THE ROLE OF WEB DESIGN IN PRODUCT PROMOTION AND EDUCATION
Salopek, I.; Hudec, G. & Stracenski, M.

Summary: The experience and results of research in CARNet's center for educational materials development are used as the base for this paper. In this paper the importance of Internet in product promotion and engineer education with accent on design of web page is described. All advantages and disadvantages of the use of Internet in promotional purposes are discussed with special accent on the importance of basic elements of web page design. In the paper are also discussed different aspects of Internet use in a system of education for engineers. The necessity of modern technologies uses to improve the process of teaching and knowledge distribution is pointed out and all possibilities of its use in the engineer education are discussed.
Key words: World Wide Web, web design, education, product promotion

1. INTRODUCTION

Rapid development of computer technologies with constant hardware and software price decrease promoted Internet as one of main medias for research and transfer of different kinds of information. It is internationally and world wide accepted because it is relative easy to use and is cross compatible. The research of importance of technological development in different segments of human life like education, started a year ago as a project under Croatian Academic and Research Network (CARNet). CARNet was created in the year 1991. as the project of Croatian Ministry of Science and Technology with aim to support web based activities within academic community in Croatia. The main goal of last year's CARNet's project was to provide on-line support to university staff in the process of educational materials development. CARNet organised seven reference centers and included about 30 experts from different fields to give support to university professors, assistants and anyone willing to develop educational materials. Organised centers are following:
- center for informative technology hardware and software selection,
- center for courseware selection,
- center for methodic and communications in distance learning,
- center for distance learning project application with domestic and international link advices,
- center for knowing proofing methods in distance learning,
- center for multimedia development techniques and
- center for educational materials development.

All materials that came out as result of research are on-line and can be reached at http://www.carnet.hr/referalni/obrazovni/. In this phase of work materials are only in Croatian language, but in the future will also be in English. Besides materials that can help each one interested in educational material development, all reference centers provide information to all users and contact is possible via e-mail, telephone or on individual base. Computer technologies give many possibilities that should be used in promotional and educational purposes. The main problem is how to connect them with design and how to build successful designed sites.

Research of referral center for educational materials development resulted with answers on that questions and part of it is presented in this paper.

2. WEB DESIGN IN PRODUCT PROMOTION

2.1. Product promotion
Marketing budget deserves careful consideration because it is expected to generate revenues. An important precaution is to understand that each market segment may react differently to the way that a promotional message is presented and to particular media that is used.
The medias for product promotion can be print and graphic arts media or electronic medias. Each media has a variety of strengths, opportunities, threats and weaknesses to consider. In the group of print and graphical arts medias are brochures, catalogues, magazines, newspapers and billboards. Brochures are cost effective way of promotion with only one purpose - to give short information about product. Catalogues give more information, but they are expensive and that's why are mostly designed only for specific, targeted markets. Magazines are even more expensive, but have specific audience of subscribers so manufacturers tend to use this media to reinforce their trademarks and brand names in the market. Billboards are more expensive, but have specific audience of subscribers so manufacturers tend to use this media to reinforce their trademarks and brand names in the market. Billboards are expensive and its effectivity depends on its location and the time of their exposition.

Electronic medias - radio, television and Internet offer possibility for efficient advertising, but accordingly to efficiency, the costs are higher. Radio is cost effective and the audience is routinely loyal to a station's program format. In comparison to radio that gives only audio message, television has the powerful advantage of virtual impact. It captures more audience time than any other media. The TV commercial is cheap and has the power to reach a continuous audience, it can be repeated at any time and the message can be repeated at any time. The use of Internet in product promotion

Internet is an arena of competition where everyone competes for viewer visit and time. Advertisers use Internet to give
Detailed information about product and service, to get feedback from consumer in order to research market, improve their services and to animate consumer to buy product or use service. As all other promotional medias, promotion through Internet has its advantages and disadvantages. Most important advantages of Internet use are following:
- Internet enables direct sale.
- Advertisers can get information about number of visitors that search their website.
- Advertisers can provide almost unlimited amount of information about their product or service.
- Promotional efficiency is, according to costs, high.
- Advertisement and commercial on TV and radio are broadcasted few times and information and advertisement on Internet are 24 hours on-line and all the time reachable. Main disadvantages of Internet use are following:
- Internet is relatively new media, many people still don't have access, and so the number of its users is reduced.
- The security on Internet and protection of private information is still questionable.
- There is no censorship, so data authenticity is questionable.
- Technology on web still isn't developed enough to put TV advertising in the second plan (Bratko et al., 2001).

