the notes, syllabus and various materials available in the internet. But the websites with quality contents were not optimized properly so the various websites without any contents and poor contents started to rank well by applying some black hat techniques which may not be identified by ranking programs available in search engines. So in order to help the students we created a sample domain kprblog.in which is an educational website focus on answering various queries of the students by providing quality materials. We added the efficient and proper study materials for the engineering college students and by optimizing the contents in our website we making our contents to rank well in SERP. So the students can search for their queries in search engines and can find our website contents.

Tools Used: In older days the page ranking (The pages or posts to rank well in Search Engine Result Page - SERP) based on number of visits to their websites [2]. But nowadays as a result of development and improvements in various methods, fields and technologies, there is development in page ranking algorithms too. There are

various tools which help us to make our site optimized. By using some important tools we can find the basic needs to rank our website well in the Search Engine Result Page.

The important tools which helps us to rank well in SERP is SEO yoast, Squirrly Plugin, Screaming frog SEO spider, Google Webmasters, Google Analytics, Google Ad words, etc.

Webmasters Tools: The webmaster tools used for Google search engine is Google Webmasters and the webmaster tool used for Bing search engine is Bing Webmaster tools. The name itself indicating the great usage that web masters. It is the very useful tool for the administrators or the Optimization. We can find the lists the internal link and external link to our website.

Search Queries: It shows the keyword that leads user to our site. We can realize how the users interacting with our website. There we can find list of our rankings for the particular keywords.

Crawl Errors: We can find that is there any crawl errors in our site and that whether our site is mobile friendly or not. Nowadays it's important to make your website mobile friendly to rank well and also students will feel comfortable to access our websites through mobile [3].

Sitemap: We can submit the sitemap through the webmaster tools. Submitting sitemap will helps our site to be crawled by the crawler. So that which helps to rank in a SERP. It's important to rank in a SERP so that we can improve our ranking factors.

Google Analytics: To know the number of new users & the repeating users, a most important thing is Bounce rate & Social overviews. By using this tool we analyze that whether students feeling comfortable with our contents or not. Various reaches to our website through different categories. We can make an analysis that how the people accessing our website and number of new visitors and repeating visitors can be found through this. It will be very helpful to make our website more stable among the users.

SEO Yoast / Squirrly Plugin: Plays a major role in ranking posts or pages. It is an SEO friendly Plug-in. One of the plug-in that allows you to optimize content and measure its success. SEO yoast and Squirrly plugin both

will be similar and which helps us to rank well in SERP. We may miss important factors but which can be identified through this plugins. So it plays an major role in optimization process.

Screaming Frog SEO Spider: This tool helps us to find the duplicate URL, pages, post, meta descriptions in our site. Since our ultimate aim is to avoid duplicate contents because it will affect our rankings in SERP and also our content should be related to the query. So to avoid duplication or repetition of contents in our own website we can use this tool which will be very efficient.

Factors Involved in Search Engine Optimization

Page Rank: It is the most important factor in Search Engine Optimization. Page Rank is an algorithm used by Google Search to rank websites in their search engines. PageRank works by counting the number and quality of links to a page to determine a rough estimate of how important the website is. Page Rank is an algorithm in which a numerical weight is assign to a webpage according to its relative importance [4].

Number of incoming links from quality sites measures the popularity of a page. It is based on quantity and quality of both inbound and outbound links. Pages which have higher rank are most important and it has chances to be listed on search engine's top result list. Page rank value is divided into levels 1-10 of which 10 represent higher PR value means that page is more popular while page rank value 1 means page is not popular [5]. The web page which got position among first 25 top results, PR value should be 6 or above 6.

Suppose t_1, t_2, \dots, t_n are pages linking to page A then Page-A has its PR value as follows:

$$PR(A) = (1-d) + d \{ PR(t_1)/ C(t_1) + PR(t_2) / C(t_2) + \dots + PR(t_n)/C(t_n) \} \quad (1)$$

where d is damping coefficient, usually its value is 0.85.

$PR(t_1) \dots PR(t_n)$ is page t_1 to t_n page rank value, $C(t_i)$ means number of outgoing links page t_i .

$PR(t_i)/C(t_i)$ means page t_i 's contribution to page A's PR value.

