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Do North American Standards for Web Design Require Adjustments for Arab Audience?

Roukana Sanjakdar

A Thesis

In

The Department

Of

Education

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To my parents who always believed in me and gave the freedom to follow my dreams.

To my husband, Sabah, who made the life so beautiful and bright, who stands by my side all the way with love and patient; without him I will not have my dreams come true.

To my children who teach me precisely to survive and enjoy life. They are the lights of my life.

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ABSTRACT

Do North American Standards for Web Design Require Adjustments for Arab Audience?

Roukana Sanjakdar

This thesis discusses those elements of web design that may create different impact on people from distinct cultures, specifically Arab versus Western cultures. Since the inception of the Internet, there has been only one set of standards in designing web sites (including education sites), essentially American standards. This thesis tries to determine whether different users (Arabs in particular) read sites differently, or react differently to interface design elements such as color, graphics, and arrangement. For instance, do Arabic speaking users have different preferences for placement of elements on the page due to the fact that the Arabic language reads from right to left, in contrast to the English language, which reads from left to right?

The research starts with a literature review, including an examination of cross-cultural issues and a summary of the American standards used in designing web sites. Questionnaires were composed, based on the literature review, to survey designers for the Arabic market and both Arabic and North American users providing the research with rich data used in compiling the results and establishing recommendations. These recommendations are potentially useful for designers trying to design and develop for the

Arabian market, as well as for designers targeting other cultural groups. The results and recommendations may also help other researchers seeking more information in the areas of culture and Internet use.

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I Introduction

I.1. The New Society

In today's world, educational institutions have a larger responsibility than ever to widen their perspectives, due principally to the rapid global change in business and industry. Tougher competition, largely as a result of globalization, has left less space for smaller companies, and even large companies have adopted a strategy of significant downsizing in order to survive and be competitive. This has led to a need for more training and retraining, as employees must adapt to new roles. The increasing role of technology in the workplace, and the increasing pace of technological change exacerbate the situation. Overall, employees require more skills and greater flexibility to enter the job market, and once they are employed, they must be prepared to upgrade their skills and adapt to changing requirements on an ongoing basis.

The emergence of the knowledge-based economy is yet another factor in the growing need for change within the educational milieu. Having a university degree is not enough to find a job in today's market, let alone to keep it, and there are new pressures on universities, colleges and schools to meet the needs of employers. As Owston (1997) puts it, "academic, community, business, and government leaders are calling upon our schools, colleges, and universities to produce a different kind of student than a generation ago." (P. 31). He identifies that the reason behind this phenomenon is that the challenges posed by the new global economy stress the importance of the knowledge and skills of a nation's workers as the key to competitive success. Specifically, Owston (1997) identifies

the skills needed in this new environment to be critical thinking, problem solving, written communication, and the ability to work in a collaborative environment. Formerly competitive factors such as natural resources and geographic location, have now been relegated to the past.

Given the pace of change, and the specific nature of knowledge requirements of workers, it is clear that formal education, specifically classroom-based educational programs, cannot meet all of the needs of organizations. Even formal training may not be a viable solution. Strategies such as "just-in-time learning" are needed, as well as life-long or continuing education. New approaches are also required to meet the challenges of increased access combined with decreased funding of public education, especially at the tertiary level.

Media have an important role to play in overcoming barriers to learning posed by time, cost, and access. Television, radio, audiocassettes and correspondence education have all played, and continue to play, a significant role worldwide in providing greater and more timely access to opportunities for learning. However, the World Wide Web (WWW) is viewed by many to be the tool that can offer the greatest potential for easy accessibility to learning, and for organizations to implement cost-effective distributed and just-in-time learning strategies.

I.2. The Importance of the WWW

The Web promises to make learning more accessible. Owston (1997), for example, defines the access to learning as "providing educational opportunities in the workplace, community, or home, for those unable to attend school or college because of cultural, economic, or social barriers" (P. 27). Also, the Web can promote improved non-formal modes of learning. Owston (1997) also identifies the Web to be a learning tool, i.e., a vehicle to search for and retrieve information.

Arguably, the Web has a special and important role in the educational field, especially now that it is widespread all over the world, allowing access to anyone in any place to participate in a particular class offered on the WWW. Attending classes or getting information through the Web is remarkably viable, saving time and costs associated with the physical attendance of classes. For organizations, the implications are clear. This saves the employees time away from the workplace and reduces the time away from their jobs. Productivity is improved. At the same time, with adequate scale, the costs of delivering training are greatly reduced: distribution costs are less, travel costs are eliminated and the costs of maintaining or leasing dedicated facilities for training are reduced or eliminated.

Users can also access the WWW on their own time and when they feel they are ready to learn and benefit from the information they receive. Owston (1997) summarizes in page 31 this advantage as follows:

What the Web can offer that traditional media cannot is information that is instantly available, often very up-to-date, world-wide in scope, and presented in a more motivated format for students to explore.

I.3. Cultural Differences and Their Implications for Web Design

The global nature of the WWW raises interesting questions about cross-cultural appropriateness. There are differences among cultures across the globe that dictate the way content should be presented and adapted to different cultures. Issues that might be considered include values and morals, aesthetic considerations, political systems and beliefs, and traditional modes of learning (translated into different instructional strategies).

I.3.1. The Meaning of Culture

It might be useful to begin this discussion with a few definitions of culture. Henderson (1996) defined culture as a "manifestation of the patterns of thinking and behavior that result through a group adaptation to its changing environment, which includes other cultural groups." (P. 86). Similarly, Martin, Nakayama and Flores (1997) assert that culture "consists of traditional ways of doing things, traditional objects, oral traditions and belief systems that are taken for granted." Livonen, Sonnenwald, Parma, & Kober (1998) define culture to be "more than art, it is a framework to our lives. It affects our values, attitudes and behaviors. In other words we are actors in our culture and affect it."

Culture has also been defined as a way of living, thinking and learning, and as an individual dialectic, as Martin, et al (1997) describe it:

> You may have some behaviors not shared by anyone else, perhaps a unique way of wrinkling your nose or a unique way of using language. However, you may also share communication patterns with those who have shaped you (family) and with whom you share other cultural practice.

Rice (1998) believes that there are individual differences within the range of the generalization of a culture. She mentions that "within a given culture there is a range of individual variations created by preferences, religion and innate differences such as gender and disabilities."

Martin, et al (1997) explain how pervasive the effect of culture is on individual perceptions, cognition and behavior:

> Each culture operates according to its own internal dynamic, its own principles, and its own written and unwritten laws. Even time and space are unique to each culture.

They further identify culture:

> ...to consist of social meanings and practices and the discursive material (e.g., the discursive forms and practices, such as television, film, music and political discourses) that we use to create our identities, behavior, and worldviews. Such discourse (e.g., the language we use, the symbolic constructs that we invoke such as "progress" and "commitment", the representations and images that we copy) details how we should behave, what to think or believe, and who we are or should be.

This suggests that the extension of the WWW throughout the world, and its presence in daily life, could have a significant impact on cultures, much as the influence television has been shown to have had in the past. If the Web is not to have the same negative impacts as previous forms of mass media on other cultures, issues of cultural appropriateness need to be considered. A hopeful expectation is that the nature of the Web, which is more democratic in terms of accessibility to the means of production and transmission of material, will lead to a different dynamic than the mass exportation of western culture through mass media that occurred through the decades of the sixties to the eighties.

I.3.2. Cultural Variation and its Impact on Web Use and Web Design

Various authorities have identified different dimensions along which cultures vary. Recently, a few have addressed how cultural differences might influence those using the World Wide Web. In other words, the manner in which the web is designed, written, and the way the information is organized may affect the users' understanding or interpretation of, or receptiveness to, the information presented. The following discussion highlights some of those elements that could have different impact for different cultures.

I.3.2.1. Time and Place

Rice (1998) studied the effect of time and place on culture, and divided the culture into monochromic and polychromic in terms of how they view time:

> Those with a monochromic view see time as ordered, liner, tangible, and discrete. People with this view prefer to have events or tasks clearly separated from one another and sequentially ordered.

Cultures with a polychromic view do not see time as rigidly separated into past, present, and future. Rather they see time as a continuous expanse. Rice believes that people with a polychromic view could be more comfortable exploring the Web than those influenced by a monochromic perspective.

I.3.2.2. Structure of Knowledge

Henderson (1996) highlights the importance of culture in shaping the structure of knowledge. In this regard Henderson presents an example of the misunderstanding of computer graphics by different people:

> As Jones (1993) concluded: the form of the cultural artifacts, in this case computer graphics, expresses our symbolic relations with the world and influences how we are constantly re-inventing ourselves.

Rice (1998) also explains how the same graphics could be interpreted differently by different cultures. She concludes that:

> These visual elements generally do not transfer across cultures. For example, navigational images and text grouping intended to indicate the directional flow of information for users in the Western culture may confuse non-Western users. Asian users whose written languages traditionally appear vertically and read from right to left may find it counter-intuitive to have a directional arrow placed at the bottom right of the page and the arrow pointing right for the next page (Slemp, 1998). Likewise placing "important information" in the top left-hand section of a page may not be recognized by people in the eastern cultures as a cognitive organizer.

I.3.2.3. Language as a Communication Tool

Rice (1998) studies language as a communication tool, and its usage by different cultures. She points out that designers would need to take into consideration spoken communication concepts as well as textual ones. For example, some cultures take offence at brief exchanges using short sentences of declarative language, and they require more polite, sometimes more formal, interaction.

I.3.2.4. General Background Information

On a related topic, Martin, Nakayama and Flores (1997) described how culture can be compared on a scale of importance of context, the information that surrounds an event. They mention that "Japanese, Arabs, and Mediterranean peoples, who have extensive information networks among family, friends, colleagues, and clients and who are involved in close personal relationships, are considered to be high-context". They add that while "within each culture, there are specific individual differences in the need for contexting - the process of filling in a background data", it is still helpful to know whether the culture of a particular country or region falls on the high or low side of the scale, given that each person is influenced by the level of context.

Rice (1998) also addresses the importance of the general background information available within cultures. With regard to the importance of this variable for WWW use, she concludes the following:

> Low-context cultures insulate themselves by focusing on their immediate environment. They are not well informed on a wide range of topics and world

> events. Students from these cultures may lack the background knowledge to participate in some Web activities where they need to compare and contrast views, which draw on knowledge of cultural difference. High-context cultures, on the other hand, want to know as much as possible about the world around them. They are generalists. Students from these cultures tend to bring a broad background of knowledge and an understanding of multiple perspectives into learning activities.

Henderson (1996) reports a study conducted by Andrews (1995) regarding the cultural effects on learning. He concludes that there are culturally determined perceptual issues that affect how people respond to what is on the screen and, hence, how they learn. In general, we know from cognitive psychology and information processing models of cognition and perception, that prior knowledge affects the processing and understanding of new information. In concluding, it is not a big stretch to concur with Altarriba (1993), that "prior knowledge and cultural background greatly influence comprehension processes." In explaining how the culture plays an important role in the development of mental structures, Altirriba writes:

> The overall organization of a text would vary, as the structure of its sentences and paragraphs is different from a culture to another. It is, therefore, important to consider the prior knowledge and culture background of individuals when assessing their level of reading comprehension.

I.3.2.5. Ambiguity

At the same time, Rice (1998) addresses an additional issue, which is the role of ambiguity. She points out that "people from different cultures vary in the amount of uncertainty in a situation they will tolerate and how comfortable they feel with ambiguity." This obviously has implications for message design; for both the contents and structure of information presented through the Web.

I.3.2.6. Cognitive Styles

Gauvain, in Altarriba (1993), highlights the role of cultural influences in our cognitive lives:

> Cognitive development emerges in response to pressing internal demands to make sense of the world around us. But over 20 years, research has made it increasingly clear that the content and process of cognitive development are strongly influenced by social and cultural forces.

Rice (1998) also proposes that there is a general cultural cognitive style, which is related in part to issues concerning time, context and background information mentioned above. She summarizes the situation thus:

> Some cultures manifest linar logic in the way they process information and react in situations. They are context independent and simply approach the task at hand without a need for background information. They want to be told what to do, not why. Minimalist, just-in-time directions work well with them. Other cultures manifest circular logic: they are contextually grounded and do need to see the whole picture before acting.

Following Rice's conclusions, if the culture affects the cognitive style of the individual, then the learning style, the preferred strategies and modes of learning, must also be affected by the culture. Rice gives some examples related to instructional approaches, including collaborative learning strategies. multiple perspectives, memorization versus problem solving, and competition versus cooperation:

> This individualism verses collectivism will impact how well students can participate in collaborative experiences and how many teachers value such activities. Some societies place greater value in memorization than in problem solving. Students from different cultures react differently to positive and negative feedback, competition, authority figures and gender difference.

I.3.2.7. Graphics:

Some of the effects of culture are subtle, though pervasive, as the preceding discussions of culture and its relation to individual perception and cognition might suggest. As Lineback (1998) writes, "cultural conditioning will influence us in subtle ways without our consciously thinking about it." However, at least some cultural differences are easy to operationalize or observe. This is true of the reactions of individuals from different cultures to the graphical components of Web sites. For example, Henderson (1996) mentions the results of Andrews' study in South Africa, where he found that Indian students had little understanding of icon information. Andrews (1995) noted several issues. First, learners failed to interpret the standard arrow to mean, "press the arrow to continue". Second, there was cultural specificity evident in the interpretation of cartoons and the sequencing of pictures. Finally, graphics made up of body parts, such as the pointing hand or talking head were perceived to be sacred.

I.3.2.8. Colors

In a similar vein, Lineback (1998) notes how different cultures have diverse understandings of color; a single color may mean different things for different people coming from diverse cultures. Lineback provides a good illustration:

> In Japan, the color yellow represents grace and nobility, while in the United States it is often associated with caution or even cowardice. In Egypt Yellow represents happiness and prosperity. In France, red is the color of Aristocrats and, in the United States it often represents danger or serious alert.

Likewise, Rice (1998) views colors as important visual elements that carry diverse meaning for different cultures. The implications for Web designers are clear: "Color is also an element of design where its meaning differs among cultures. When designers use color on a Web document, the meaning users assign to it may detract from its purpose." Lineback (1998) draws the same practical conclusions:

> Web designers working on a project that may reach all over the globe, need to exercise some caution. Web designers must have at least some knowledge about cultural differences when they work with colors. And this is especially true for icon design, which is closely related subject.

Other researches, such as, Satio (1996), have shown cultural differences regarding color preferences through studies.

I.3.2.9. Instructions, or Information Delivered

Clearly there are cultural differences which will have an impact on how instruction or information delivered via the Web will be received by individuals with different cultural backgrounds. Some of these differences are more obvious, if the designer cares to look for them, such as the meaning or connotations of colors, or the acceptability of different themes (e.g., violence, fatalism, pacifism, inclusively etc). But others are subtler, and also possibly deeper rooted. There is a subtle interplay or dynamic between these differences and the communication artifacts a culture produces, and to which a culture is exposed. Medhurst, Gonzalez, and Peterson (1990) explain that:

> There is a rough and homemade relation between parallel sets of terms. These include action, power, structure; voice, text, program; speech, press, computer;

> hermeneutic, deconstruction, structuralism; and the dimensions along which all communication artifacts effect their consequences – the creation, dissemination, and preservation of culture.

Henderson (1996) points out how these ideas extend to instructional design:

> Approaches to instructional design not only reflect differing world views, but they consist of values, ideologies, and images that involve inclusions and exclusions that act in the interests of cultural, class, and gender groups. (p. 87)

And, of course, not only do instructional designs reflect the culture of the designers, but they may also, over time, affect other cultures that are widely exposed to these designs, just as we know other forms mass media have had an impact on other cultures.

Therefore, we cannot ignore the effect of the cultural element in shaping our understanding and perceiving of things, and then the way we are learning. My personal experience with learning in two different cultures has provided me with a good sense of how students from another culture learn and understand differently than the way I am used to looking at things, analyzing and understanding them.

I.4. The Problem (Objectives)

This study will focus on finding out whether there are elements of the interface that could affect the Arab users' responses to materials on educational Web sites. From the discussion above, it appears that educators need to consider cultural differences in determining appropriate message design and interface design, for web-based delivery

systems, to ensure such systems will be as effective and well received as possible. The goal of the current study is to address cultural effects on the perception of web sites.

I.5. The Plan (Methodology)

The importance of the cultural effect on understanding the materials (or the presented information) has been discussed in the literature. The interface design is the most important element that users see and interact with. It is the window of the Web site. In order to study this phenomenon and investigate its effect on designing educational Web sites for Arab users, which is the objective of this work, the following steps were carried out:

1. Conduct literature review to identify important dimensions of interface design.
2. Develop questionnaires for structured interviews and surveys, based on the literature review.
3. Identify the participants in the interviews and the survey. The subjects that are interviewed have been selected from the student population of the United Arab Emirates University. Instructional designers from different companies that are involved in designing educational web sites for Arab users are the subject matter experts who also have been surveyed. The Western subjects have been chosen from Concordia University in Canada, and from other educational institutions in the United States of America.
4. Conduct pilot tests for the questionnaires.
5. Revise the questionnaires based on the results of the pilot test.
6. Conduct structured interviews and distribute survey questionnaires via e-mail.

7. Collect and organize the data from the survey.
8. Analyze the data.
9. Establish results and conclusions and propose recommendations.

The issues that are discussed in the questionnaire are based on the American standards for Web design. Only those issues that might be affected by culture are considered, because there are certain standards that (in my opinion) should be used for every one all over the world. These universal standards, which address issues such as knowing your audience: their education background, ethnic background, etc, logical structure, the quality of the graphics, reading on the Web, etc., could shape the global standards for designing educational Web sites. On the other hand, other standards might be identified as specific to different cultural background users. In other words, designing for Arab users might be different than designing for American or Chinese users.