2.3. Web design in product promotion
The sentence «Content is the king» is undoubtedly true. The content on the site should be presented in the order that is most convenient for the viewer and everything should be structured from viewer's perspective. The sites that promote product or services should have list for each product/service with its benefits, descriptions, specifications, applications, costs, requirements, method of ordering, method of paying and similar, organised logical and easy to use. The content on such site has to be shortened and clear, without any unnecessary poetic descriptions.
Content is important, but on promotional sites design plays main role. Attractive design is the one that pays visitors attention and keep them exploring the site. Images on promotional sites are extremely important. In fact, it seems that such site can't function without picture because visitors and potential consumers won't buy product if they can't get the real picture of product or service. Many pictures on one page can cause serious loading problems, but if they are compressed, the page will function without loading problems. All pictures have to be clear, without any additional artistic filters.
Navigations main function is to make moving around site easy. Its design should reflect site's organisational structure and site's content. Design of each navigational element should be elegant, clean and enhance identity and personality of the site. For successful navigation building, detailed planning before start of designing is necessary. As long as navigation is easy to use and if it doesn't pay to much visitor’s attention, instead of promoted product, it is good one.
Animations can add visual interest to a site and are welcome as long as they aren't annoying and if there aren't many animated gifs running from one side of window to another one. Animated gifs were first trace of animation in the past. Today is instead of repetitive and slow loaded gifs used well-built, high-tech Flash files in extremely small file sizes.
Flash animation on promotional sites is often used on homepages with aim to amaze visitors and get them interested in product. But, too long animation loop can drive impatient visitor away before he enters any inner page. So, on each page with Flash introduction should be placed button with title «skip intro» or «skip flash». If those titles are on site, each visitor without interest in animation can easily and fast enter the next page.
It is possible to build an entire web site using Flash, but that's not always the best solution. It is better when Flash is used as component of a standard page rather than a replacement for HTML.
Site performance is an integral part of website design. Viewers often have very little patience with slow loaded sites. Twenty seconds is often quoted as tolerable limit for an inside page load and for home page only ten seconds. Some of best tricks to increase the loading speed are following:
- Minimise graphics.
- Use of .gif and .jpeg formats for pictures and images.
- Reduce of number of pixels.
- Use of drawings instead of photographs whenever possible and avoid use of animated gifs and java applets.
Color is very important parameter of design. Possibilities of choosing colors, textures and images for background are enormous and that's one of major problems because background of each promotional site should be as simple as possible and it is very hard to eliminate so many complexes and beautiful backgrounds. Only on sites with clean background can content be in the first plan and that is what every advertiser and producer need. (Goto et al 2002).
It is good to make pages with strong contrast between background and content, for example by use of light colored background and dark content. Reverse color schemes – light text on dark background are generally not considered businesslike. Text color, font and font size have to be used consistently, so viewers can quickly interpret site's style.
It is important to keep in mind that design of web site is never finished. There are always small changes that have to be made. Each promotional site has to be constantly updated, because without constant information update its existence is useful and can cause many confusing situations.

