DEVELOPING A WEBSITE – THE DEPARTMENT OF SOCIAL AND PREVENTIVE MEDICINE EXPERIENCE

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ABSTRACT: In 1999, the Department of Social and Preventive Medicine set up its website on the Internet (http://ummc.med.um.edu.my/spm/). Setting up the website was a whole new experience for the author and many new things were learnt along the way. This paper describes how the website was constructed, the problems, and solutions to all these problems. The experience of the author in setting up the SPM website may be useful to others wishing to set up their own department websites. *(JUMMEC 2000; 1: 36-40)*

KEYWORDS: Internet, SPM, website, web page

Introduction

The World Wide Web is barely a decade old, which in the design of most things seems such a short time. Yet in that short space of time, its growth has been nothing short of spectacular. Before its existence, many people did not even know that there was such a thing as the Internet. Today, many Malaysians surf the Web (as it is popularly called) and terms such as e-commerce, chat rooms and e-mail is no longer alien to many of us. To many of us, the Web (short for the World Wide Web) is the Internet and anything associated with the Internet has to do with the Web. Malaysia came into the Web with the setting up of its first Internet Service Provider called JARING (Joint Advanced Research in Networking) by MIMOS Berhad; a body set up at the time to promote the Internet among Malaysians. Since the introduction of JARING and the push by the government to introduce the Multimedia Super Corridor, Malaysian websites have mushroomed. Where there were no portals, there are several today all designed by and targeted at Malaysians. Examples include JARING itself, Catcha.com, Cari, NewMalaysia etc. Educational institutions were not to be left behind with many jumping on the bandwagon and setting up websites to promote themselves. Sad to say, the initial euphoria following the setting up and launching of these websites died down after the website was launched.

In the year 2000, we find many types of websites today. Newspapers are increasingly available online. Even medical journals are now published online. The mushrooming of the online edition of the British Medical Journal is one such example (1). Among the many advantages of setting up websites is the instant updating of information (2) which suits many types of information providers. In Malaysia the government's push for the construction of the Multimedia Super Corridor for example, is partly derived from the realisation that developing countries stand to be left behind in the Internet revolution if they do not act quickly. As aptly pointed out by Arunachalam (3) the Internet will eventually reduce the gap between developed and developing countries but first it will increase the gulf between the haves and the have-nots.

In 1998, no department in the University of Malaya Medical Centre (UMMC) except the Department of Physiology had a website of its own (and that was not known to many in the faculty and fewer still to those outside the faculty). Thus the Department of Social and Preventive Medicine (SPM) was among the first few departments in the faculty to actually set up a fully functional website called SPMNet.

Objectives of the website

One has to be quite clear as to the objective (4) of setting up a website and balance the questions of cost and expertise. For many institutions the main objective is to publicise oneself. Secondly, it can be used to educate and inform others. Thirdly it can be used for business or the so-called e-commerce. As a teaching department, the SPM Department depends on a regular supply of clients for its programs to ensure its survival. Publicity

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is thus considered an important thing and a website would thus help to publicise the department and its programs internationally. Thus the first objective was considered the most important followed by the second objective.

Cost of setting up a website

The cost of setting up an independent website (unique domain name and separate line) within Malaysia can be quite prohibitive. Aside from the cost of a server and related software, a digital leased line (bandwidth 64 kbps) costs more than RM 20,000 per year to maintain. This plus an Internet account (leased line) adds up to something like RM37,000 per year to maintain. Few departments can afford this sort of expense and after weighing the cost, an independent website is too expensive to start and maintain. In reality, one does not have to do this. If the institution already has a leased line and a functioning web server with a domain name, one could always ride on the web server. This avoids the problems of applying for a separate line and domain name, although domain names are generally not expensive (RM 100 per year to maintain with MYNIC). In the case of the SPM Department, there was a choice. The first choice was to use a separate web server and have a URL (Uniform Resource Locator) like http://spm.med.um.edu.my . The second choice was to use the faculty's existing web server and publish the SPM website on a sub-folder on the web server. Thus the URL would read http://ummc.med.um.edu.my/spm/ . The first choice would have been ideal if there was a working web server. The SPM Department has a server in working condition. Unfortunately, the server was not equipped with the necessary software to act as a web server and money was hard to come by in 1998 due to the economic recession. In the initial phase of setting up the website, it was not necessary to have the website up all the time so the website was hosted on a PC for testing. This method does have certain disadvantages as a PC running Windows 95 is simply not a very secure server and having a website running on a PC tends to slow down the general running of the computer. Towards the end of designing the website, it was decided that the second option i.e. of publishing the SPM website on the faculty's web server would be a better option. The second option does have the advantage of leaving the maintenance of the server out of the hands of the department, making it easier to manage the website.