Data collected from six designers was classified and analyzed to find out which were the most important issues that should be considered while designing Web sites for Arab users. Information such as favorite color, or preferred location for the most important information, was specifically targeted.

The questionnaire items are constructed from the literature review. All of the background information revised and summarized below is taken into consideration in order to formulate the items in the questionnaires submitted to the users, and the designers.

Each question is assigned a number on a scale of one to five, where "1" means "disagree strongly", "2" means "disagree", "3" means "neutral attitude", "4" means "agree", and "5" means "agree strongly". For each question a mean, median and standard deviation are calculated and reported. Although the results are mainly descriptive, statistical tests comparing results from Arab and North American users were performed for certain key items.

For the "yes" and "no" questions, the answers were assigned a percentage and the results analyzed accordingly.

I.6. The Interface Design

I.6.1. What Is the Interface Design?

User interfaces are those parts of computing that allow the person using the computer access to the facilities offered by the computer (Thimbleby, 1990). Weinschenk, Jamar and Yeo (1997) identify the interface as:

> the part of an application that the user sees and interacts with. It relates to, but is not the same as, the underlying structure, architecture, and code that makes the software work. Interface includes the screens, windows, controls, menus, metaphors, online help, documentation, and training. Anything the user sees and interacts with is part of the interface. (p. 13)

They also note that interfaces are sometimes not as easy to understand and use as they should be. On the contrary, they are often very difficult to use. User interface design is a difficult task that combines two disciplines; psychology and computer science. These disciplines have very different cultural backgrounds (goals, knowledge bases, and

methods): psychology is concerned with people, computer science with computer machinery.

I.6.2. The Importance of the Interface Design:

The interface design plays an important role in conveying an educational message. A difficult and incomprehensible interface might discourage the user from further explanation and interaction with the question. The interface has to be sufficiently attractive and suit users' requirements.

Weinschenk, Jamar and Yeo (1997) highlight the importance of the interface design, by stating that "designing a Web site is designing an interface." However, they realize that the different needs of the users require different interface design: "You can not design a Web site for everyone in the world."

Knowing your target audience (the Web site's users) is very important in order to provide them with what they need on the site. Weinschenk, Jamar and Yeo (1997) address the most important features the Web sites should possess. They should be:

- Easy to use
- Fast
- Fun
- Informative, useful, and current.
- Interactive - visitors control their paths and can communicate directly with you

I.6.3. The Importance of Good Web Design

Interface design is a very important element in designing a Web site because one needs to build something easy that "helps people do their work better" (Beyer & Holtzblatt, 1998, p. 2). The interface design "can consume from 30-35% of the total design effort" (Carey, 1995, p. 72).

Beyer and Holtzblatt (1998) also emphasize the importance of understanding the user before one starts designing. "The first problem is to understand the customers: their needs, their desires, their approach to the work." (p. 22) This highlights the importance of this study since the purpose is to develop standards for designing educational Web sites for Arab users.

A good design of an interface could: (a) reduce user's memory requirements, (b) reduce user-training requirements, (c) reduce the possibility of error, (d) provide reasonable interaction speed, and (e) be easily incorporated into software products (Carey, 1995, p. 73).

I.7. The Elements of Interface Design

I.7.1. General Issues

Weinschenk, Jamar and Yeo (1997) point out the main target to be achieved when designing the interface that is to bring up the human's strengths, and minimize human limits.

One of these general design issues that one should consider is users need to find their way without moving their eyes so often. The solution is to use effective grouping and placement. Information should be placed to follow the pattern of reading. For example, people who read English will tend to look at the top left of each screen, and then move left to right and top to bottom. The placement of information on the screen leads them towards either the left to right (horizontal) or top to bottom (vertical), first (Weinschenk, Jamar & Yeo, 1997). However, the Yale Style Manual emphasizes the importance of having all the important information on the top of each page so that the users can recognize where they are and avoid getting lost in the pages. It points out that the headers and footers of Web pages are more informative and elaborate than the ones found on printed pages. The Yale manual also advises designers to answer four questions in the site: Who is talking? What is being presented? When it is presented? Where is it?

I.7.2. Audience

The importance of understanding the users and their needs has been extensively covered in the literature. For example, Beyer and Holtzblatt (1998), Instone (WWW.w3j/c0m/5/s3.onstone.html), Thimbleby (1990), Weinschenk, Jamar and Yeo (1997) highlighted considerations concerning how people learn in order to consider the cognitive element in designing a better interface.

According to the Yale Style Manual, the goal is to serve the needs of all of your potential users, adapting Web technology to their expectations, and never requiring the readers to simply conform to an interface that puts unnecessary obstacles in their paths.

Knowing the audience means having some background information on the users such as education level, work experience, the kind of modem they are using, and accessibility to the internet. Levine, (1996) for example, stresses the importance of knowing the audience by finding out whether they are:

- Employees of your company?
- Customers?
- People familiar with your subject matter?
- People just learning the things you will be discussing?

However, in the Yale Style Manual the authors specify the backgrounds of the typical users that are visiting the educational Web as: "often the typical user is already highly educated. Flexible, interactive, non-liner design structures are ideal for those users. But, this audience is also easily bored and needs the frequent stimulation of well-designed graphics and illustrations to stay involved with the material". Every designer should consider what most interests the target audience and try to give them what they need.

I.7.3. Navigation

Using the right tools for navigation is very important since these tools can greatly simplify understanding the site. On the other hand, poor navigational design can make it very difficult to the degree that the users might get lost and not know where they are going, or lose the original site (the site you are designing). Rick Levine (1996) provides the following list of advice regarding navigation:

- Include document and chapter headings on long multi-part documents.

- Consider duplicating navigational headers at the bottom of your pages.
- Avoid {return to} or {back} buttons and links.
- Avoid using a palette of graphic navigation buttons.
- If you must use graphic navigation buttons, use {redundant} text labels as well.
- Supply alternate text for graphic navigation buttons.
- If appropriate, add a brief table of contents at the top of the page.
- Put a title header on each page.
- Choose the HTML title to reflect the textual page title.
- Choose a title that accurately summarizes the content of the page.
- Provide a search service.

There are several ways to guide the users through a Web site. Smith and Yoder (1998) point out the following techniques:

- Maps that give the user an overview of the content and a conceptual understanding of the structure.
- Backgrounds that serve as a way for the reader to move among various parts of the documents. These elements appear on each page as a way to provide an obvious and consistent way to move around the site.
- The placement of buttons which activate links can easily give the reader unintended cues. For example, people tend to activate buttons in a hierarchical organizational scheme from top to bottom or left to right.

Smith and Yoder (1998) also emphasize the importance of the shape of the buttons because the shape could convey the wrong message to the user. For example, all the buttons should have the same size, shape, color and even location throughout the document. Discrepancies in size and emphasis (e.g. boldness) might lead the user to believe that one is more important than another. Even the distance between them should be equal, otherwise the user might interpret buttons grouped together as conveying a certain message. The number of buttons on one page should not be more than between five and seven, because of our memory capacity, and of course, less buttons means less potential confusion. The placement of the buttons is also a very important issue. Generally they should be placed at the same location on the page throughout the document. It is important to mention here that most of the literature advises the designer to avoid the "back', "previous", or "next" buttons. Smith and Yoder (1998) point out that

> The Back button merely retraces the reader's travel through a document. The reader may quickly move several screens from the one that displays the initial choice. If they decide to return to make a different choice, using the Back button can be frustrating and time consuming.

Vorburger (1999) makes the same point: "Back & Forward, Next & Previous button are distinct! The first is provided by the browser for the 'casual' flow of the current visit, the second is for the fixed logical flow between your pages." Of course, with the buttons, the designer can use words, or graphics. Sometimes both are used to provide the user with enough information. In addition, web designers can use other elements to make it easy for the user to navigate through the web site. These include the following:

- Smith and Yoder (1998) advise that "using borders can also help to identify cards that contain information about a particular topic. When you change topics, change your border as well."
- Icons: "to communicate with your reader without adding a lot of text. In addition, using icons helps your document to be more visually interesting." Each icon represents an idea or instruction. For example, the right arrow says 'go to the next card', while the house signifies 'Back to the Home card' (Smith & Yoder, 1998).

I.7.4. Links

Links are what distinguish the Web from printed material. The users can choose to get more information on a word that appears in the text that has a link with or without finishing the whole text.

Rick Levine (1996) suggests the following guidelines regarding linkages:

- Write about your subject as if there were no links in the text.
- Choose meaningful words or phrases for links.
- Choose an appropriate length for the linked text.
- Create context for a link.
- Choose your links so they support your sentence and concept structure.
- Try to match the link text that someone clinks on with the title of the resulting page.
- Highlight text that is different
- Don't change text link colors.

I.7.5. Organizing Information

It is essential to organize information in an efficient way in order not only to satisfy users' requirements but also to save space. Drue Miller (home.netscape.com/com...webbuilding/studio/feature19980729-1.html) identified what she called "seven deadly sins" for Web designers. She mentioned that information can be organized in many ways, but not all of them are equally useful. It is better to try to arrange the Web-site content in different ways to find the best fit. Should it be listed alphabetically? Grouped into categories? Presented along a timeline? Sorted from best to worst or largest to smallest? It is a good idea to try different structures to find the best one or two or three.

It is very important to let the users know where they are and what type of information they will find in the site's pages. Additionally, it would be nice to know something about the developer. The header could be used in this regard, or more information could be placed on the home page. Vorburger (1999) identified a few issues regarding general consideration: "Who is your site about? Who do you write for? And who are you? Publish your answers by stating "This site is intended for / of interest to..." on your homepage."

It is important to develop a structure for the site before starting the design of the pages. Clear charts would be one way to present a clear structure. As Vorburger (1999) points out, logical structure is fundamental for every site. It is a good practice to keep a well- balanced and generally rather shallow, rather than a deep, hierarchical tree. In

addition, at the developer's level the directory structure and filenames should reflect the logical structure of a site.

Smith and Yoder (1998) also point out the importance of starting the design by having a clear view about the structure that has to match the flow of the content. They also advise linking the structure to the kind of material the designer wants to put there, whether it is "liner", or "branching", or "the document is intended to be exploratory".

I.7.6. Writing:

I.7.6.1. Readability and Legibility:

Smith and Yoder (1998) explain the difference between readability and legibility: "Readability means the ability to process words quickly and efficiently but readability also refers to blocks of text. Readable body text is comfortable to read, provides pleasure for your eye, and encourages you to continue reading."
While: "Legibility refers to the ability to recognize letterforms and words quickly and easily. The legibility of text does not take into consideration that act of reading blocks of text. Legible text allows the reader to easily recognize what characters and words have been written."

I.7.6.2. Reading on the Web:

Results of many studies and experiments regarding how users do not read on the Web have been reported in the literature. Nielsen (1997) mentioned that the users typically scan the page, focusing on individual words and sentences. He also found out from his

study that 79 percent of the test users always scanned any new pages they came across; only 16 percent read word-by-word.

Based on this study, Nielsen (1997) recommended the use of certain techniques in writing for the Web, including the following:

- Highlight keywords (hypertext links serve as one form of highlighting, i.e., typeface variations).
- Use meaningful sub-headings (not "clever" ones).
- Include bulleted lists.
- Use one idea per paragraph (users will skip over any additional ideas if they are not caught by the first few words in the paragraph).
- Apply the inverted pyramid style, starting with the conclusion.
- Restrict yourself to half the word count (or less) of conventional writing.

Vorburger (1999) also found out from his study that users at first don't read, rather they scan. If a key word that is not of interest to the user is mentioned, then the new visitor is gone. Therefore, a high quality content written in good style is one consideration, while making it easy to find and looking nice is another.

Nielsen (1997) advises using the pyramid stricture for writing on the Web. Since several user studies revealed that users don't scroll, they will very frequently be left to read only

the top part of an article. Very interested readers will then scroll, and these few motivated souls will reach the foundation of the pyramid and get the full story in all its detail.

I.7.6.3. Typeface:

Typeface plays an important role in conveying the message. As explained by Smith and Yoder (1998), typefaces communicate their own messages - even though those messages are often subconscious. Some typefaces make the reader feel relaxed and comfortable as they read. The same words in a different typeface might feel formal to the reader. Some typefaces make reading a document so difficult that the reader looks for excuses to stop reading.

In that sense, the designer should choose a good and comfortable typeface to use. Smith and Yoder (1998) suggested that the serif typefaces are generally considered quite readable. That is, the eye moves across the letters smoothly and easily.

They also advised not to use more than two typefaces per page. One of them should be used for the body of the text and the other for the titles. In addition, the designer should keep the same typefaces for the whole document. Furthermore, the designer should remember that not all the typefaces would appear on all types of computers.

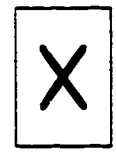
I.7.6.4. Text Color:

Colors are fun to use; however, they are very delicate elements to be used on the Web. Smith and Yoder (1998) found that using colors for short blocks of text on the

screen can be effective but using colors with large blocks of text is often a poor choice. Colors generally decrease readability.

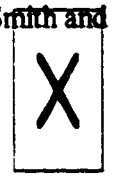
There are certain things that a designer should avoid, such as using white text on black background because it would be hard for reading. On the other hand a designer can apply certain techniques while using colors. Smith and Yoder (1998) recommended to use "a bar of color instead of colored text" to brighten up the text. Also "to place a color or outline typeface against a black or gray background". They also advised balancing those colors with other elements in the page.

I.7.6.5. Text and Graphics:

It is important to establish a coherent look on the screen especially when adding a  graphic element. However, it is more important to present the graphic in such a way that it will not make it difficult for reading. Smith and Yoder (1998) addressed this issue and suggested that the text should be wrapped around a graphic so that a given line of text stops at the left edge of the graphic and starts again on the right edge of the graphic. In the case where the eyes are forced to jump across the graphic to complete the grouping of words, the text is almost impossible to read. Also, when the graph is wrapped from the right it would be equally hard to read, because the lines can be too short to read. The principle is illustrated in this very paragraph, where the graphic is surrounded by the text.

Smith and Yoder (1998) mentioned that the case would be worse when the text is justified on the left of the graphic. In this case the text would not be easy to read at all. It is also very difficult to read the text that lies on the right of the graphic, (as in the case of this written paragraph), unless the text is written differently. In this case, it would be easier for reading to use a border around the text, which would help the reader to focus on the text. At the same time, the boarder should be spaced away from the text to increase readability.

Suggestions for Written Material on the Web:



Smith and Yoder (1998) suggested that in order to increase the readability of a text, it is a good practice to allow for a heading, to use a margin between the text and the boarder, to reduce the text size when using capital letters and to increase the white space around the graphic, as in the example here.

Finally, Smith and Yoder (1998) suggested that the designer should use slightly larger font size on screen than would be appropriate for printed material. Also the font should be round, with well-defined strokes. These choices will result in a clear, concise, brief, and more direct writing style than is usually used in print material.

I.7.6.6. Hidden Text:

Hidden text is the text that is not visible to the reader, directly, but can be accessed by clicking one of the buttons, a picture, or an underlined word. The hidden text can provide the reader with more explanatory text without leaving the page, so the readers will not get lost in the document. As Smith and Yoder (1998) put it, this could be a small consideration or a big one. However, there are a few issues regarding the hidden text, such as:" how to make the text visible? Where should the text appear? How long should the text be visible? Do you let the reader control the time factor or should the software be allowed to handle the timing?" (p. 79)

I.7.6.7. Emphasis:

Underlining should be avoided because it is difficult to read text on the line. Underlining is generally not attractive because it cuts off the bottoms of letters - called descends. When read onscreen, underlined text can be particularly difficult to read.

Instead of underlining, the italic type can be used. Meanwhile bold face should be used only for the titles of documents, since it is too difficult to read onscreen a full bold text. The Yale Style Manual also recommends the use of bold for headlines.

Also, it is a well-known convention that the underlined words mean linked words. In other words, most of the users assume that the underlined words will lead them to other pages if they click on them. That is another strong reason to avoid underlining for the purpose of emphasis.

I.7.7. Color:

The color plays an important role in the viewers' decision to either accept the page or never visit it again; it also makes the eyes feel tired which discourages the users from reading the rest of the page.

Terry Sullivan (1998) focuses on the color issues that are related to the Web design. Informed color use can help making a page more readable. However, color is best as a secondary means of highlighting and emphasis. HTML provides literally dozen of structural tags for emphasizing and highlighting content, and these tags represent the surest, strongest foundations for readability in any Web page.

Sullivan also differentiated between the types of the colors. Warm colors (such as yellow, red, and orange) appear to "approach" the reader visually, while "cooler" colors (such as blues and greens) appear to recede.

Smith and Yoder (1998) mentioned that using a color is very "similar to the idea of using headers and footers to identify the chapters in a book." Using the same background for a particular group of cards that are related helps show unity and cues the user's navigation. Another way to use the color is to highlight some important information. And, of course, the vital role of color in making a site lively or aesthetically attractive cannot be ignored. "Color can also be used to help a presentation build to a climax."

Smith and Yoder (1998) also mentioned that people react emotionally to colors:

> Color may convey a message that some one may or may not intend to convey. For example, bankers and accountants often react negatively to red and positively to blue. If a document is one that is intended to teach about finances, then the use of red should be avoided. For others, brown and green have a natural, outdoor connotation. While this would be extremely appropriate for a document that teaches about trees and natural wildlife, the same colors used in a formal setting may work against the message that is intended to be communicated. (p. 121)

Smith and Yoder (1998) also give some tips about using the colors effectively, reminding designers that the purpose is to help the reader to understand and recognize the materials better. For example, they believe that using a color on dark backgrounds will make it lighter. They also suggest to use the colors for rules or frames other than just coloring the whole text.