3. WEB MATERIALS IN EDUCATION

3.1. Web material development
Traditional education tends to focus on content, but context can often provide more challenging and powerful information and experiences. When a new technology comes along, enthusiastic and creative educators want to put it to explore ways to enhance student learning. The richness of web, especially depth and interactivity open up an entirely new way to educate. For the educational community, on-line hypermedia offers a simple way to design interactive lessons for local and distant use. Internet is large enough to accommodate almost everyone's taste and interests. It seems it has something for everybody. It is not a global encyclopedia or archive of historical documents where everything can be found, but it continues to grow exponentially and becomes more robust and sophisticated.
All traditional ways of teaching can be replaced using Internet. Many of traditional printed materials used in the process of teaching like textbooks, encyclopedias, magazines, newspapers or textbook indexes have their own replacements on the web. That makes them available to students at any moment and excludes necessity of search for literature in the library. Some examples of replacements for traditional educational instruments in the field of engineering are shown in table 1. On educational site, content on each page still remains the most important part. The content on educational web page basically looks like traditional text, but differences between educational materials placed on site and published version of educational material must always exist. An educational site cannot be on-line equivalent of textbook. The text on web version can almost stay intact, but educational material on web should take advantages of each component that modern technology gives. Use of web is ideal to put traditional education in the second plan.
The biggest advantage of educational web material is a fact that all materials on web can be available for everyone to see and explore, no matter where the user is, for 24 hours a day instead of being viewed only once or few times in the classroom. Educators interested in hypermedia technology can organise a site that includes class lectures, frequently asked questions and multimedia presentations of experiments that may consist of text, graphics and audio. Some of interesting additional elements that should be used on educational web sites are mailing lists, quizzes and forums. Mailing lists are ideal to keep visitors updated about new features and information on a site. Quizzes can amuse students and help them to realise on their own how much they've learned.

For discussion about defined topic, forums are ideal and often used because students can exchange facts between themselves and professor.

### 3.2. Advantages of web for students
Features of the web can produce more challenging learning experiences both for students and educators. Rather than looking to the web for information, educators engage students in more profound learning when the topics on a site are presented and linked to some similar. The World Wide Web presents an excellent media for students to organise and publish their own projects. With the recent expansion of web they have opportunity to create their own complex learning environments but also to present that environment to other interested parties – students, teachers, friends or people on the other side of globe. Instead of writing seminars, students can also use the web to create reports or on-line multimedia projects with links to similar sites.

Recent research showed that some students just aren’t comfortable with talking in class. On-line discussion is easier for some of them since the form of communication changes from interpersonal – the one in the classroom to cyber personal – the one over forums or e-mail. Allowing students to work with each other and learn from each other opens their minds and increase a level of communication.

Students of all ages learn better when they are actively engaged in a process, especially if the process comes in the form of sophisticated multimedia package. Engaging students from a variety of angles and allowing them to feel as if they are a part of the subject matter often leads them to become more interested in the subject.

### 3.3. Design of educational web materials
There is no doubt that the content is most important part of each educational site, but the importance of design should not be underestimated. Interesting and well-designed site will attract visitor’s perception and encourage them for further site exploration. On the other hand, badly designed home page can deter visitors from even entering.

There are some basic principles of design that should be considered in the process of web site development. The most important segments of design of educational web site are background, color, font, navigation, images and animation. As known, the color has great influence on man’s psyche. The color is the first element of design seen when page is loaded and that’s the reason why the color has to be chosen with many patience. Each color on the site should create emotional feeling which is related and in harmony with the topic of the site. Due to monitor and video board differences, not each color can be reproduced on every monitor. To resolve problems with choosing color, a palette of web “safe” colors is built. The palette includes 216 colors that are generated almost the same way by browsers on Macs and PCs. Each of 216 colors has its code and it is very easy to find “the right one” and include it in site design. (Slocombe, 2001).

The best principle when picking the sites background is to find the one that is simple and light colored. The background color is very important on educational sites where content has to be in the first plan. On such sites visitor’s attention has to be paid on content and not on complex and annoying background. Good content readability can be done by use of contrast colors – light color for background and dark one for content. Reverse color schemes – light text on dark background can cause problems to a user in the process of printing when the dark color can be printed on each page or light colored text can be ignored. The background can be built up using one single color, created textures or images that appear in their whole size or in tiles. As already written, for educational material development, use of simple background is always recommended.
It is already mentioned that it is the best to choose color from the list of web «safe» colors. The similar situation is with fonts. The list of existing fonts is huge, but there is no assurance that all fonts, especially rare ones are installed on the viewer’s computer and that they will appear on each computer. The use of «standard» fonts - fonts that are usually installed on each computer is a kind of guarantee that the site font will appear on each computer. Standard fonts that will appear on most systems are Arial, Arial Black, Comic Sans, Courier New, Georgia, Impact, Times New Roman, Verdana and Webdings. Sometimes, those standard fonts aren't interesting enough for titles and headlines. In that case, any «non-standard» font can be used, but only if converted to .gif or .jpeg file and placed on the page as graphic. Conversion of font to graphic is suitable only for titles or headlines because such graphic files increase loading time. (Baggerman, 2001).