HTML and HTML editors

Web pages are basically written in HTML (Hypertext Markup Language). This is a relatively simple programming language to learn and one does not need a compiler to design web pages. All one needs is a text editor like Notepad or WordPad in order to write HTML. In recent years, the advent of powerful HTML editors like Microsoft FrontPage has made HTML writing using text editors obsolete and hardly anyone writes HTML in this way. Even word processors like Microsoft Word 97 can create HTML pages without any fuss and without the author knowing a word of HTML. The SPM website was created using the Microsoft FrontPage 98 software, a powerful and fairly sophisticated tool for creating web pages. There are a few advantages of using such software as FrontPage. Firstly, there is no need to learn HTML. The mechanics of making web pages can be learnt within minutes. Secondly, the author can see the web page being created as it would appear, the so-called WYSIWYG (What You See Is What You Get). In other words, it is akin to using a word processor. Thirdly, one can insert images, music, video, animation (using Dynamic HTML), Java applets at will and can test out the effects immediately. It thus provides a very user-friendly interface for creating web pages for the beginner.

Layout of web page

There are two ways to create a web page. The first way (not to be recommended) is to download someone else's web pages and use those as templates. The second way is to build it from scratch. Creating a web page from scratch would definitely be recommended, as many things gained from the experience cannot be duplicated. It is certainly a more tedious way of doing things but certainly more enjoyable and rewarding as the satisfaction at the end of it all is worth every bit of the effort.

The layout of the web page needs considerable thinking. Adopting or copying someone's layout (however good it looks) may not be right for a department's web page. A commercial website may be filled with banners and all sorts of advertisements which may not serve any purpose for a department website and will just slow down the person browsing the website. If the objective of the website is to publicise the department and to ensure that information is presented well, then the layout of the web page must be tailored to fulfil that objective.

In the case of SPMNet, because the objective was to publicise and inform rather than to attract business, information is presented in a simple but meaningful way. To achieve this, two templates were drawn up. The two templates are really quite similar and only differ in the number of columns used in the main table. One uses a two-column approach while the other uses a three-column approach. The two-column approach is used for top-level pages (except the very first page) while lower-level pages apply the three-column approach. The use of tables in designing web pages is not new and is used extensively all over the world. The primary reason for using tables is to ensure precise placing of information and objects. Certainly it is possible not to use tables for creating web pages but control is difficult and one can never be too sure how it will turn out.

Site layout

Site layout is important to ensure that the website does not become cluttered. A cluttered site that is not organised makes editing pages difficult. To avoid clutter, it is advisable to create folders and sub-folders wherever necessary. What was intended to be a simple website may well turn out to have a hundred pages and this makes editing difficult as one has to remember many names. Organising by the use of folders is thus advantageous in this respect. What folders to use is up to the Webmaster and depends on what is presented on the website. In the case of SPMNet for example, each unit within the department is given a separate folder. Images are centralised in a separate folder with sub-folders to indicate which images are animated GIFs, which images are logos and so on. Staff profiles organised in a separate folder from the units to make it easy to locate the staff profile page.

Navigation

A good website must be easily navigated. Some websites use navigation bars to aid the user in going through its site. Others use a simple column approach to provide easy navigation through. In the case of the SPM website, the entire website can be navigated using the left-most column which contains links to other main pages within the website. To further ease navigation, a hover bar is provided at the bottom of every page to help the user get to certain critical pages quickly.