I.7.8. Graphics:

Graphics can enhance the appearance of a Web site. In addition they can be used as an effective means to link pages together, hence making it easy for the user to surf through the web site. The poor use of graphics and pictures could discourage the users from revisiting the web site, especially if they did not understand the role of the graphics or what do they mean, or they have speed of loading problems. That is why the graphics have to be very relevant to the topic and should support the message that the text intends to convey. Rick Levine (1996) identified the following issues related to the efficient use of graphics on the Web:

- Use graphics critical to the information content of your page.
- Limit large images used solely for visual appeal.

- Keep the total size of all images used on a page to less than 3K.
- Use available technology tricks to minimize content access time.
- Avoid message-critical JPEG images if you want the largest possible audience.
- Warn the audience if a link leads to a large graphic.
- Minimize the number of colors being used in a single page.
- Include alternate text for each image.
- Use images with transparent backgrounds to better integrate your images.
- Don't use graphics referenced from another site.
- Use graphical bullets for a purpose, not because they look "neat".
- Use graphical divider bars sparingly.
- Use a small set of bullets or accent graphics repeatedly, rather than using a large number only once each.
- Take care with background images.
- Understand the pitfalls of changing the default text color for a page.
- Preview your images on several hardware and browser combinations.

Smith and Yoder (1998) identified different types of graphics that can be used with electronic documents. Graphics can be produced as original work by the author, imported from the many collections of electronic clip art, or, with the aid of a scanner, brought in from many other sources. Each choice gives a wide range of options for saving and storing the image. In other words, we have different kinds: paint graphic, drawn graphics, line art made up only of solid shapes and lines, clip art, scanned images, and photos.

These can be used to present different kind of information, and to establish presentation styles that may produce different emotive and reactions in the viewers.

Animation also plays an important role in designing a web site. Since this element does not exist in the printed materials, it can be used as an additional tool to provide better understanding of the presented materials. If it is not carefully used it might distract the attention of the reader. Terry Sullivan (1997) warned Web designers about this issue; he mentioned that there is simply no way to juxtapose text and animation without having them compete with each other visually. He also mentioned that the more lively or the more numerous the animations, the greater the competition. Animations are certainly popular, but pages peppered with motion are nearly impossible to read. Animations may improve the "coolness" quotient, but they "drive the readability index straight into the ground."

I.7.9. Placement of Page Elements:

I.7.9.1. Alignment:

Organizing the elements of the page site requires a few decisions to be made in advance, such as which alignment to use. Smith and Yoder (1998) suggest establishing a grid as the best way to organize the materials on the Web pages. The grid defines where to place the different elements (text and graphics) within the page. They could be placed on the right, left or center of the page. Most beginners have a tendency to center all of the elements on a page. Centering can be effective, but the visual impact is often less exciting and attractive than other forms of alignment.

I.7.9.2. Associating the Elements:

Placing the elements on the page affects the readability. Smith and Yoder (1998) advise that the best way to place the elements is by using the principle of "proximity" which is based on the idea that elements which are close together visually are perceived as being related. In other words, grouping similar elements together, such as the buttons, will make it easier for the reader to see related items as a unit. We can also say the same thing about repeating similar items. For example, for a names list, the typeface that is used for the names can be repeated for the address so that the reader would know the text from the header.

I.7.9.3. Using White Spaces:

Using the white space effectively is an important element in designing Web pages. First it is important to leave enough white space in the page in order to increase readability. Moreover, it could be used as a technique to draw the attention of the reader to important information. As Smith and Yoder (1998) explain: "your eye is drawn away from white space. This helps you see other elements more clearly. Wise use of white space is essential."

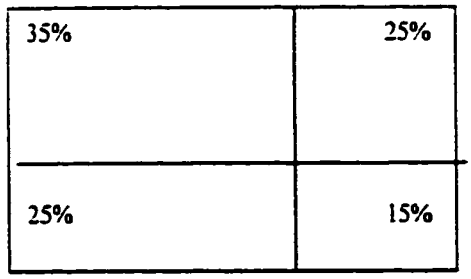
However, leaving a lot of white space in a page could give the feeling of lacking flow or movement. Smith and Yoder (1998) mentioned that with good use of white space, a reader will be drawn into the material on the Web site immediately. The time it takes to load a page with less materials also will be shorter, making it more likely that the page will be read and the reader will return in the future.

On the other hand, the importance of using a lot of white space comes from the idea that the pages that could convey better the information are those pages that are not crowded. A lot of space provides the reader with the opportunity to view the information and to feel comfortable without being lost in the flow of the information.

I.7.10. Balance:

Balancing materials within the pages would help in getting attractive pages. However, there are two kinds of balancing: centering, which sometimes looks too low, and using the golden mean. Smith and Yoder (1998) note that this latter proportion is very pleasing to the human eye and it is used frequently in the design of buildings, as well as the layout of hypermedia cards. However, it is located at a point a little bit higher than the usual physical center.

Smith and Yoder (1998) recommend dividing the page into four areas, recognizing that the eyes go directly to the visual center of the card unless there is some other element on the card that draws the eye more strongly. The following diagram (Figure I - 1) that is adapted from Smith and Yoder (1998) shows the preference for certain parts of the page:



(Figure I - 1)

The preference for certain parts of the page (from Smith and Yoder, 1998, p. 107)

The readers will definitely go to see the upper left part of the Web page, even if they do not see the other parts. So it is beneficial to take advantage of this fact and place the most powerful information in this spot.

However, they also added that the goal of a good design is to get the readers to examine the document and to keep their eyes moving from the most important to the least important items on the card.

Finally, they suggested that the informally balanced cards are more visually interesting.

I.7.11. Contrast:

To achieve contrast a designer may use larger parts, bright colors, or perhaps an unusual perspective. High contrast such as black and white always attracts the eye. As Smith and Yoder (1998) mention, an eye has a natural tendency to look in the direction

that the eyes of an animal or person on the card is looking. This is also true with the direction of the lines. The eyes will follow the lines and normally point towards the arrow formed by the lines or their extensions. The same happens to the apparent motion of the image on the card.

However, using the white space to create a contrast could work where the eyes have to follow in order to catch the message.

It is important to mention that all the elements should complement each other and fall in harmony. Also, keeping the "look and feel" is important as much as "matching the tone of the images." And, of course, the typeface should match the mood of the pages and the audience.

I.7.12. Page Length:

A good example of an effective site design is the one that has short pages. This makes it easier for people to read on the screen. According to different studies that have been mentioned above, people do not read on the screen, they scan. Rick Levine (1996) put forward the following advice regarding this point:

- For presentations that must grab people's attention to be successful, pages should not be made longer than the windows.
- Some content must be presented in one screen because the user cannot tell if there's more to be seen below the edge of the window.

- If it needed to present short, it is necessary to segment chunks of information, pages should be kept short so people won't miss things that fall off the end of the page.
- If pages present text that people will want to read at length, it's all right to use longer, scrolling pages.
- A general rule of thumb is to try to make the majority of pages no longer than one-and-a-half of screen full and not to get into too much trouble.
- A separate link for printing a complete document should be provided.
- The use of shorter pages makes the Web more maintainable.

Short pages are easier to load and to read. Vorburger (1999) mentioned that short pages look lighter and load faster. It is better to split long texts into small ones, and to present discrete chunks of information. Even better, write concisely enough from the beginning so that the text does not need to be split.

II. Methods

II.1. Designers:

II.1.1. Respondents:

Eighteen copies of the revised questionnaires were sent via e-mail to various companies producing educational software and materials for Arab users. E-mail was addressed to the Web development departments. The companies were chosen randomly from a magazine that is published in the Middle East, and that focuses on Internet-related issues. Only two questionnaires were returned. The other two participants were interviewed, and were from the Multimedia Department of the United Arab Emirates University. These four subject-matter experts were two men and two women. Three of the Arab respondents were working in the Middle East; two were doing postgraduate work in North America, in related fields; the fourth designer, a Westerner, was working in Montreal. There is no data available about the latter's educational background.

II.1.2. Questionnaires for Experts and Users:

The questionnaire design was based on the literature review. A pilot test consisted of interviews with three subject-matter experts from the Multimedia Department of the United Arab Emirates University. These respondents were not the same ones as those surveyed in the study. These one-on-one interviews were fruitful. The participants were asked the questions and the researcher observed how the participants perceived the questions and how they answered them. The participants were also given the opportunity to comment on the clarity and interpretability of the questions.

The results of the pilot test suggested a few revisions, such as:

- rewriting some questions to make them easier to understand;
- omitting a small number of questions that were considered unnecessary, that is, that would not add value to the results and, at the same time, might confuse the participants;
- changing the response format for some items from a 1-10 scale to a yes/ no option, because the participants found it confusing to evaluate their answers with numbers, and preferred simply to answer yes or no.

Concerning the literature review, it should be acknowledged that this comprises a review of various sources that present standards. These standards are based on principles derived from empirical research, primarily in the field of human-computer-interaction and the study of perception, and collective experience in the field of graphic design. However, it is apparent that design standards are loosely interpreted from these foundations: for example, a single source might suggest to avoid scrolling in one place, then relax this prescription to something like "do not have content scrolling more than one-and-one-half screens". These prescriptions sound inconsistent, but they merely reflect the basic perceptual and cognitive principles regarding the problems associated with scrolling -- applied more or less strictly, as the case may be. Since interface design is a design problem, one may expect constraints will sometimes require a trade-off among design principles, so that one or more principles is stretched or bent to accommodate other important principles that are also implicated.

II.1.3. Response Scales and Analyses:

Many items in the surveys were constructed with a 1-10 scale, where one meant "disagree strongly," and 10 meant "agree strongly." For reporting descriptive results, I compounded one through 4, 5 and 6, 7 through 10 to produce a three-point scale reporting (agree, neutral and disagree), which simplifies the presentation and reading of the descriptive results and is probably more in keeping with the degree people can discriminate with regard to these items. Only results with a response of 75% and up in one question are taken into consideration since only four designers were interviewed.

It is good to note that some questions were not measured on an ordinal scale. Rather, general response options were available, and the choices not forced, meaning that the respondent might select more than one response. For example, in an item asking the respondent where certain information should be placed (center, left, or right), the respondent might approve or disapprove more than one choice. This explains why there are sometimes more than four answers, even though there are only four participants. On the other hand, participants sometimes did not answer certain questions, which explains why, in some instances, we have fewer than four responses.

II.2. Arab Users:

II.2.1. The Respondents:

The participants were randomly chosen from the College of Engineering at the United Arab Emirates University, and consisted of 10 males and six females. Two subjects were postgraduate students, and one was a faculty member.

II.2.2. The Pilot Test:

The questionnaire design was based on the literature review. A pilot test, consisting of one-on-one interviews with four participants, took place on the Women's Campus of the United Arab Emirates University in Al-Ain. In order to gain access to the Women's Campus, and in order to give the questionnaires in the university, it was necessary to obtain special permission from the Deputy Vice-chancellor for Students Affairs, who had also approved a copy of the questionnaire. The four female students were chosen randomly from different departments. The participants were handed a copy of the questionnaire, and were asked the questions at the same time. The observations recorded during the interviews were helpful to trace the participants' reactions and body language, in order to determine if the questions were easy to understand. Several times, I had to explain the questions in my own words, sometimes in Arabic. The questions were asked in English and the participants responded in English, but sometimes the use of Arabic was necessary to explain certain terminology, or to clarify a few questions for the participants. The participants' comprehension of English was sufficient for understanding the questionnaires, but I had to explain certain terms, such as "golden mean." These questions were rewritten in simpler language, and some terminology was replaced. As well, some questions were rephrased to be clearer. However, for some questions, the 1-10 scale was changed to a yes/ no option, where the participants failed to evaluate their answers by giving a number. In these cases, their answers remained yes or no even after I had repeatedly asked them to assign a number value to their feelings. On the other hand, some yes / no questions had to be revised to 1-10 scales, since the participants gave answers in number values, claiming that was the way they felt toward the question.

II.2.3. Procedures:

The percentage of participants considered in the results and conclusions are 55% and above. Sometimes, 50% of responses were considered in questions with options. For example, the 50% of the Arabs' choice of black text is considered because it was the highest percentage.

Note that in some questions, where different options were given, Arab respondents sometimes chose more than one option. For example, more than one participant chose both photos and clip art as their preferred type of graphic, which explains why we sometimes have more than 16 responses per question. At the same time, some respondents did not answer certain questions, which explain why some questions have fewer than 16 responses. Nevertheless, in both cases, the average was taken into consideration.

II.3. North American Users:

II.3.1. The Participants:

Approximately 100 undergraduate students from the Department of Building, Civil and Environmental Engineering, at Concordia University were asked to volunteer to fill out the distributed questionnaires. Only 10 students responded within two weeks. At the same time, 10 questionnaires were sent by e-mail to random undergraduate students in various departments of Depaul University, United States of America. Four participants returned their responses by e-mail within 10 days. There was a total of 14 participants, consisting of six males and eight females.

To organize the data and conduct the results for the North American users, the same steps were followed as with the Arab user data. The same scale as that used in analyzing the Arab data, was used for the North American users' data.

II.4. Comparison:

II.4.1. Arabs and Designers:

To compare the results of the designers and the Arab participants, summary tables are used to summarize the main differences between the answers of both groups of respondents. In these tables, the field is checked when the percentage of answers meets the standard to allow that answer to be considered sufficiently a positive. These standards are mentioned earlier in this chapter. In other words, the accepted results are taken from both the designers and the Arab respondents, and organized into tables so that they may be more easily recognized and read.

II.4.2. Arabs and North Americans:

To compare the results of Arab and North American respondents, the positive percentage of answers from both groups is taken into consideration and compared. In order to be considered positive, a percentage should meet the standard determined for either Arab or North American participants, as described earlier in this chapter. Figures are used for explaining differences between the two groups.

Some statistical tests were helpful to highlight the main differences between the two groups. Chi-square was employed to analyze these differences for questions with

categorical data. The Mann-Whitney U. Test was used for examining group differences in questions with ordinal data. Assumptions of equal variances and normal distributions were not met for all non parametric items. Thus, the Mann-Whitney U test was chosen for analysis, rather than parametric methods.

It is good to note that, for statistical hypothesis testing, the 1-10 scale was retained. The only problem posed with this procedure was that, for some items, the frequency of ranks was too small to allow for the test to be conducted.

III. Results

III.1. Designers:

III.1.1. Target Audience:

The designers indicated they had enough information about the users of their products. Three designers (75% of the samples) collected data about their target audience in addition to collecting comments.

Three designers (75%) mentioned that the majority of their audience was male. All the designers recognized their target audience as well-educated (university level).

III.1.2. Navigation:

All the designers liked to include document and chapter headings at the tops of the pages they design. However, only one designer (25%) preferred to duplicate the headings at the page bottom.

Only one designer (25%) preferred to use the NEXT and BACK buttons a lot, and two designers (50%) preferred not to use them.

Two designers (50%) preferred to use a palette of graphic navigation buttons, while one designer (25%) did not. One respondent (25%) did not answer the question. However, all the designers preferred to use alternate text for graphic navigation buttons. Only one designer (25%) preferred to add a brief table of contents to each page, while three designers (75%) preferred not to add this feature. However, the designers chose

different locations for a table of contents, such as on the right, the left, at the beginning of the page.

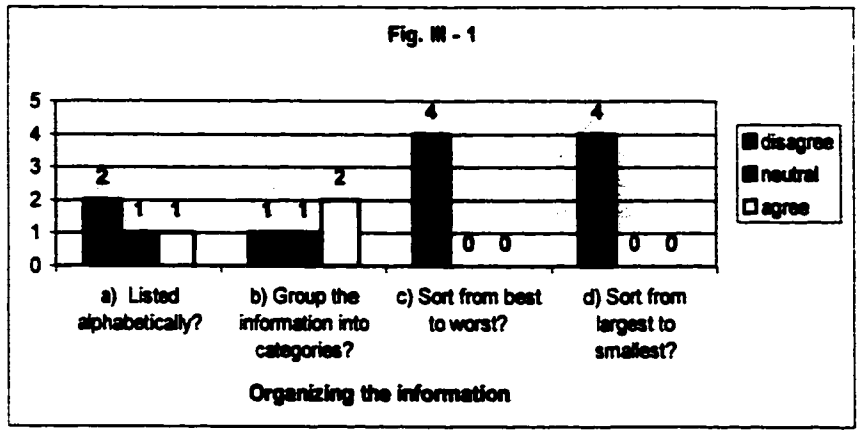
All the designers preferred to use a title header on each page. Moreover, three of them (75%) preferred to provide a search facility. Three subjects preferred to use the buttons to aid navigation; only one designer (25%) preferred maps, and two designers (50%) preferred icons.

III.1.3. Links:

The links issue did affect the writing style of three designers (75%), who usually preferred to use many links within a text. In the same vein, all the designers agreed that links help to make the materials easier to understand. The respondents preferred to highlight the various linked text, and used one linking text color in all pages.

III.1.4. Organizing Information:

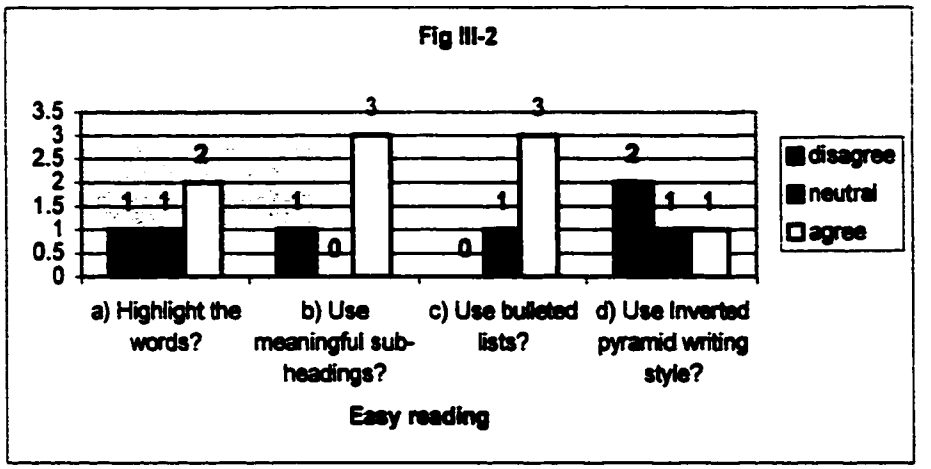
Only 25% of the designers preferred to list information alphabetically, 25% had a neutral attitude, while 50% disagreed. Meanwhile, 50% of participating designers preferred to group information into categories. Twenty-five percent disagreed and 25% had a neutral attitude. However, all the designers disagreed with sorting the information from best worst and from largest to smallest, as is shown in Figure III-1.