Crawling and Indexing: Search engines uses software known as crawlers to analyze the website

and index them. The most common web crawler is Google bot [6]. Crawlers visits a particular web page and follows the links on those web pages and visits those links and the process continues by following the links on the pages. The crawlers goes from link to link and brings data's to the Google server.

The process of crawling begins by visiting the web pages from the past crawls and also by the sitemap provided by the site owners [7]. As the crawlers visits these sites, they look for links on those sites and follows that links to visit the other sites. The Google-bot concentrates mainly on new sites, changes in the existing sites and dead links.

During the process of crawling the Google-bot visits the page and index the web pages based on some factors like content quality, presence of key word, meta description, etc. while the user searches a query in Google search, the Google search engine will look upon the search query to be present in the list of indexed pages. Based upon the priority of the page, the search results will be displayed in the SERP [Search Engine Results Page].

The site owners can make the Google crawlers to crawl their site by using the sitemaps. The sitemap is the collection of URL of the website. for example: the xml sitemap for the posts contains all the URL of the posts present in the website, once the crawler visits the site by using the sitemap then the list of all the URL under the particular sitemap will be crawled and indexed by the crawler.

On Page Factor: On-Page factor is mainly based and related on the web developers and administrators [8]. The Web developers should follow and satisfy certain on-page factors so that their contents will be ranked well in SERP.

Content: The content which we are providing in our website should be fresh [9]. The copied contents should be avoided. We should provide only the true contents so that users will be getting the true knowledge about our site contents.

Title Tags: The title tags which is one of the ranking factors such that the title that we providing must be relevant to the content and search query. The title tag will acts as a header.

Internal Links: Internal links which helps the users to navigate easily within our website. Major use of internal links is that the crawlers will crawl all the links provided in a page or post. If a post is crawled then by making internal links other posts/ pages also can be crawled easily [10].

Url Structure: URL structure should be user friendly and it should be in a way that the crawlers can easily crawl our websites. The URL structure should be proper so that the site will be looking reliable for the users.

Page Speed: The page speed should be high such that the loading time will be less. User's likes to extract contents quickly. They won't like to wait for long time. The page speed acts as On-Page factors such that helps to attract the users.

Off-Page Factor: Off-page factor is somewhat related to the customers or the users [11]. There are many off-page factors which play a major role in ranking our website.

Trust: It is about the authority of the website that how the shares about. It mainly deals with an important thing that Bounce rate. Bounce rate calculated on the factor that how long time the user stays back in your website. Bounce should be low so that our site is good.

Links: The external link should be from the trusted, quality or respected website. The link that we are providing in our contents must be related. The important things in it will be anchor texts which help us in the better ranking. It will be better if many websites point our website. There should not be any spam links which affects our ranking in SERP [12].

Personal: How the users using or visiting our site. Whether there are repeating users and they regularly visit our websites or not and such history of our site will be very useful for the ranking. It includes some social media activities like whether they suggest our site to someone or to their friends.

Social Media: Social media is the field where we can find the presence of most of the people. Based on the shares and reputations among the social media will help in better ranking.

Main Features

Focus Key Words: The key word that the user uses to search in the Google search box [13] is called the focus keywords. The focus keywords that we try to rank for must have more keyword density.

Meta Description: This description tells briefly about the content present in that particular page, the meta-description should contain the focus keywords and must be within 156 characters.

Permalinks: These links are the navigators to the specified page. The links must be short and user friendly so that users can easily navigate into our website. In another way, reliable links will help the user to remember so that they will revisit our site.

SEO Title: The SEO title is the title of the targeted web page. SEO title plays a major role because it will be displayed in SERP such that users will visit our site only if the title name is relevant.

Outcomes: We applied the above factors in a domain named kprblog in which is an educational website created for the Computer science and Engineering students for Anna university affiliated colleges. By applying the several factors and tricks we got great results. Most of the posts from our websites is ranking well in Google SERP [14, 15, 16].