Sophistication

Technology used on the web moves very quickly. What is today current and state-of the art browser may well be obsolete tomorrow and this can be seen by the speed of improvements in browsers. Having said that, it would be a mistake on the part of the Webmaster to assume that everyone has the latest generation browser and plug-ins. If the idea is to reach as many people as possible, then the Webmaster must consider many Internet users still using third or even second-generation browsers. The message is the web page must not be so sophisticated that older browsers cannot read the important information that the Webmaster is trying to get across. Because of this, if the Webmaster wishes to use Java or ActiveX for example to enhance the web page, it should not be such that the entire website depends on it. The use of these technologies should be judicious and should used only where deemed necessary. It is with this in mind that SPMNet was constructed. The use of Java has been kept to a minimum and it only appears as navigation bars at the bottom of the page. These navigation bars are not absolutely essential as hyperlinks to the same pages can be found on every page.

Problems in setting up the website

The biggest problem in setting up the website (assuming that there is a web server ready to host the web pages) is getting the information. In any case, what goes into the website is determined by whether the information is readily obtainable or not more than anything else. If the aim of the website is to promote the organisation (and it frequently is), then the correct type of information must be available on the website. Getting this information can be a problem as some information although known to everyone is not in any written form. Getting personal profiles can be a headache as not everyone may share the Webmaster's enthusiasm for creating the web page. A compromise would be to only publish information that the person deems fit to appear on the website. In the case of SPMNet, getting the information was initially a problem as many documents were either not updated or difficult to find. Personal profiles were initially a headache as not everyone would like to publish the same sort of things online for the whole world to see. A compromise was reached whereby only information regarded as publishable by the staff was put on the website.

SPMNet contains a lot of hyperlinks to interesting sites like journals, medical organisations and health-related sites. As with any website or web page, there is the problem of link rot. Link rot basically means that the links provided on the web pages are no longer live. Checking for links has to be done regularly to prevent this from happening. Fortunately, present day HTML editors can check all these hyperlinks without one having to do these manually. Verifying these hyperlinks are best done in the early morning so as to capitalise on available bandwidth as it may take a while to do particularly when there are a lot of links. Even when a broken link is found, it is usually not wise to delete the link without checking out the site manually. Checking involves either pinging (sending a stream of data from one computer to another on the Internet to determine the response) or using a browser to manually check out the links. Pinging will establish whether such a site is registered as a domain while a browser will check out the actual page. Occasionally a link is reported as broken when it actually is not because of the way the website handles verification requests. Even when a link is reported as broken, it should not be deleted or edited unless it has been confirmed to be no longer active. For SPMNet, the usual practice is to ping and browse the website. If both methods report a non-existent website, then a search is performed using at least 3 major search engines. Sometimes the search engine will turn up an alternative site that is more recent. Should such a thing happen, then the recent website is checked out and if found to be correct, the link is corrected. Links are only deleted if several verifications prove that the website no longer exists. One has to regularly do this to prevent link rot from setting in. The more links present

in a website, the more time-consuming it becomes to check for link rot.

Testing

Any new website cannot be assumed to be ready without extensive testing. It is not uncommon to find websites that are not properly tested and pose many problems for the user. What test you want to carry out depends basically on the objectives of setting up the website in the first place and who the website is aimed at. Basically any website should be tested for accessibility and browser compatibility. Not everyone has very fast computers and connections (T1,T3 lines) with sophisticated browsers and plug-ins. The majority still use dial-up connections from home (28-56 kbps modems) and pre-Pentium era PCs. Though the dominant browsers at the present moment is Microsoft's Internet Explorer and Netscape Navigator, this does not mean that other browsers can be ignored if the objective is to reach as many people as possible.

Testing for accessibility should be done at home using real-world connections rather than the Ethernet connection at the office. Ethernet in most office networks typically offers speeds between 10 to 100 Mbps (although higher speeds are possible, it is not typical) and this is virtually unheard of at home at the present moment. It is then that it becomes painfully obvious that what appears to snap onto the screen at the office takes forever to load at home. Efforts must be made to find the source of the delays and solutions found. Some solutions require only simple measures such as removing unnecessary music and movie files which tend to slow down loading. Others may not be so simple such as optimising images so that they are reduced in size without compromising quality.

Compatibility with commonly used browsers such as Internet Explorer, Netscape Navigator and Opera must be done to avoid errors in the display of web pages. Fortunately there are free tools on the Internet like NetMechanic which assesses the HTML code written to see whether it conflicts with certain browsers. This takes the hassle out of going through each page with different types of browsers (with their different versions) to see whether the code is compatible or not.