Three designers (75%) did not prefer to play with different structures in order to find the best one. However, all the designers preferred to give the reader information about the author, reader location, and the site purpose. They all preferred to have this information on the home page. At the same time, all the designers agreed that they used different structures for different purposes.

III.1.5. Writing:

The survey showed that, in order to facilitate online reading, two designers (50%) liked to highlight words, where one designer (25%) preferred not to, and another designer (25%) had a neutral attitude. Three designers (75%) preferred to use meaningful subheadings. In addition, three designers (75%) preferred to use bulleted lists, and only one designer (25%) preferred to use an inverted-pyramid writing style, as is shown in Figure III-2.



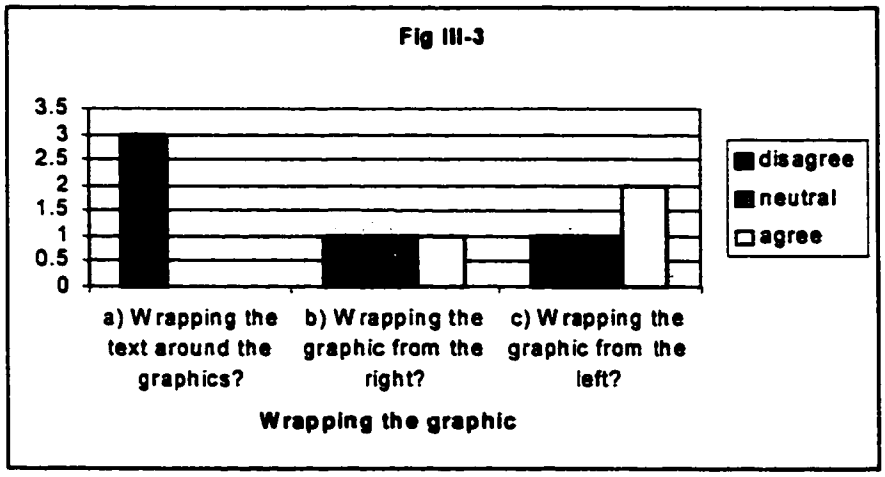
All the designers used one idea per paragraph. Only two designers (50%) prefer to follow the style of counting half the words.

Three designers (75%) preferred to use two typefaces per page, and would use two or three typefaces per document.

The designers chose black as the favorite text color. However, only one designer (25%) preferred to use light text colors, while three respondents (75%) preferred to use dark colors for the text, and preferred to use colored text. Two designers (50%) used the colored bar to brighten the text and the other two did not answer the question. However, none of the designers preferred to use many colors within a text.

Three of the four designers (75%) did not prefer to wrap text around graphics while the fourth did not respond to this question. One designer (25%) did not like the text to flow around the graphic on the right, while another did. One designer was neutral and the fourth designer did not answer the question. Two designers (50%) preferred to wrap the

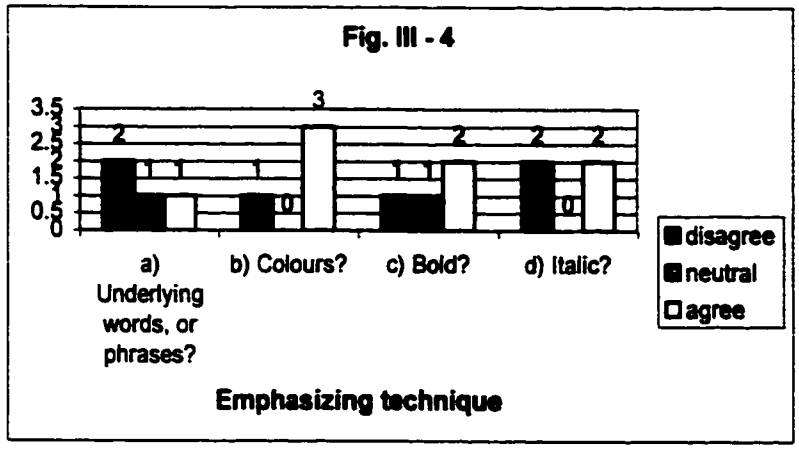
graphic from the left; and one designer (25%) disagreed with this while the other did not answer the question, as is shown below in Figure III-3.



Three designers (75%) preferred to use white space around graphics. None of the designers preferred to use hidden text. However, when hidden text is used, two designers (50%) preferred the hidden text to replace a graphic, while only one designer (25%) preferred to show a text box on the side of the page. With regards to techniques, to direct users to hidden text, all the designers disagreed with the use of a special graphic such as the magnify, three designers (75%) agreed with using words, and only one designer (25%) preferred to use other ways. However, two designers (50%) thought that hidden text could facilitate better understanding.

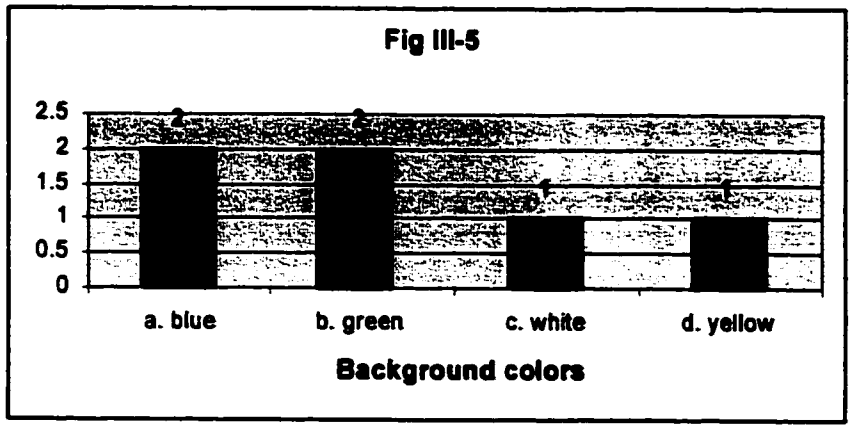
Two designers (50%) did not like underlining words for emphasis; only one designer (25%) would use underlining, while the other designer was neutral. Three designers (75%) used colors for emphasis. Only two designers (50%) used bold words, while one

did not agree with the use of this technique. Two designers (50%) used italic text, while the other two designers (50%) disagreed with its use, as is shown below in Figure III-4.



III.1.6. Colors:

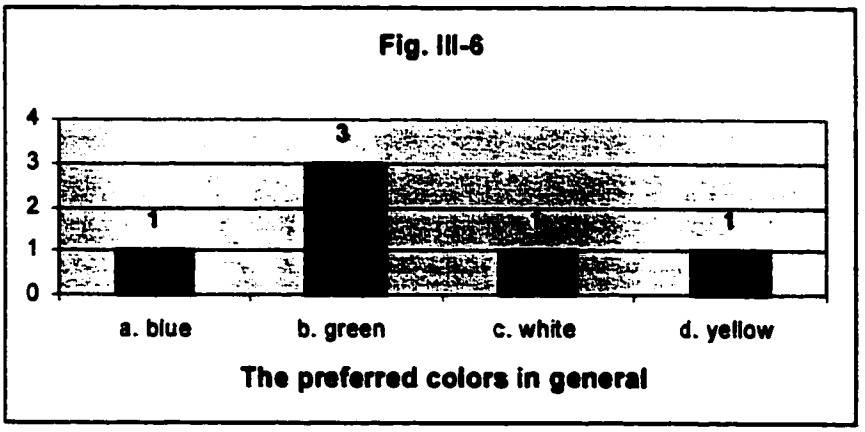
For linking words, only one designer (25%) liked to use the color red; two designers (50%) used blue and only one used white. For the background, two designers (50%) used blue and two designers (50%) used green. One designer (25%) liked to use white and another (25%) yellow, as is shown below in Figure III-5.



However, three designers (75%) liked to use black for text; two designers (50%) liked dark blue; and only one designer (25%) liked to use dark colors.

None of the designers preferred to use many colors within a single page. They all liked to use warm colors, while only two designers (50%) liked to use cold colors. All the designers preferred to use two colors in one page. Three designers (75%) believed that the target audience reacts emotionally to colors, but only one designer (25%) had noticed the target audience reacting differently to certain colors.

The preferred colors were as follows: one designer (25%) preferred blue, three designers (75%) preferred green; one designer preferred white, and one designer preferred yellow, as is shown below in Figure III-6.

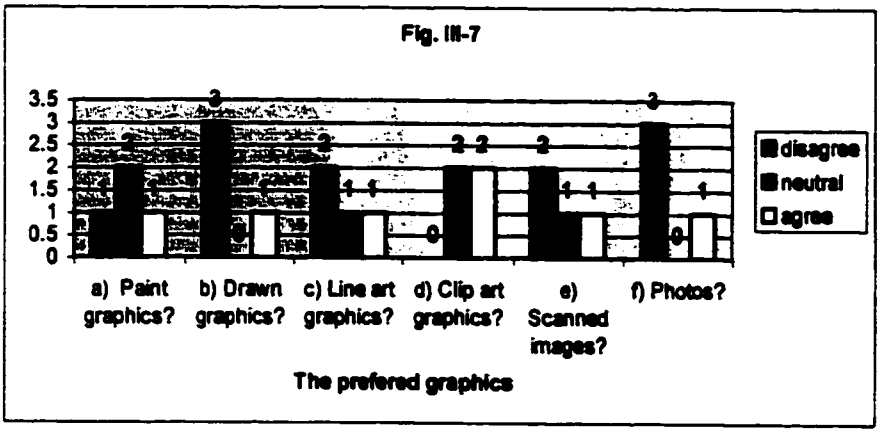


III.1.7. Graphics:

Three designers (75%) preferred to use a lot of graphics, since all the designers believed that using graphics help to facilitate understanding. They used the graphics to support the text. Nevertheless, all designers used a limited number of graphics within a single page. Two designers (50%) preferred to warn users if a link leads to a large graphic. Three designers (75%) were neutral for using alternative text for each image.

However, three designers (75%) preferred to use graphical bullets and graphical divider bars. Only one designer (25%) preferred to use fancy background, and three (75%) believed that the background play a role in attracting the users. Three designers (75%) preferred to use animation and two (50%) felt that animation helped to convey information better.

Only one designer (25%) preferred to use paint graphics, drawn graphics, line art graphics and scanned images. Two designers (50%) liked to use clip art graphics, while the other two (50%) were neutral. Three designers (75%) liked to use photos, as shown below in Figure III–7.



III.1.8. Placement of Elements:

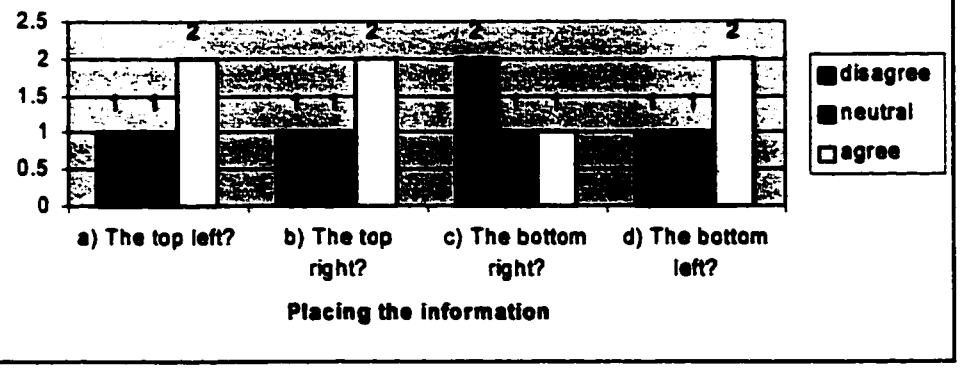
Two designers (50%) preferred to place elements at the page center; two designers (50%) preferred to use right alignment, and three (75%) did not prefer to use left alignment.

Three designers (75%) preferred to gather similar elements together. Only one designer (25%) preferred to use a lot of white space as an attention-drawing technique. All the designers thought that crowded pages did not convey information better.

III.1.9. Balance:

Two designers (50%) preferred to use the golden mean, while the other two (50%) were neutral. However, three designers (75%) thought that the golden mean was more effective. Two designers (50%) preferred to place the most important information on the top left and the top right of the page, while one (25%) preferred to place it on the bottom right. Two designers (50%) said they would put the information on the bottom left of the page. Figure III-8 illustrates the above data.

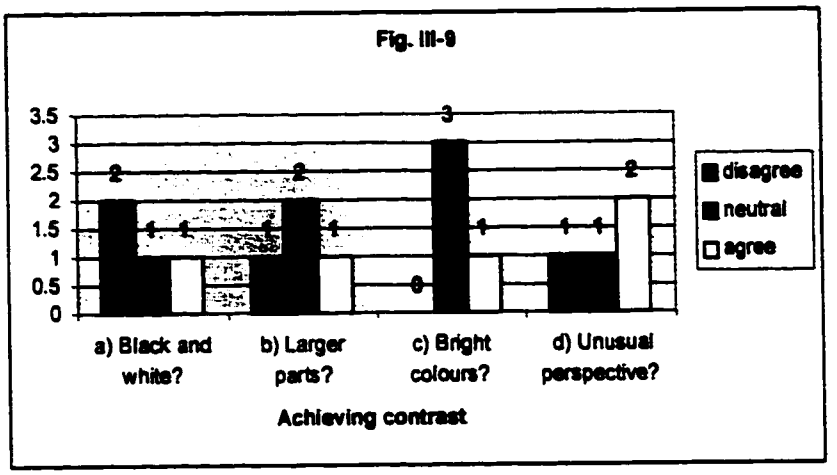
Fig. III-8



Finally, three designers (75%) did not want to create pages that would demand excessive eye movement from their users.

III.1.10. Contrast:

To achieve contrast, one designer (25%) preferred to use black and white, larger parts, and bright colors, but two designers (50%) used unusual perspective as a technique, as shown below in Figure III-9.



Three designers (75%) used lines to direct the attention of the user. Two designers (50%) liked to use a line drawn from left to right or from right to left, and one (25%) used a line drawn from top to bottom and bottom to top.

Two designers (50%) preferred to use motion to draw attention, and one (25%) used motion from left to right.

While using white space as a means of directing the users' attention, two designers (50%) would place the important information at the center.

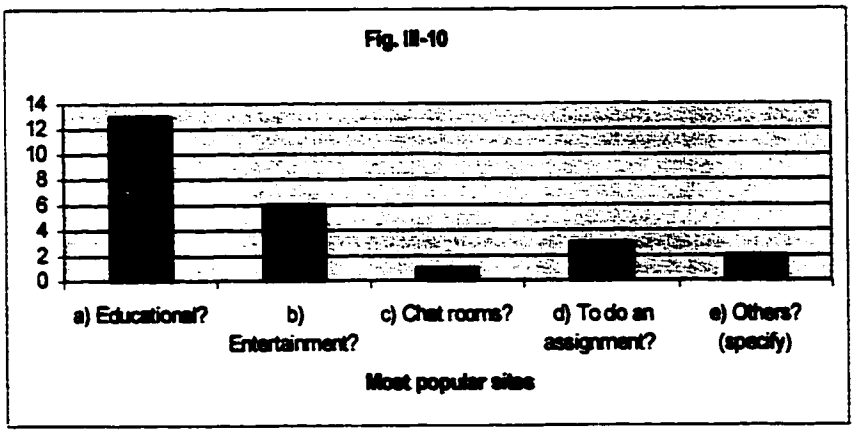
III.1.11. Page Length:

Three designers (75%) agreed that they prefer to make short pages. Moreover, they preferred not to make pages where the users have to scroll down a lot. However, two designers (50%) also thought that having all the information on one page could help the readers achieve better understanding.

III.2. Arab Users:

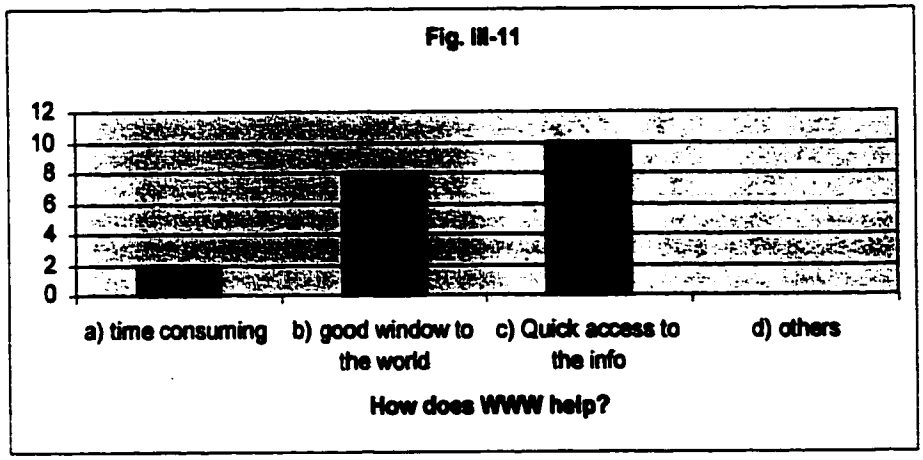
III.2.1. General Information:

One hundred percent of Arab respondents had computers. One hundred percent of Arab respondents had been on the Internet. Eighty-one percent used the WWW on a regular basis, but only 44% used it daily. Sixty-nine percent used the WWW for school purposes. However, 81% of the Arabs visited educational sites; 38% visited entertainment sites, and 6% visited chat rooms. Nineteen percent of Arab respondents used the WWW to do their assignments, while 13% used the WWW for other purposes, such as reading the news, as shown below in Figure III-10.