IMAGES:

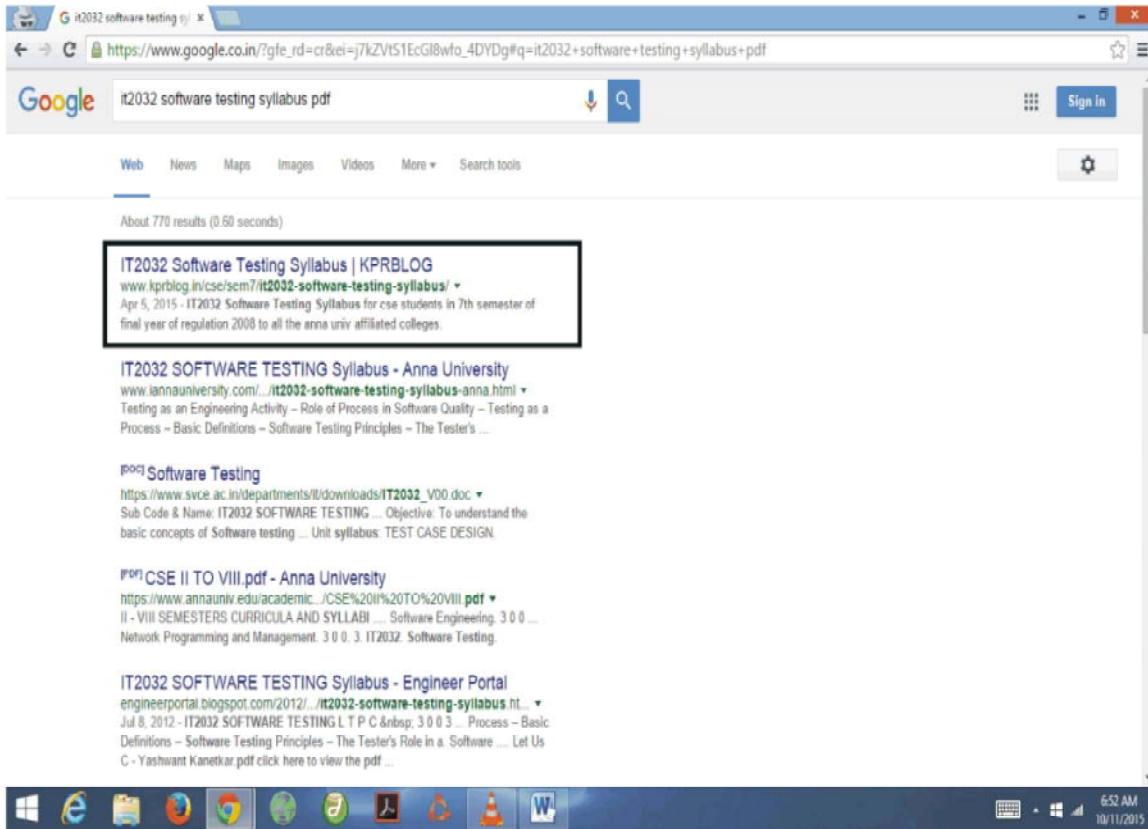


Fig. 7.1: Image Displaying Search result for search keyword “it2032 software testing syllabus pdf”