SPMNet was tested using real-world connections from home at various times of the day. As a result of the testing, it was found that certain pages took a long time to load because of the size of those files and appropriate measures were taken to reduce the access time to a more reasonable amount. Browser compatibility checks were carried out using software such as NetMechanic to determine compatibility with the different versions of different browsers. Testing took several weeks and this was a good learning period for the Webmaster involved.

Publishing the website

SPMNet was published on July 1, 1999. Publishing a website means setting it up on a web server so that the whole world can access the information. Publishing to one's own web server is the most ideal situation because it is easier to remember a domain name but there are many problems one must content with. The web server has to be a dedicated server that is it has to function as a web server all the time. Normal desktop PCs can be used as a web servers but problems will surely be encountered. Firstly most PCs are loaded with the Windows 9x operating system (OS) which is not the most stable operating system in the world. Secondly, although it would be possible to use the personal web server (PWS) available with the Windows 9x OS, this is not to be recommended as the PWS is not a very secure server software. Having considered these things and considering that SPM is after all a part of the Faculty of Medicine, it was decided that the website would be hosted by the faculty's own server. There are inherent advantages in this. The faculty's web server is a dedicated web server running the Internet Information Server (IIS) on top of Windows NT making it less likely to crash as it would not be burdened with other work at the same time. Secondly, the use of the faculty's web server would enable a mirror copy available on the originating PC as backup should the web server crash, or the website was compromised. Thus a speedy return to operations is possible with the backup being ready to take over at a moment's notice. This has proved necessary on a couple of occasions, both being occasioned by the web server crashing causing the website not to be available. On both occasions, the entire content of the website was wiped out and had to be restored from the backup copy.

Publicising the website

Once SPMNet was published, there were not many hits initially. Hits are simply visits to the website. A lack of hits would imply that few people know about the website, which would defeat the purpose of the website in the first place. To get visitors to the website, the Webmaster must be prepared to spend more time publicising the website. The simplest way is simply to inform as many people as possible, either through the e-mail or more traditional mail system. This can be done quite easily and was done in the case of SPMNet. A second and better method is to get the website listed on other sites where one believes one's target audience is likely to come from. For example one could get one's website listed on the Ministry of Health's website

and whoever was visiting that website may come across the link to one's website, and be tempted to visit it. Other sites where the SPM website is listed include health-related sites, counterpart sites and major search engines and portals. There are many search engines available on the web and listing is free on most. Because it is time-consuming to go to each and every search engine, it is sometimes wiser to use search engine listing sites to help. An example of such a site is the Add-me.com which will assist in listing the website of one's choice on 25 major international search engines. In this manner a lot of publicity is gained with minimal effort. One should not forget the local search engines too and has can be seen nowadays, there are many local search engines concentrating on Malaysian websites.

Maintaining the website

Very often websites are set up at great expense and launched with great fanfare. Because these websites were constructed by professional web developers, they are frequently very well designed. The problem starts when information on the website becomes outdated. Usually, by commissioning web developers to do the job of creating the website, there is no technology transfer and as such no one in the organisation knows how to perform maintenance. It would be better for the organisation to send someone for training and create the web pages by themselves. The resulting web pages may not be as good as those created by professionals but certainly updating will be a lot easier. In the case of the SPMNet, these web pages were created in-house using available expertise. As such, while it may not be the best that can be done, updating is certainly very easy and can be done at any time.

Benefits of the website

Since the website was launched in 1999, there have a number of benefits. Apart from the usual congratulatory messages (and some criticisms) from people who have viewed the website, it has certainly made the department more visible to the outside world. A number of prospective students have been in touch with the department staff inquiring about studies in the faculty, postgraduate and undergraduate. Some inquiries have been received about jobs in the University of Malaya Medical Centre (UMMC), which were promptly directed to the appropriate persons. It is still too early to say what proportion of students coming to study in the UMMC has surfed through the SPM website as the site is barely a year old but a number of inquiries have been received from prospective international students. It is envisaged that the website will be utilised as a means of conducting long-distance learning in the future and efforts are underway to make this a reality. Eventually it is hoped that part of the teaching of undergraduate and postgraduate students be conducted through the Internet. With that in mind, it is the author's personal opinion that all departments in the UMMC should move towards adopting this new media in order to remain relevant in the Information Age.

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