Ninety-four percent of Arab respondents felt comfortable using the WWW. Only 13% visited Arabic-language sites, but 100% visited English-language sites.

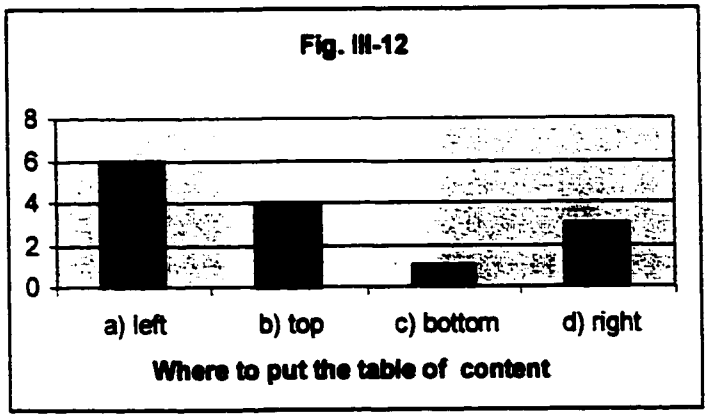
Only 19% of Arab participants had their own Web sites, but 75% were interested in making one. Eighty-one percent of respondents felt that the WWW gave them freedom. Ninety four percent believed that it helped them in their lives, whereas 13% thought the WWW was time-consuming. Fifty percent believed it was a good window to the world, but 63% of respondents found it gave them quick access to information, as is shown in Figure III-11, below. It is note worthy that none of the participants had attended any classes online.



III.2.2. Navigation:

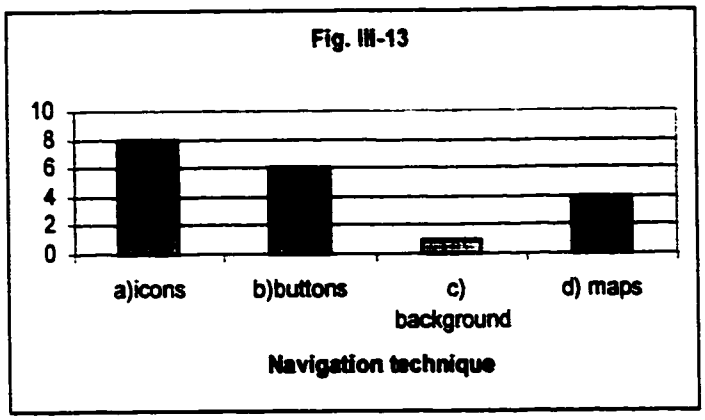
Ninety-four percent of Arab respondents preferred to have a document heading on each page, and liked it placed at the top of the page. While only 19% of respondents preferred to have a duplicate header at the bottom of the page, and 56% preferred to have NEXT and BACK buttons, 100% preferred to have a palette of graphic navigation

buttons. Fifty-six percent of respondents preferred to have alternative text for graphics, and 75% preferred to have a table of contents on each page. The results regarding preferences for the positioning of the table of contents were mixed. Thirty eight percent of Arab respondents preferred the table of contents to be on the left; 25% of participants preferred it on the top; 6% preferred it on the bottom, and 19% preferred it on the right, as illustrated in Figure III-12, below.



Ninety-four percent of Arab respondents preferred to have a search function available.

Regarding navigation techniques, 50% of Arab respondents liked icons, 38% liked buttons, 25% preferred maps and only 6% liked the use of different backgrounds, as shown below in Figure III-13.

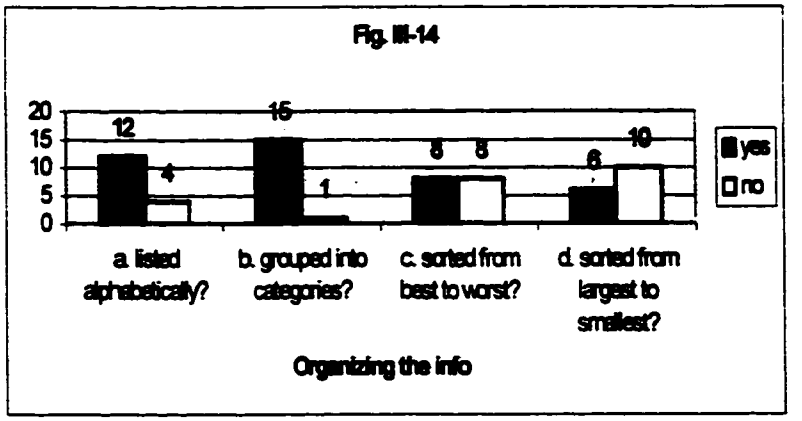


III.2.3. Links:

Eighty-one percent of Arab respondents liked the idea of having links within the text. Only 38% did not mind having many links within a single text. Seventy-five percent found that links within a text helped them to better understand and getting more information. Sixty-nine percent of Arab respondents preferred to see the same color used for the linking text throughout a document.

III.2.4. Organizing Information:

Seventy-five percent of Arab respondents preferred to have information listed alphabetically; 94% preferred to have the information grouped into categories; 50% of the respondents preferred to have the information organized from best to worst, and 38% preferred to have the information sorted from largest to smallest, as shown below in the Figure III-14.



Sixty-nine percent of respondents wanted to know the author of the pages, while all the respondents wanted to know their location at all times, and the name of the site being visited. Eighty-eight percent of Arab respondents wanted to know the purpose of the site they were visiting. Only 56% of respondents would go back to the home page to get information regarding the site.

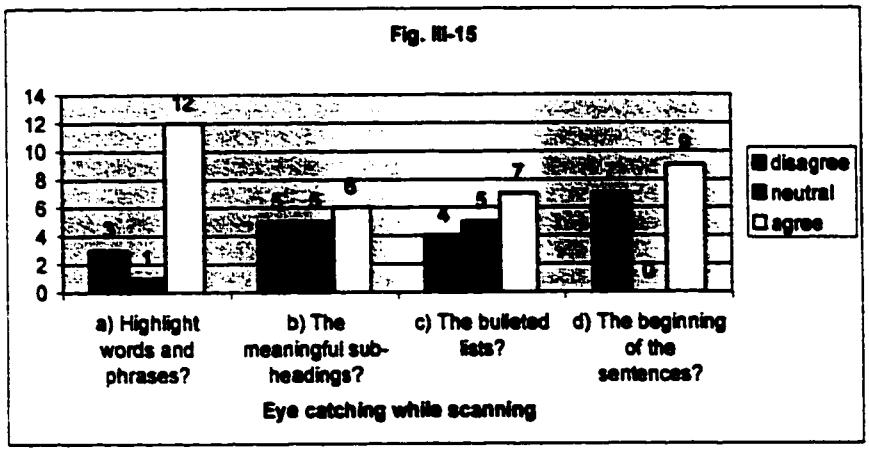
III.2.5. Writing:

Only four respondents (25%) read online. Seven respondents (44%) did NOT read text online, while five respondents (31%) were neutral.

As for online scanning, again seven respondents (44%) reported that they did not scan online. Only four respondents (25%) scanned online, and five respondents (31%) responded neutrally. Twelve respondents (75%) believed that while they scanned online, highlighted words would catch their eye. Nine respondents agreed strongly with the use of highlighted words. Nineteen percent of Arab respondents did not prefer the use of highlighted words. At the same time, six respondents (37%) preferred to have meaningful

subheadings, while three respondents (19%) did not, and five respondents (31%) were neutral.

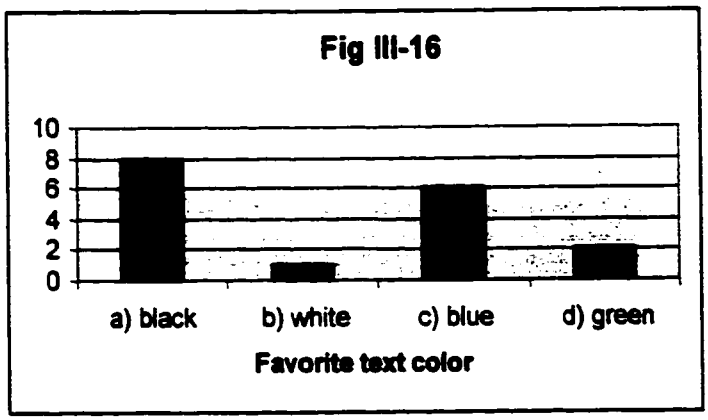
Seven respondents (44%) preferred to see bulleted lists, while four respondents (35%) did not, and five (31%) were neutral. Nine respondents (56%) read the beginning of the sentences, while seven respondents (44%) did not. This data is illustrated in Figure III-15, below.



Eighty-one percent of respondents preferred to see one idea per paragraph.

The breakdown for typeface preferred by Arab respondents is as follows: three respondents (19%) preferred Arial; another three (19%) preferred Times, while only two respondents (12%) liked roman. At the same time, seven respondents (44%) liked having one or two typefaces on a page; six respondents (37%) liked seeing three or four typefaces, and only two (12%) liked seeing five or six typefaces.

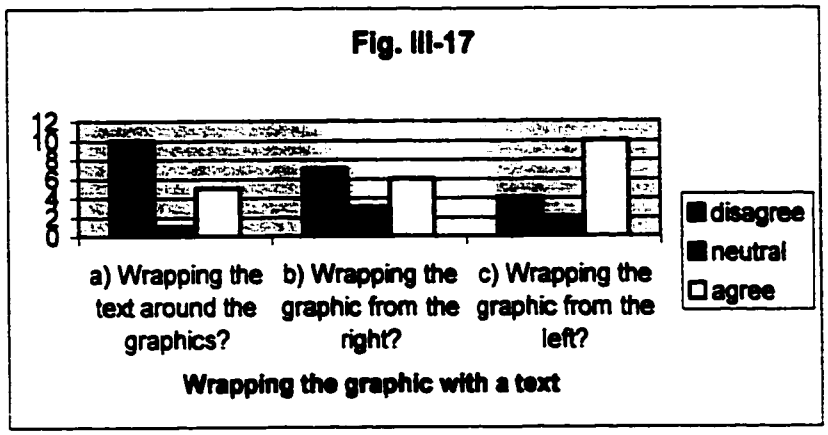
Respondents reported the following preferences for text color: 50% preferred black; 37% preferred blue; 12% approved green, but only 6% liked white to be the text color. (See Figure III-16 below).



Only two respondents (12%) preferred light text colors, while ten respondents (62%) did not like light colors, and eight participants (50%) disagreed strongly. Five respondents (31%) indicated a neutral attitude. On the other hand, fifteen respondents (94%) preferred the use dark text colors, ten respondents (62%) agreed strongly and five respondents (31%) agreed, whereas only one respondent (6%) disagreed strongly with using it. On the other hand, ten respondents (62%) preferred to see colored text, while four respondents (25%) agreed strongly. Only five respondents (31%) did not like to have colored text. Twelve respondents (75%) did not like to see many colors within a text, while nine respondents (56%) disagreed strongly. Only one respondent (6%) preferred to see many colors within the page.

Ten respondents (62%) disliked text wrapped around graphics and three respondents (19%) disliked this strongly. However, five respondents (31%) preferred to wrap the text

around the graphic. Six respondents (37%) preferred graphics wrapped from the right, while seven respondents (44%) did not, and three respondents (19%) were neutral. Ten respondents (62%) found it acceptable to wrap text from the left, while four respondents (25%) disagreed, and only two respondents (12%) were neutral, as shown below in Figure III-17.

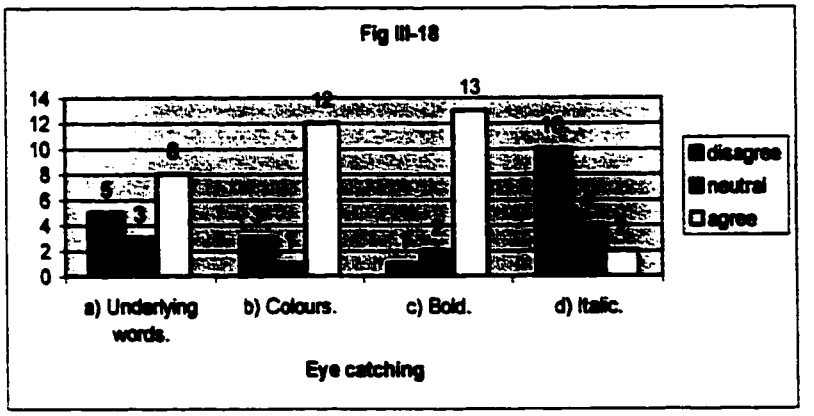


Thirteen respondents (81%) preferred to have white space around the graphics. Eleven of Arab respondents agreed, and only two respondents (12%) disagreed. Ten respondents (62%) approved the use of hidden text, while three respondents (19%) disagreed.

On the subject of the placement of hidden text, five participants (31%0 responded that they would like the text to replace the graphic, while seven respondents (44%) disagreed with this. Meanwhile, eight respondents (50%) wished to see a text box on the side of the page, while four respondents (25%) did not prefer this, and three (19%) were neutral.

As for the tools that direct the user to the hidden text, six respondents (37%) preferred to use special graphic element such as a magnify, while five respondents (31%) disagreed, and four (25%) were neutral. Only four respondents (25%) agreed with the use of the words, while nine respondents (56%) disagreed, and two (12%) were neutral.

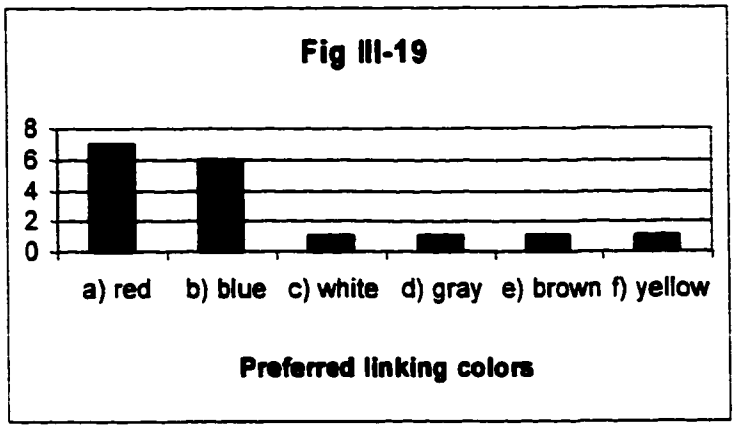
Eleven respondents (69%) agreed that hidden text could help the user to better understand the contents. Eight respondents (50%) found the underlining words were eye-catching and more comfortable, while three respondents (19%) who responded naturally are eliminated. Twelve respondents (75%) believed that color text caught their attention, while thirteen (81%) found bold words to be an effective method of attracting attention. Only two respondents (12%) approved use of italicized text for attracting attention. (See Figure III-18, below).



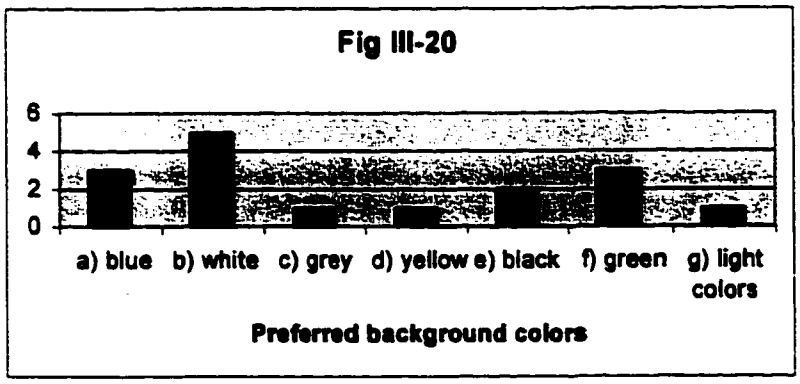
III.2.6. Color:

Red was the most popular color for presenting linking text, finding approval with 44% of the Arab respondents. Blue as a linking color was approved by 37% of the

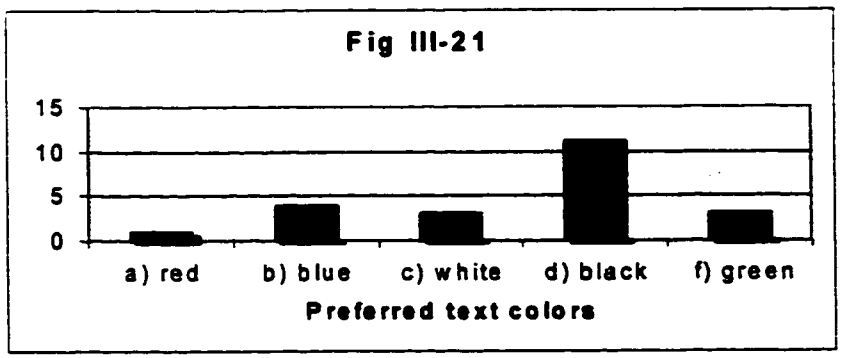
respondents, while only one respondent chose one of the remaining colors. (See the Figure III-19, below).



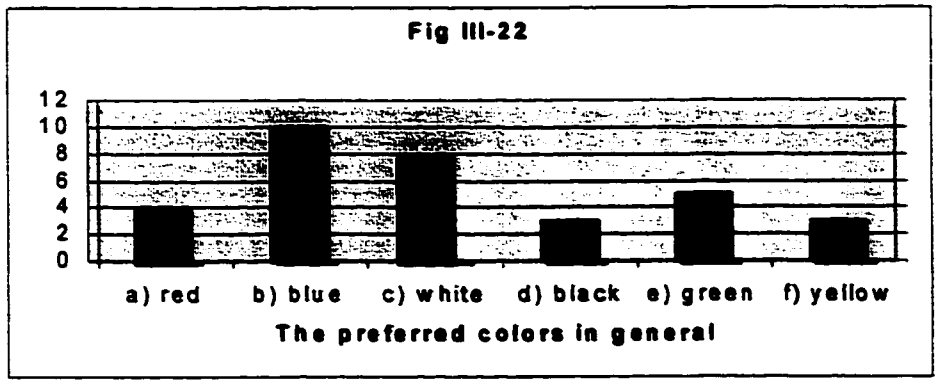
As for the background color, 31% of Arab respondents preferred the white, while both green and blue were preferred by 19% of the participants. (See Figure III -20, below).