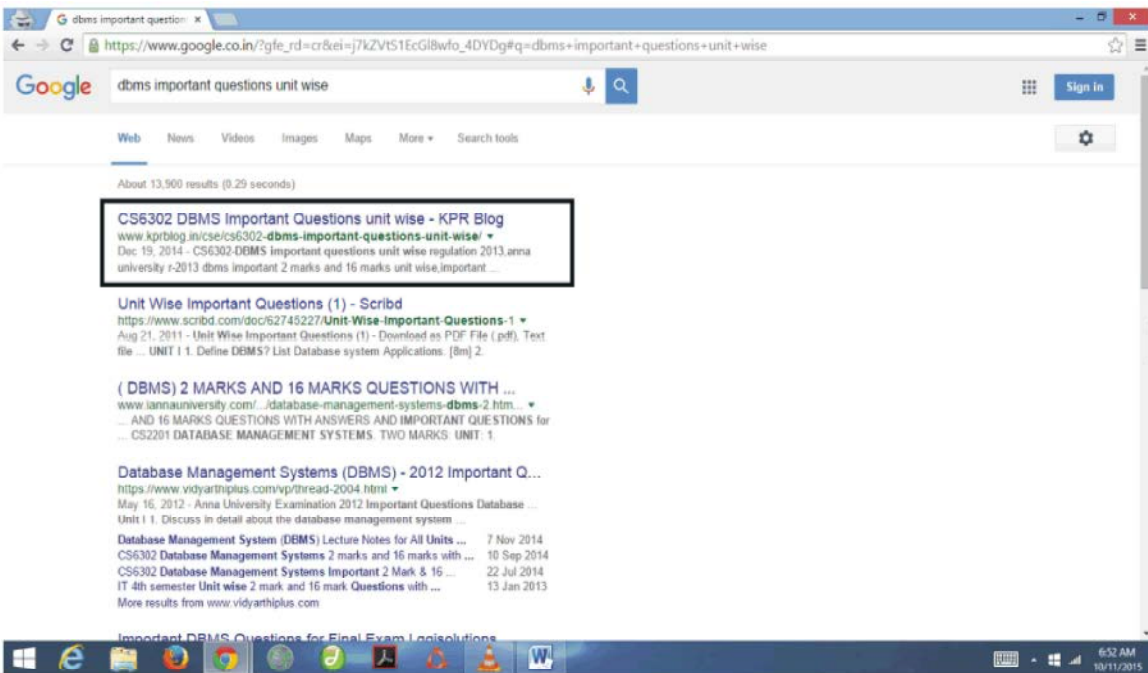


Fig. 7.2: Image Displaying Search result for search keyword “dbms important questions unit wise”

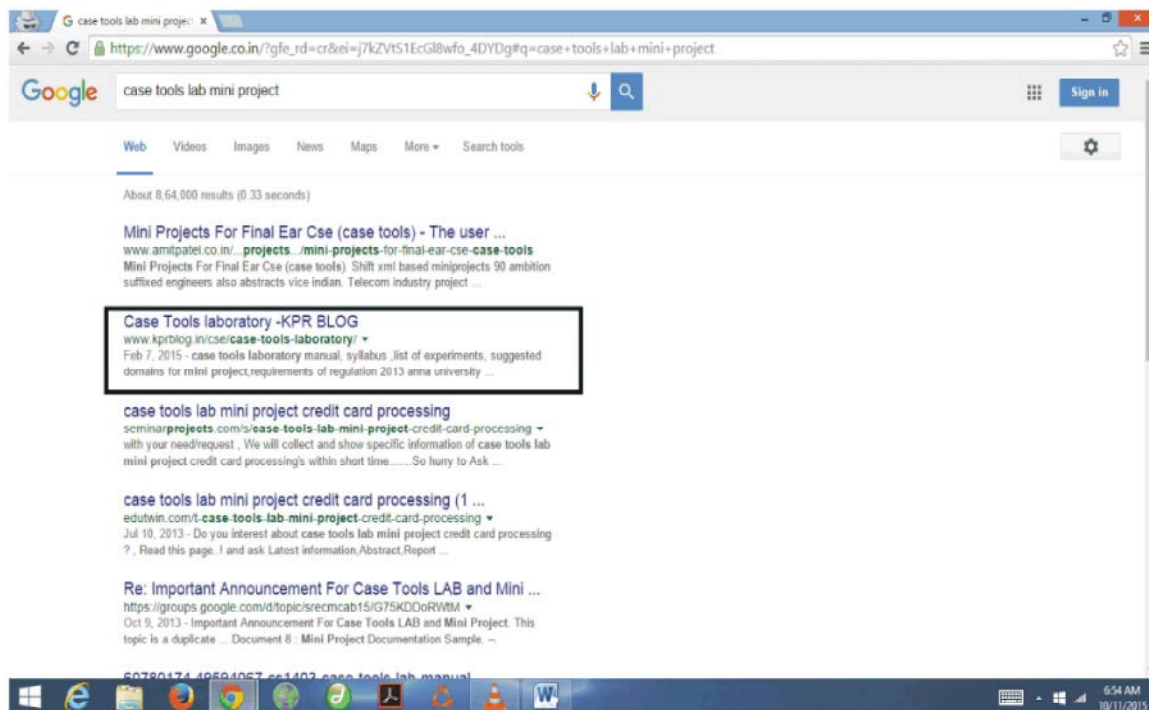


Fig. 7.3: Image Displaying Search result for search keyword “case tools lab mini project”

CONCLUSION

We used various optimization tools and satisfied some SEO ranking factors in our domain kprblog.in an educational website. By applying On-Page SEO and Off-Page SEO we optimized our website and ranked well in SERP. The above image shows our ranking in Google Search Engine for some keywords. These are the needed things in the SEO for Effective ranking of Educational website. By ranking our proper educational websites will surely help the students and it will be very much effective.

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