Content is dominant element on each educational page. Navigation isn’t and shouldn’t be. Its function is only to enable visitors to move from page to page and not to distract visitor’s attention from the content.

Navigation always has to be intuitive, easy to understand and use. It has to connect clearly all major site categories and make the access from one section to another one as easy as possible. Navigation should in its basic elements and design stay intact on each page of the site.

The difference in navigation is possible between the homepage and following inner pages, but most basic characteristics have to stay intact because many variations can disorient visitors.

Navigation bars can be positioned almost anywhere – on the left edge, right edge, at the top or bottom of window. It is common to position it on the left edge or the top, while positioning navigation on right edge, what is quite rare can confuse visitors. It is also very important to fit navigation completely into standard window – 800 x 600 pixels. (Danielson et al, 2002).

One of educational web page characteristics is a huge amount of text. To resolve this problem, pages with much information can be split into more pages and use of vertical scroll-bars is very helpful. Educational web sites usually have many inner pages. To ensure that visitors at any moment have right picture of site structure, it is good to put on site a site map that provides comprehensive listing of all main site's contents.

The basic elements of navigation are buttons. They can be designed, in many colors and shapes, but such design isn't convenient for educational web site. Buttons should be simple and elegant and shouldn't be in conflict with background and page content.

Each educational page needs interesting and informative images that are connected to page content. Besides holding visitors attention, images break visual monotony and help visitors to understand technical experiments. In comparison to traditional educational materials, the great advantage of web educational materials is in use of great amount of images without any extra cost. There is just one problem - the time of image loading on the page, so the number of images on each page can't be unlimited. On the page, no image larger than 400 pixels and with resolution higher than 72 pixels/inch should be placed. All images should be in compressed formats - .gif and .jpeg which aloud fast image loading.

With development of digital cameras, it is quite easy to make photography and put it on the site. Besides, there are so many sites on the web that offer free images of all kinds. More powerful, very important and today definitely one of most exciting and interesting web technology in design of educational materials is animation Good animation of any process, machine work or similar replaces many words, makes things look easier to understand and stays in visitors memory for a long time (Williams et al., 2002). Flash animations on educational web site are rich and interactive, load quite fast in comparison to .gif animation and add sophistication to a site, so definitely and without any doubts should be used whenever possible. (R. Williams et al.). It is difficult to draw a line between great, interesting and bed and annoying design. One person's definition of well-designed site is often different from another's. For those without any skills, the best advice is always to keep it simple.

3.4. Future of web education

Assuming that the future of web use in educational process is clear and secure, some of steps must be taken to further development of web as one educational instrument. First of all, institutional access to the Internet must increase dramatically. Web community networks must begin to offer web access at reasonable rates and offer educational institutions server accounts so they may publish web sites on their own. And finally, people with experience should offer their assistance to demonstrate to others what the web can do and how simple it is to develop a new site.

4. CONCLUSION

The importance of Internet use, both for product promotion and education aren’t questionable. With rapid modern technologies development, increase of Internet users and number of web sites, there must be an element that will make difference between them. Design is the one. Design makes differences; it invites visitors or disorient them and drives away. It isn't easy to make great design. It isn't even easy to draw a line between good and bad design, but the simplicity is always good choice. There are some general principles of design, but design of each site depends on its content and purpose. On educational web sites, content is most important part. But, it isn't enough just to put text from Word document on site. The text has to be «packed» into simple design and decorated with images and animations that are connected to text and make further explanations.

Promotional sites, on the other hand, don't need too many textual pages. Text has to be shortened and only most important information has to be on page. Design of such pages can be amazing and less functional than on educational sites.

This paper gives only some basic principles of web site design. Distribution of web design knowledge and giving support interest for educational material development will remain our main activity in the future.

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5. REFERENCES

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