Sixty-nine percent of Arab respondents preferred black as a text color, while 25% preferred blue, and 19% preferred both white and green. Only 6% preferred red, as shown in Figure III-21.



Eleven respondents (69%) did not like to see many colors within a single page, while four respondents (25%) indicated a neutral attitude. Seven of Arab respondents (44%) thought that colors helped users to understand the materials, while four respondents (25%) did not agree strongly with this idea, and four others (25%) were neutral. An equal number of respondents agreed and disagreed with the appropriateness of warm colors. Eleven respondents (69%) approved the use of cold colors, such as green and blue. Sixty-two percent of Arab respondents preferred to see the color blue on the screen, while 50% preferred white, and 31% liked green. Twenty-five percent of Arab respondents preferred red, 19% liked black, and 19% preferred yellow, as shown in Figure III-22, below.



III.2.7. Graphics:

The advantage of seeing many graphics on a page was not clearly determined since six respondents (37%) agreed with this, six respondents disagreed, and four respondents (25%) were neutral.

Twelve Arab respondents (75%) believed that graphics contribute to better understanding, and fourteen (87%) liked to see graphics that support the text. Nine respondents (56%) said they would like to see a warn that leads to a graphic, while four respondents (25%) had neutral attitude.

On the subject of the use of an alternative text for each graphic, the respondents were divided equally into those who agreed with it, those who disagree, and those who were neutral.

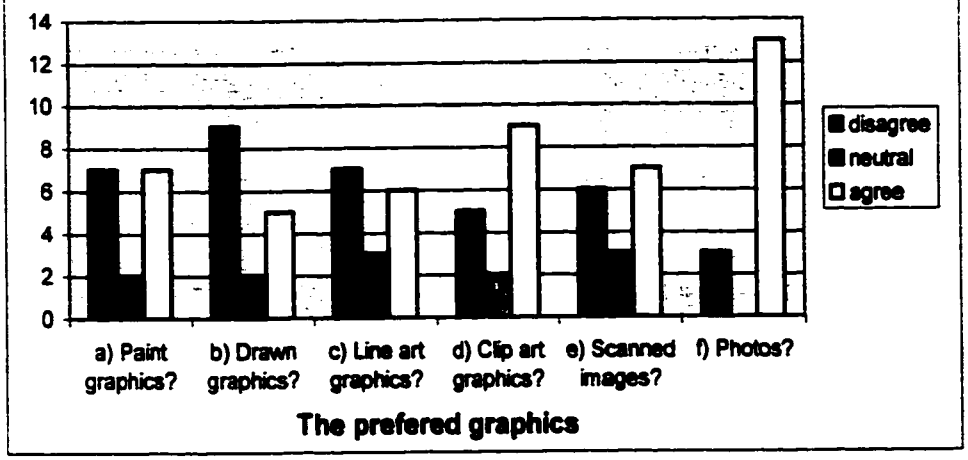
While ten respondents (62%) preferred to have graphical bullets, two respondents (12%) were neutral. At the same time, there was no clear preference regarding the use of a graphical bar, where six respondents (37%) preferred it, four respondents (25%) disliked it, and six respondents (37%) were neutral.

Meanwhile, nine respondents (56%) preferred fancy backgrounds, and four respondents (25%) who felt neutral about it. At the same time, eleven respondents (69%) believed that backgrounds play an important role in attracting attention. Seven respondents (44%) preferred to have animation within a site; four respondents (25%)

disliked it, and five respondents (31%) were neutral. Nevertheless, eight respondents (50%) believed that animation could help in better understanding. Seven respondents (44%) were neutral.

On the subject of the preference for paint graphics, seven respondents (44%) liked them, and seven respondents (44%) disliked them, which leaves us with no clear result. In a similar way, six respondents (37%) liked line art graphics, and seven respondents (44%) did not. Similarly, seven respondents (44%) liked scanned graphics, while six respondents (44%) did not. The results regarding drawn graphics were clearer: eleven respondents (69%) disliked them; only five respondents (31%) strongly liked them. In other words, the drawn graphics were not among the preferred graphics for the respondents. However, nine respondents (56%) did like clip art graphics and five respondents (31%) dislike them. Thirteen respondents (81%) liked the photos, while only three (19%) disliked them, as shown below, in Figure III-23.

Fig. III-23



The breakdown for the preferred location for graphics was as follows: one respondent (6%) liked to have the graphics bottom right; another one liked the graphics to be on the left; another preferred them in the middle, but eleven respondents (69%) liked the graphics to be on the top left.

III.2.8. Placement of Elements:

Seven respondents (44%) preferred to have elements centered on the page, while six respondents (37%) did not prefer to have them centered.

Nine respondents (56%) did not prefer elements to be right aligned; three respondents (19%) strongly preferred it, and four respondents (25%) were neutral.

Meanwhile, seven respondents (44%) preferred left alignment. Three participants were neutral, and six (37%) did not prefer it. In other words, very few Arab respondents preferred left alignment.

Seven respondents (44%) preferred to group similar information together. Five respondents were neutral about it, and only four (25%) did not agree with this technique. In other words, most respondents preferred to have similar information grouped together.

Eight respondents (50%) preferred the use of a lot of white space. Only one respondent was neutral, and seven respondents (44%) did not agree with it. Thus, half the respondents preferred the use of white space.

Ten respondents (62%) said they would like to see white space as an attention-drawing technique, while only three respondents (19 %) did not.

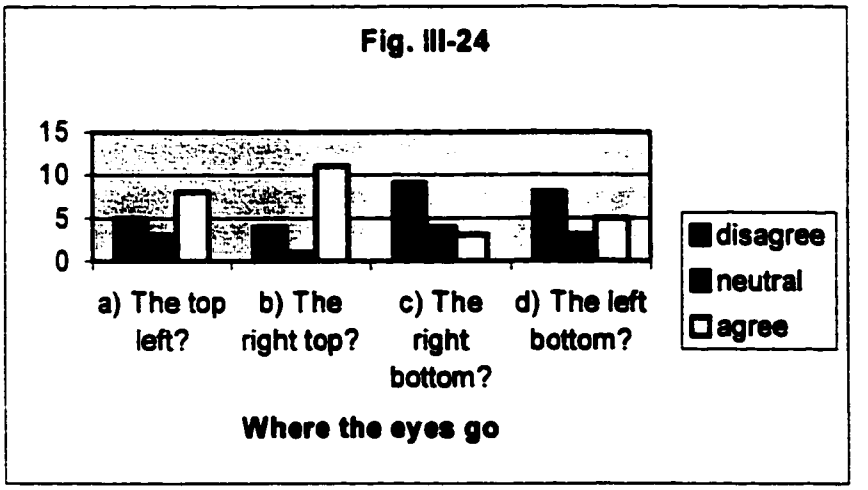
Twelve respondents (75%) did not think that crowded pages better conveyed information.

III.2.9. Balance:

Seven respondents (44%) preferred the use of the golden mean, while six respondents (37%) did not.

Nine respondents (56%) felt that the golden mean was more effective than the other places, while only four respondents had a neutral attitude.

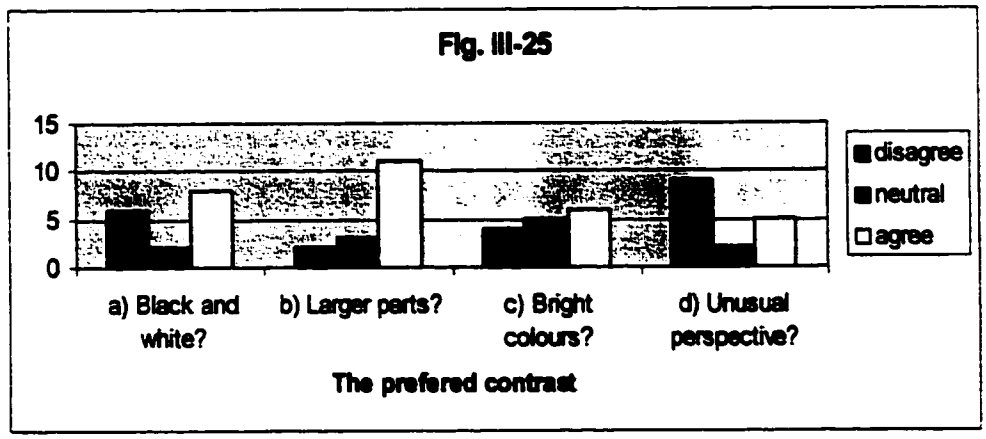
After being shown the diagram, eight respondents (50%) felt that the top left caught their eyes. Three respondents were neutral, and five respondents (31%) did not agree. On the other hand, eleven of Arab participants (69%) believed that the top right of the page attracted their eyes. Only three respondents (19%) believed that the bottom right attracted their eyes, compared to nine respondents (56%) who were not attracted by it. Similarly, only five respondents (31.25%) believed that their eyes were attracted to the bottom left, while eight respondents (50%) disagreed, as shown below, in Figure III-24.



Finally, only one respondent (6%) preferred a lot of eye movement within a page. Eleven respondents (69%) did not prefer that.

III.2.10. Contrast:

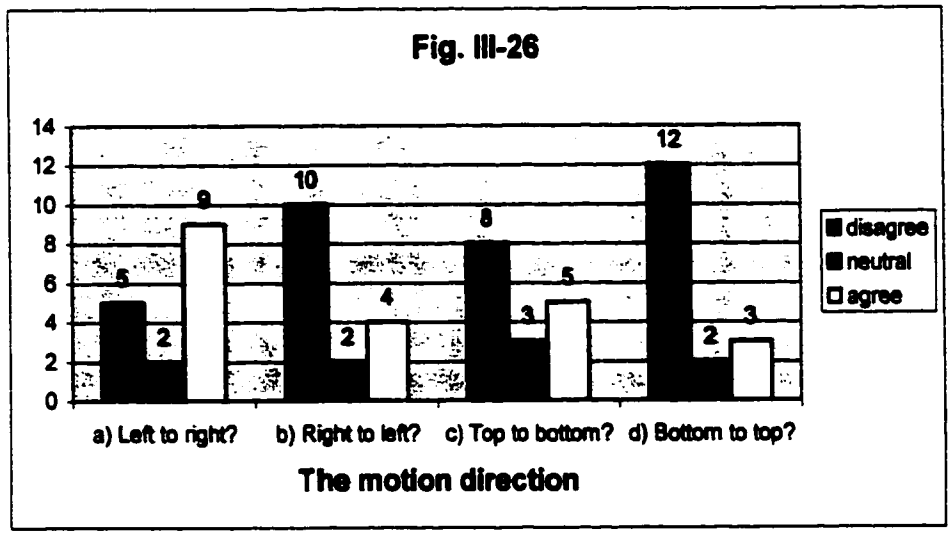
Eight respondents (50%) preferred the use of black and white to achieve contrast, while six respondents (37%) did not. Eleven respondents (69%) preferred the use of larger parts for contrast. Six respondents (37%) preferred bright colors to achieve contrast, but four respondents (25%) did not. Five respondents (31%) preferred the unusual perspective compared to nine respondents (56%) who did not, as shown below, in Figure III-25.



Seven respondents (44%) preferred a line to direct attention to important information, while five respondents (31%) did not. When such a line is present, twelve respondents (75%) preferred it to be from left to right, while only three (19%) preferred it to be from right to left. Nine respondents (56%) preferred the line to be drawn from top to bottom, and only three said they would like to see it from bottom to top.

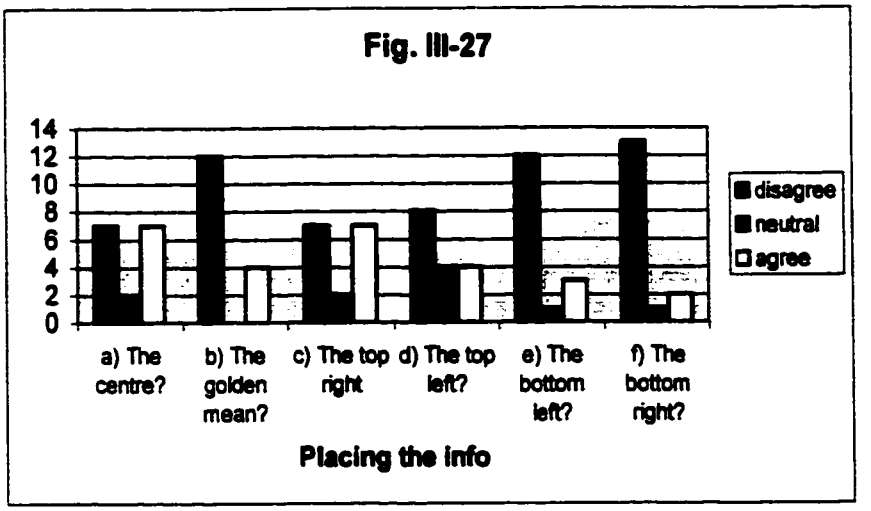
Six respondents (37%) preferred to see motion to indicate direction since only one participant (6%) did not prefer this, and seven respondents (44%) were neutral.

Nine respondents (56%) wanted the direction of the motion to be from left to right, while five (31%) did not prefer that. Only four respondents (25%) preferred a right-to-left motion, and ten respondents (62%) did not. Five respondents (31%) wanted a top-to-bottom motion, while eight (50%) did not. Only three respondents (19%) preferred the motion to be from bottom to top; twelve respondents (75%) did not, as is shown below in Figure III - 26.



Seven respondents (44%) preferred to find information in the centre, with white space serving to direct attention. Seven respondents (44%) also did not like the important information to be centered. Similarly, seven respondents agreed with a top-right placement for information, and seven respondents disagreed. However, only four (25%) preferred the information to be on the golden mean, while thirteen respondents (81%) did not. Only four respondents (25%) wanted the important information on the top left of a page; eight respondents (50%) disliked it there. Three respondents (19%) wanted the important information on the bottom left, while twelve (75%) disliked it there. Finally,

only two respondents (12%) wanted the important information on the bottom right, while thirteen respondents (81%) did not, as shown below, in Figure III-27.



III.2.11. Page Length:

Ten respondents (62%) preferred short pages, while six (37%) did not. Only three respondents (19%) preferred to scroll down, while eleven (69%) preferred not to.

Four respondents (25%) felt that having all the information one page contributed to a better understanding. Nine respondents (56%) disagreed.

III.3. North American Users:

III.3.1. General Information:

All North American respondents had access to a computer and had been on the Internet. Ninety-three percent used the Internet on a regular basis, and 86% used it daily for various reasons, including school. However, 79% used the Internet for educational purposes, 57% for entertainment, 14% for chats, 43% for assignments, and 36% for other purposes, such as following the stock market.

Ninety-three percent of North American participants felt comfortable using the Internet. Ninety-three percent of responses visited English-language sites. Thirty-six percent had their own Web pages. Eighty-six percent believed that the Internet gave them freedom, and 93% believed that the Internet helped them in their lives. Fourteen percent found it time consuming, 29%, a good window to the world, and 100% found it gave quick access to information. Only 21% attended classes online, and these reported that they had enjoyed the experience.

III.3.2. Navigation:

Seventy-nine percent of North American respondents preferred to have a document heading on each page. Ninety-three percent liked to have the header at the top of the page. Only 36% preferred to have a duplicate header at the bottom of the page, and to have NEXT and BACK buttons. Meanwhile, 71% preferred a palette of graphic navigation buttons. Seventy-one percent preferred to have an alternative text for the

graphic. Sixty-four percent preferred to have a table of contents on each page: 71% preferred the table on the left, and 36% preferred it on top. Ninety-three percent preferred to have a search service available.

Seventy-nine percent preferred to use icons as a navigation technique; 36% preferred buttons; only 7% preferred background techniques, and another 7% preferred maps.

III.3.3. Links:

One hundred percent of North American respondents liked the idea of having links within the text, but only 36% preferred to have a lot of links. However, 100% believed that links were helpful to getting more information. Ninety-three percent preferred the use of a single color for the linking text.

III.3.4. Organizing the Information:

Sixty-four percent of North American respondents preferred to have information listed alphabetically; 100% preferred the information to be grouped into categories; 43% preferred to sort the information from best to worse but only 29% liked the information sorted from largest to smallest.

Only 57% preferred to know the author of the pages, but 93% of North American respondents wanted to know, at all times, where they were, and the purpose of the site. Only 79% used the home page to obtain this information.

III.3.5. Writing:

Only three North American respondents (21%) read all the text on the screen. Fifty percent were neutral, and only four respondents (29%) did not read. Nevertheless, 64% scanned a lot, while only 7% had a neutral attitude, and 29% did not scan online. While scanning, 79% of the North American respondents found that the highlighted words and phrases caught their attention, and 7% had a neutral attitude. Seventy-one percent were attracted by meaningful sub-headings, while only 14% were neutral. Only 29% of respondents said that their eyes was caught by the bulleted lists, 21% were neutral, and 29% were not affected by them. However, 29% are affected by the beginnings of sentences. Only 14% had a neutral attitude, and 43% did not read the beginnings of sentences while scanning.

Seventy-nine percent preferred to have one idea per paragraph. Font preference was as follows: 7% preferred Arial, 14% preferred Times, and 14% preferred New Romans. However, 57% preferred one or two typefaces per page, while 21% preferred three to four typefaces per page.

Ninety-three percent of North American respondents preferred black for the text, and 21% preferred blue. Seventy-one percent of participants did not want to see light text colors, and only 21% were neutral. On the other hand, 93% preferred to see dark text colors, and only 7% were neutral. Only 36% preferred to have colored text, while 43% were neutral, and 21% did not like colored text.

Only 7% preferred to see many colors within a single text, 21% had a neutral attitude, and 71% did not agree with having many colors in a text.

Sixty-four percent of North American participants preferred text that wrapped around the graphics, and 36% were neutral. Twenty-nine percent of North American users preferred the text flow around the graphics on the right; 36% had a neutral attitude and 29% disagreed. Twenty-one percent of North American respondents liked the text to flow around the graphics on the left, while 50% were neutral, and 14% disagreed. Fifty-seven percent liked to have white space around graphics, 21% had a neutral attitude, and 21% did not like white space around graphics.

Only 21% of North American respondents liked hidden text, while 79% did not. Nevertheless, 29% preferred the hidden box to replace the graphic; 21% were neutral, and 36% disagreed. Twenty-one percent liked to see a text box on the side of the page; 29% were neutral, and 43% disagreed. Fifty-seven percent preferred to have a special graphic such as magnify to direct the user to hidden boxes; 21% had neutral attitude, and 21% disagreed. However, 29% preferred the use of text to direct them to hidden boxes, 43% were neutral, and 21% disagreed.

Only 36% of North American respondents believed that hidden boxes might help them to better understand, while 29% had a neutral attitude, and 29% disagreed.

Thirty-six percent of North American respondents believed that the underlining words would catch their attention; 43% were neutral, and only 14% disagreed. Nevertheless,

79% preferred color text, while only 7% were neutral, and 7% did not like color. Ninety-three percent approved bold words. Only 14% liked the use of italicized text.

III.3.6. Colors:

Thirty-six percent of North American respondents preferred red color for linking buttons, while 36% preferred blue.

Opinions on background color may be summarized as follows: 14% preferred blue, 36% preferred white, 7% preferred gray, 7% preferred black, 7% preferred green. Twenty-one percent preferred light colors. As for text color, 7% of North American respondents preferred blue color, and 86% preferred black.

Twenty-one percent of North American respondents preferred the use of many colors within a single page; 29% had a neutral attitude, and 50% did not like many colors on a page. Nevertheless, 71% believed that using color did aid in better understanding, 7% were neutral, and only 21% disagreed.

Fifty-seven percent said they would like to see three to four colors per page.

Forty-three percent of North Americans respondents preferred warm colors; 43% had neutral attitude, and 14% did not like warm colors. At the same time, 57% preferred cold colors, while 36% were neutral.

Generally, 14% preferred red, 64% preferred blue, 14% preferred white, 14% preferred black, 21% preferred gray; and only 7% preferred yellow.

III.3.7. Graphics:

Fifty percent of North American respondents preferred to see several graphics on one page; 36% had a neutral attitude, and 14% did not like many graphics on one page. Nevertheless, 64% believed that using graphics assists in better understanding, while 36% had a neutral attitude. Eighty-six percent of respondents liked graphic that support the text; 14% were neutral. Seventy-one percent of North American respondents preferred to see a warning if a link lead to a larger graphic; 14% had a neutral attitude, and 14% preferred not to have a warning. Fifty-seven percent of respondents preferred to have alternative text for each image; 36% were neutral, and only 7% preferred not to have it. Sixty-four percent of respondents preferred graphical bullets; 14% were neutral, while 7% disagreed. Only 14% liked graphical divider bars; 43% were neutral, and 43% disagreed. Twenty-one percent of respondents preferred fancy backgrounds; 14% were neutral, and 64% did not like them. Nevertheless, 71% believed that backgrounds played an important role in attracting attention, while 29% were neutral on the subject. Only 57% preferred to have animation; 29% had a neutral attitude, and 14% did not like it. Sixty-four percent of respondents believed that animation helped to convey the message, while 14% were neutral, and 31% disagreed.

Thirty-six percent of North Americans respondents preferred paint graphics, 50% were neutral, while 7% did not like them. Forty-three percent preferred the drawn

graphics, and 50% had a neutral attitude. Thirty-six percent liked the line art graphics, while 43% were neutral, and 14% did not like them. Fifty-seven percent preferred the clip art graphics, while 14% had a neutral attitude and 29% did not like them. Fifty-seven percent liked the scanned images; 29% were neutral, but 14% did not like them. Finally, 64% liked the photos, while 29% had a neutral attitude, and only 7% did not like them.

Twenty-one percent liked the graphics placed on the right, and 14% liked them on the left.

III.3.8. Placement of Elements:

Fifty percent of North Americans respondents preferred to have elements centered on the page, while 36% had a neutral attitude, and 21% disagreed. Twenty-one percent preferred a right alignment, while 21% were neutral, and 50% did not preferred it. Sixty-four percent of respondents preferred a left alignment, while 14% were neutral, and 14% disagreed. Fifty-seven percent preferred to gather similar elements together, and 43% were neutral. Fifty percent of responses preferred a generous use of white space, while 29% were neutral, and 21% disagreed. Fifty-seven percent of respondents liked white space as an attention-drawing technique, while 14% felt neutral about it, and 29% disagreed. Fourteen- percent felt that crowded pages could better convey information; 14% were neutral on the subject, and 71% disagreed.

III.3.9. Balance:

Twenty-one percent of North American respondents preferred the use of the golden mean; 7% were neutral about it, and 21% did not like it. Twenty-one percent felt it was more affective, while7% were neutral, and 21% disagreed.

When showing the diagram, eighty-six percent of North American respondents preferred information to be placed on the top left, while14% disagreed. Sixty-four percent preferred it on the top right, while 14% were neutral and 14% disagreed with this placement. Only 14% preferred information on the bottom right, while 21% were neutral, and 57% disagreed. Twenty-one percent preferred the bottom left for information, while 14% were neutral, and 57% disagreed.

Twenty-one percent of respondents preferred to move their eyes a lot over a page. Twenty-one percent were neutral, and 50% did not like a great deal of eye movement.

III.3.10. Contrast:

Regarding techniques to achieve contrast, fifty-seven percent of North Americans participants preferred the use of black and white, while 43% were neutral. Sixty-four percent preferred the use of larger parts, while 21% were neutral, and only 7% did not like them. Thirty-six percent said they preferred to see bright colors; 50% were neutral, and 7% did not like them. Twenty-one percent of respondents liked unusual perspective; 36% had a neutral attitude, and 36% did not like it.

Sixty-four percent of North American respondents preferred the use of a line to direct attention; 29% were neutral, and 7% did not like it. Ninety-three percent preferred the line to be drawn from left to right, but 64% did not. Only 43% liked the line drawn from top to bottom, while 21% did not. Only 7% preferred the line to extend from bottom to top.

Forty-three percent of North Americans respondents preferred the use of motion to indicate direction, while 43% were neutral, and 14% did not like it. Seventy-one percent preferred the motion to be from left to right, while 21% were neutral. Fourteen percent preferred the motion to be from right to left, with 29% having a neutral attitude. Forty-three percent preferred the motion from top to bottom, while 21% were neutral, and 36% did not. Fourteen percent liked motion from bottom to top; 29% had a neutral attitude and 50% disagreed with this.

Forty-three percent of North American respondents preferred information in the center when white space was used as a directive technique. Thirty-six percent felt neutral about this, and only 7% disagreed. Twenty-one percent preferred the golden mean, and 21% were neutral. Forty-three percent preferred the top right position for information, 14% had a neutral attitude, and 29% disagreed. Seventy-one percent of respondents said that the top left was preferred, and 21% disagreed with this. Twenty-nine percent preferred the bottom left; 36% were neutral, and 21% disagreed. Only 21% liked the bottom right as a place for information, while 7% had a natural attitude, and 57% disagreed.

III.3.11. Page Length:

Seventy-one percent of North American respondents preferred short pages, while 14% were neutral, and 14% did not like short pages. Seven percent of North American respondents preferred to scroll down a lot; 14% were neutral, and 79% preferred not to scroll down a lot. However, fifty-seven percent of respondents said they believed that having all the information on one page was better. Fourteen percent were neutral about this, and 29% disagreed.

III.4. Comparison: A: Arab Users and Designers:

III.4.1. Navigation

The designers and the Arabs agreed on the inclusion of document and chapter headings at the top of each page. Both also preferred to have a searching service.

The designers did not prefer to add a brief table of contents on each page. They preferred to use alternative text for graphic navigation buttons. They also preferred to use a title header on each page. They mostly used buttons as navigational aids.

On the other hand, the Arab users preferred to have a palette of graphic navigation buttons. They also liked the NEXT and BACK buttons, and alternative text for the graphics. They preferred a table of contents on each page. Table IV-1/1 illustrates the fore mentioned differences.

Navigation	Designers	Arab Users
Having document and chapter headings	yes	yes
Placing the header at the tops of pages	yes	yes
Duplicating the header at the bottoms of pages		
Using the BACK and NEXT buttons only		yes
Using a palette of graphic navigation buttons		yes
Using alternative text for graphic navigation buttons	yes	yes
Adding a brief table of contents to each page		yes

Adding the table of contents		
Providing a search service	yes	yes
Preferred navigation aid		
a. buttons	yes	
b. maps		
c. icons		yes

Table III-1/1 - Navigation

III.4.2. Links:

Both the designers and the Arab users liked to have many links within a text. They felt that linking contributed to better understanding. Both groups also preferred to have the same linking color throughout a document, as shown in Table III-1/2, below.

Links	**Designers**	**Arabs**
Prefer to have links in the text	yes	yes
Links are helpful	yes	yes
Prefer to stay with one colour for linking text	yes	yes

Table III-1/2 - Links

III.4.3. Organizing Information:

Both the designers and the Arab users preferred to include information about page authorship and site purpose in the home page. They all wish to be aware of their location, at all times. The Arab respondents preferred to group information into categories, and alphabetically. Table III-1/ 3 illustrates these findings.

Organising Information:	Designers	Arabs
Preferences for content organisation:		
a) Listed alphabetically		yes
b) Grouped into categories		yes
c) Sorted from best to worst		
d) Sorted from largest to smallest		
Including information about the author	yes	yes
Including information about user location	yes	yes
Including information about the purpose of the site	yes	yes
Using the home page to give the previous information	yes	yes

Table III-1/3 - Organizing Information

III.4.4. Writing:

Both the designers and the Arab users preferred dark text colors and colored text, and preferred not to see many colors within the text. Both liked white space around the graphics. They also agreed that one idea should be contained per paragraph.

However, the designers preferred to use bulleted lists as a way to organize information. Meaningful sub-headings was another choice for the designers. They also preferred to use color for emphasis. They preferred not to use hidden text boxes, but if they did use them, they would also use words to direct users to them.

Meanwhile, highlighted words and phrases caught the attention of the Arab respondents. They also read the beginnings of sentences. On the other hand, the Arab

users preferred that the text flow around the graphic from the left. They also liked hidden text, and believed it helped facilitate understanding. In general, bold text and colors caught their eye. Table III-1 /4 schematizes the previous comparison.

Writing	Designers	Arabs
To make it easier to read while scanning do you prefer:		
a) Highlighted words		yes
b) Meaningful sub-headings	yes	
c) Bulleted lists	yes	
d) Inverted pyramid writing style		yes
Have one idea per paragraph	yes	yes
The favourite text colour:		
Black	yes	yes
Have light text colours		
Have dark text colours	yes	yes
Have a coloured text	yes	yes
Have a lot of colours within a text		
Prefer to wrap the graphic with the text:		
a) Wrapping the text around the graphics		
b) Wrapping the graphic from the right		
c) Wrapping the graphic from the left		yes
Prefer to have white space around the graphic		yes
Prefer to have hidden text		yes
The hidden box should be:		
a) To replace a graphic		
b) To show a text box on the side of the page		
c) Other		

To direct for the hidden text:		
a) Using a special graphic such as a magnify		yes
b) Using words		
c) Other		
Hidden text helps to provide more information		yes
For emphasis:		
a) Underlining words, or phrases		
b) Colour	yes	yes
c) Bold		yes
d) Italic		

Table III-1/4 - Writing

III.4.5. Colors:

Both the designers and the Arab users preferred black for text. They all said they believed that using colors contributed to a better understanding.

However, the designers preferred to use warm colors. They also believed that the target audience reacts emotionally to colors, especially green. They did not prefer to use many colors within a page.

Meanwhile, Arab respondents preferred cold colors in general such as green and blue. Blue seemed to be the color with which they felt most comfortable. Table III-1/5 summarizes the above.

Colour	Designers	Arabs
Which is the preferred colour you use for linking words?		
a. red		
b. blue		
c. white		
Which is the preferred colour you use for background?		
a. blue		
b. green		
c. white		
d. yellow		
Which are the preferred colours you use for the text?		
a. black	yes	yes
b. dark blue		
c. dark colours		
Having a lot of colours within a page		
Having colours will help in better understanding	yes	
Prefer to have warm colours	yes	
Prefer to have cold colours		yes
In general which are the preferred colours		
a. blue		yes
b. green	yes	
c. white		yes
d. yellow		

Table III-1/5 - Colors

III.4.6. Graphics:

Both the designers and the Arab users believed that using graphics contributed to a better understanding, especially if the graphics were used to support the text. They believed that backgrounds play an important role in attracting the attention of the users.

However, the designers preferred to use animation, graphical bullets, and graphical divider bars.

The Arab users also preferred to have graphical bullets. They also said they would like a warning when a link leads to a large graphic. They preferred to have photos, and clip art, and preferred to place graphics on the top left of the page. Table III-1/6 illustrates the above.

Graphics	Designers	Arabs
Have a lot of graphics	yes	
Having graphics will help in better understanding	yes	yes
Prefer graphics that support the text	yes	yes
Prefer to see a warning that links lead to large graphics		yes
Prefer to have an alternate text for each image		
Prefer to have graphical bullets	yes	yes
Prefer to have graphical divider bars	yes	
Prefer to have fancy background		yes
Backgrounds play a role in attracting attention	yes	yes
Prefer to have animation	yes	
Animation helps to better convey information		
What do you prefer to have?		

a) Paint graphics		
b) Drawn graphics		
c) Line art graphics		
d) Clip art graphics		yes
e) Scanned images		
f) Photos		yes

Table III-1/6 - Graphics

III.4.7. Placement of Elements:

Both the designers and the Arab users did not think that a crowded page conveyed a better messages.

The designers preferred to gather the similar elements together. They did not prefer to use left alignment.

The Arab respondents liked white space as an attention-drawing technique. Table III-1/7 summarizes the above.

Placement of Elements	Designers	Arabs
Prefer to have elements centred on the page		
Prefer right alignment		
Prefer left alignment		
Prefer to gather similar elements together	yes	
Prefer to use a lot of white space		
White space is a technique to draw attention		yes
Crowded pages convey better information		

Table III-1/7 - Placement of Elements

III.4.8. Balance:

Both the designers and the Arab users believed that the golden mean is more effective. Neither group preferred considerable eye movement within a page.

Arab users felt that their eye was attracted to the top right of the page. Table III-1/8 summarizes the above.

Balance	Designers	Arabs
Prefer to have golden mean		yes
Golden mean is more effective	yes	
Location of the most important information should be:		
a) The top left		
b) The top right		yes
c) The bottom right		
d) The bottom left		
Prefer to move the eyes a lot over a pages		

Table III-1/8 - Balance

III.4.9. Contrast:

The designers liked to use a line to direct the users' attention. Arab users preferred the line to be drawn from left to right and from top to bottom.

Arab respondents preferred larger parts in order to achieve contrast, and they preferred motion from left to right. Table III-1/9 summarizes the above.

Contrast	Designers	Arabs
Prefer to have:		
a) Black and white		
b) Larger parts		yes
c) Bright colours		
d) Unusual perspective		
Prefer to have a line to direct the attention	yes	
Preferred direction for the line:		
a) Left to right		
b) Right to left		
c) Top to bottom		
d) Bottom to top		
Prefer motion		yes
The motion should be		yes
a) Left to right		
b) Right to left		
c) Top to bottom		
d) Bottom to top		
6. When using white space as a way to direct the attention of the user, do you put the important information at:		
a) The centre		
b) The golden mean		
c) The top right		
d) The top left		
e) The bottom left		
f) The bottom right		

Table III-1/9 - Contrast

III.4.10. Page Length:

The designers preferred to make short pages where users do not have to scroll down much. This suits the Arab users, who also did not feel that having all the information on one page is necessarily more helpful. Table III-1 /10 summarizes the above:

Page Length	Designers	Arabs
Having short pages	yes	yes
Scroll down the page a lot		
Having all the information on one page	yes	

Table III-1/10 - Page Length

III.5. Comparison: B: Between the Arab and North American Users:

III.5.1. General Information

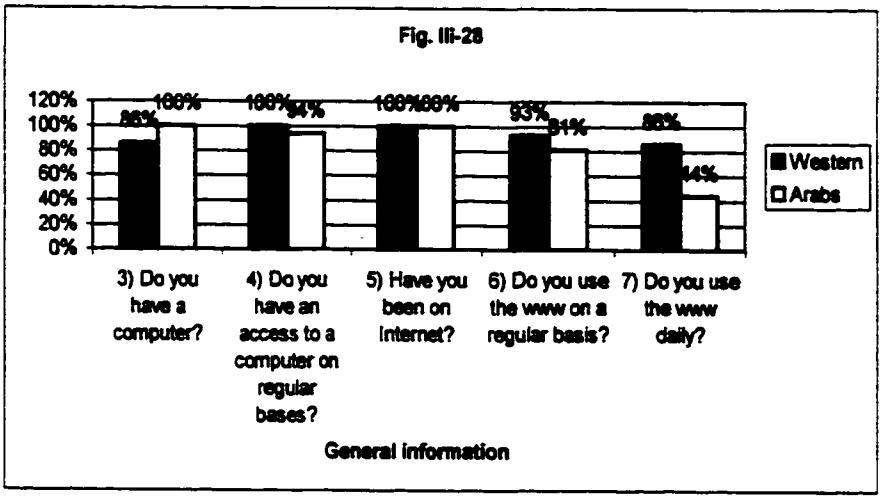
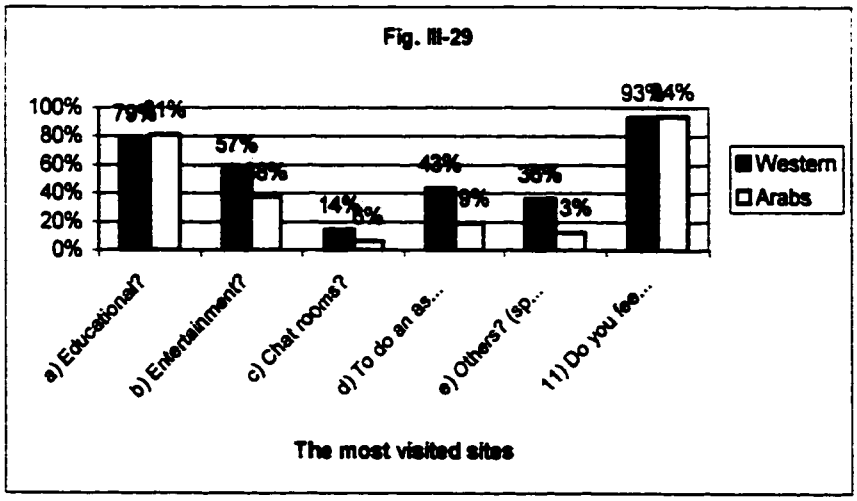
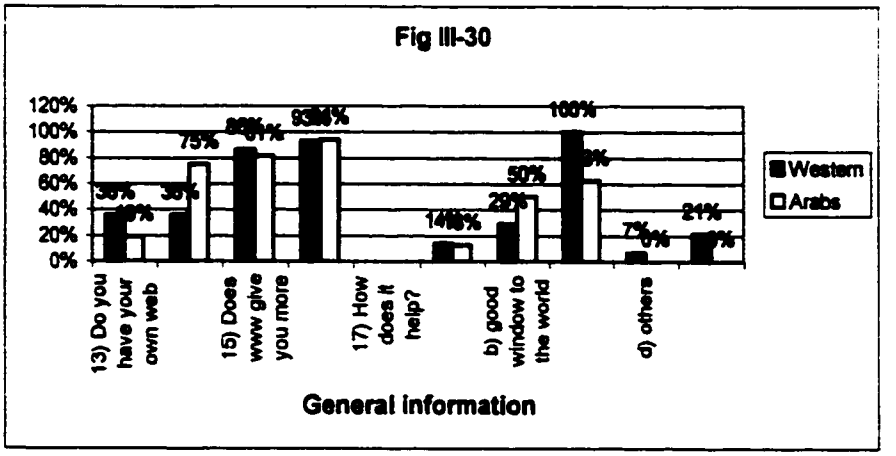


Figure III-28 above shows that 100 % of the Arab participants had computers, compared to 86% of the North Americans. This may reflect the fact that the survey took place in the United Arab Emirates, which is known as one of the richest Arab countries, and which, in addition, is known to be open and eager to keep up with technological advances. One hundred percent of both the North American and Arab respondents had been on the Internet, but 93% of North Americans used the WWW on a regular basis, compared to 81% of Arabs. Eighty-six percent of North American respondents used the WWW daily, compared to 44% of Arabs. Eighty-six percent of North American participants used the WWW for school purposes, compared to 69% of Arab participants.



As Figure III-29 shows, 80% of North American and Arab respondents visited educational sites, but 57% of North American respondents visited entertainment sites, compared to 38% of Arab respondents. Fourteen percent of North American respondents, compared to 6% of Arab respondents visited chat rooms. Forty-three percent of North American respondents visited the Internet to do assignments, compared to 19% of Arab respondents. Thirty-six percent of North American respondents used the Internet for other purposes, compared to 13% of Arab respondents. This shows how educational systems in the North American world depend more heavily on the Internet. Meanwhile, Arab educators do not rely on the Internet for assignments, even though the Arab respondents of this study were students in the United Arab Emirates University, where the decision-makers were pushing for greater use of technology in the education process. Despite this, 94% of North American and Arab respondents felt comfortable using the Internet.



From Figure III-30 one can understand that 36% of North American respondents had personal Web sites, compared to 10% of Arab respondents. This is why 75% of Arab respondents wanted their own sites. This may mean that the Arabs still did not have the skills to build sites, and to deal with the Internet on a production level.

Eight-six percent of both groups believed that the WWW gave them more freedom and 94% of both groups felt it helped them in their lives. Fourteen percent of both groups believed the WWW was time consuming, but 50% of Arab respondents felt the WWW was a good window to the world, compared to 29% of North American respondents. However, all North American respondents believed that the WWW offered quick access to information, while only 63% of Arab respondents believed so. Only 21% of North American respondents had attended classes online, and liked them.

Summary:

The number of Arab respondents who owned computers exceeded the number of North Americans by 14%.

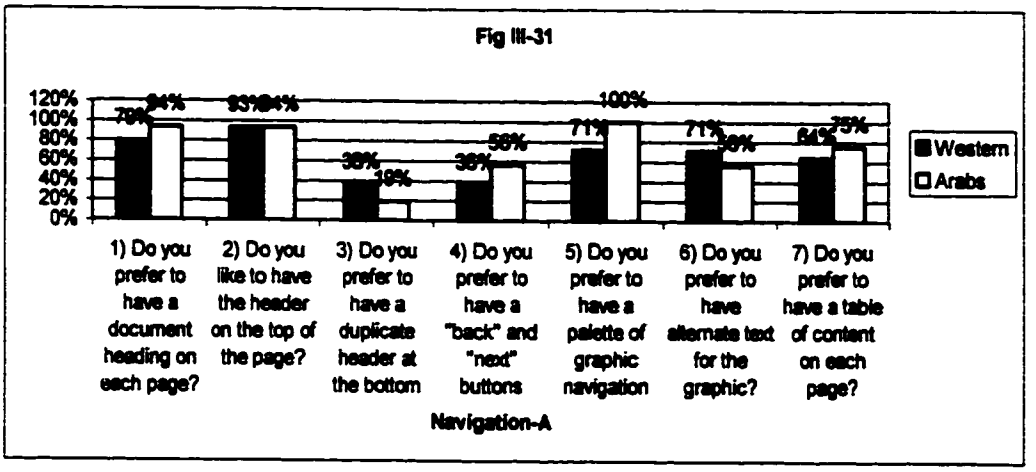
The number of North American respondents who used the WWW on a daily basis exceeded the number of Arabs by 42%, and the number of North American respondents who used the WWW for school exceeded the number of Arabs by 17%.

However, 80% of both North American and Arab respondents visited educational Web sites. The number of North Americans who visited entertainment sites exceeded that of Arabs by 19%. Also the number of North Americans who visited the WWW for other purposes exceeded that of Arabs by 24%.

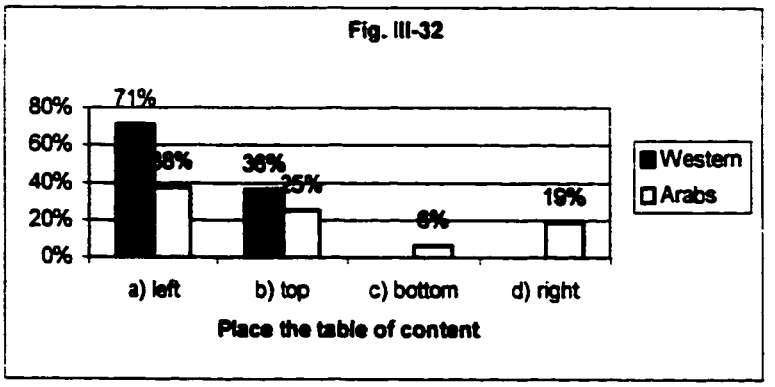
More North Americans had personal Web sites than Arabs, by 24%, therefore the number of Arabs who wanted their own site exceeded that of North Americans by 39%.

The numbers of Arab respondents, who believed that the WWW is a good window to the world exceeded that of North American respondents by 21%. Meanwhile, North American respondents who believed that the web offered quick access to information exceeded that of Arabs by 37%. It is interesting to note that the survey revealed that the Arab respondents had never attended any online classes.

III.5.2. Navigation:



As is shown in the Figure III-31 above, 94% of Arab respondents compared to 79% of North American respondents preferred to have a document heading on each page. Ninety-four percent of both groups liked to have the header on the top of the page. Meanwhile, 36% of North American respondents, compared to 19% of Arabs, preferred to have a duplicate header at the bottom of the page. Nevertheless, 56% of Arab respondents preferred to have BACK and NEXT buttons, compared to 36% of North Americans. All Arab respondents preferred to have a palette of graphic navigation buttons, compared to 71% of the North American respondents, who preferred the graphic navigation buttons. Perhaps this result, showing that Arabs prefer to see a graphic button, may reflect an ease in recognition that reading does not offer Arabs, who are using a second language while navigating the Internet. At the same time, 75% of Arab respondents preferred to have a table of contents on each page, compared to 64% of the North American respondents. Nevertheless, 71% of North American respondents preferred to have alternate text for the graphics, compared to 56% of Arab respondents.



As Figure III-32 above shows, 71% of the North American respondents voted for the left side as the option to place table of contents, compared to only 38% of Arab respondents, who preferred it on the left side. Thirty-six percent of North American respondents chose the top, compared to 25% of Arabs. Only 19% of Arab respondents voted for the right side of the page and only 6% of the Arabs chose the bottom. This result may reflect the fact that Arabs read from right to left, while more North American respondents preferred the left side since they read in English. It is worth mentioning here that the Arab respondents visited English sites frequently, thus must be influenced by the organization of these sites. For example, the table of contents is mainly found on the left. Nevertheless, 94% of both North American and the Arab respondents preferred to have a search service available.

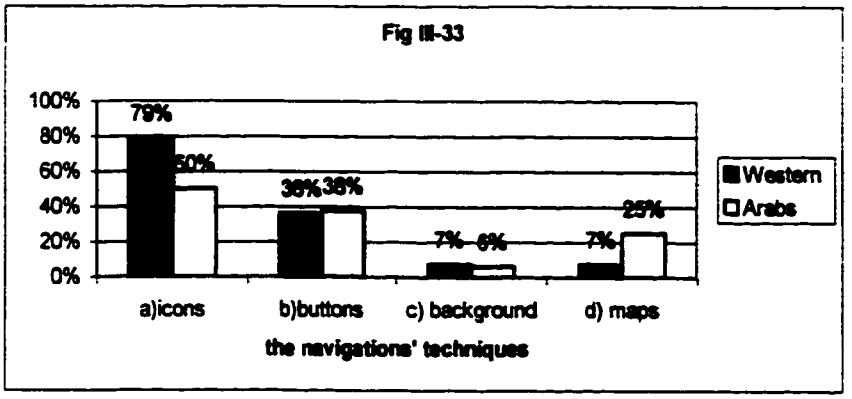


Figure III-33 above shows that 79% of North American respondents preferred icons as a navigation technique, compared to 50% of Arab respondents. A similar proportion of both groups preferred buttons: 36% of North Americans and 38% of Arabs. Twenty-five percent of the Arab respondents voted for the map as a navigation technique, while only 7% of North American respondents chose it, and 7% of both groups preferred the use of different backgrounds. It is noteworthy that the result regarding the map was unexpected. It seems that Arabs preferred to see maps in order to help them navigate the Internet.

Summary:

The Arab respondents who preferred to have a document heading on each page exceeded that of the North American respondents by 15%. The number of Arab respondents who preferred to have BACK and NEXT buttons exceeded that of the North Americans by 20%. Meanwhile, more Arab than North American respondents preferred to have a palette of graphic navigation buttons by 29%. In addition, 11% more of the Arab respondents than the North American respondents preferred to have a table of contents on each page.

Ninety-four percent of both groups liked to have the header on top of the page.

Meanwhile, the North American respondents who preferred to have a duplicate header at the bottom of the page exceeded the number of the Arab respondents by 17%. North American respondents who preferred to have alternative text for graphics exceeded Arab respondents by 15%.

Location of the table of contents:

The left side: Thirty-three percent more North Americans than Arabs voted to place the table of contents on the left side of the page.

The top: Eleven percent more North Americans preferred the top of the page for the table of contents.

The right: Only nineteen percent of Arabs chose the right side.

The bottom: Only 6% of Arabs chose the bottom.

Ninety-four percent of both North Americans and the Arabs preferred to have a search service.

Navigation Techniques:

Icons: The North Americans who preferred icons exceeded that of Arabs by 29%.

Maps: Eighteen percent more Arabs than North Americans chose maps, though only 25% of Arabs selected maps.

Buttons: Thirty-seven percent of both groups preferred buttons.

III.5.3. Links

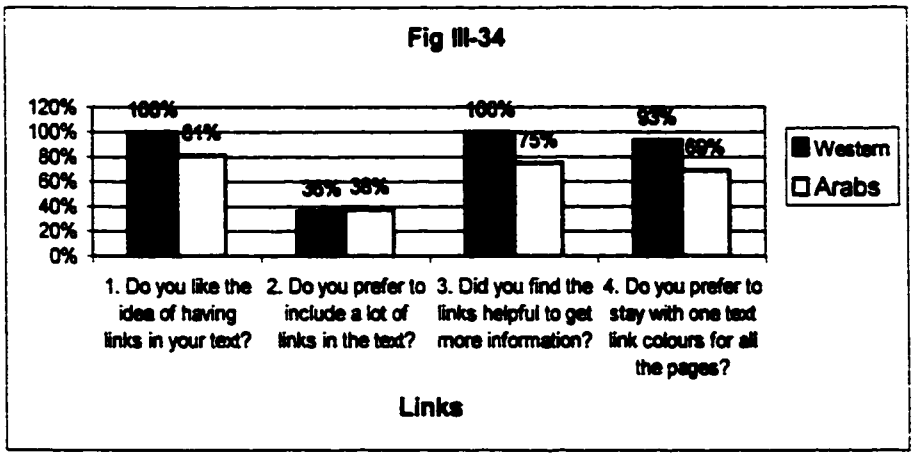


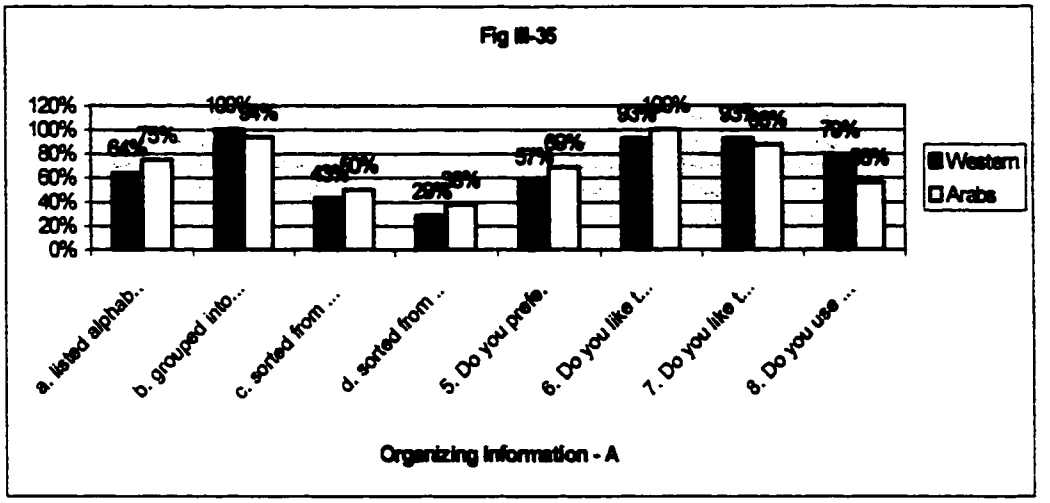
Figure III-34 above shows that all the North American respondents liked the idea of having links in the text, compared to 81% of Arabs, who preferred text-links. In addition, all North American respondents found links more helpful to get more information, compared to 75% of Arab respondents. Nevertheless, 93% of North American respondents preferred to have one linking text color for all pages, compared to 59% of Arab respondents. Thirty-seven percent of both groups preferred the use of many links in the text.

Summary:

The percentage of North American respondents who liked having links in the text exceeded that of the Arab respondents by 9%, even though 81% of Arab respondents liked it. In addition, the number of North American respondents who found links more helpful to obtaining more information exceeded that of the Arab respondents by 25%, even though 75% of the Arabs found links helpful. Also, 24% more North American

respondents preferred to have only one color for all the linking text. Featherless to say that 37% of both groups preferred to include many links in a text.

III.5.4. Organizing Information:



As Figure III-35 shows, 75% of Arab respondents preferred to have the information listed alphabetically, compared to 64% of North Americans. All the North American respondents preferred to group information into categories, compared to 94% of Arab respondents. Fifty percent of Arab respondents preferred to sort the information from best to worst, compared to 43% of North American respondents, and 38% of Arab respondents preferred to sort the information from largest to smallest, compared to 29% of North Americans.

Sixty-nine percent of Arab respondents preferred to know the author of the pages, compared to 57% of North American respondents. The numbers of those wanting to know their location at all times, was as follows: 100% of Arab respondents, compared to

93% of North Americans. On the other hand, 93% of the North American respondents preferred to know the purpose of the site, compared to 88% of Arab respondents. Seventy-nine percent of North American respondents used the home page as a source of information, compared to 50% of Arabs.

Summary:

For wanting information listed alphabetically, the Arab respondents exceeded the North American respondents by 11%.

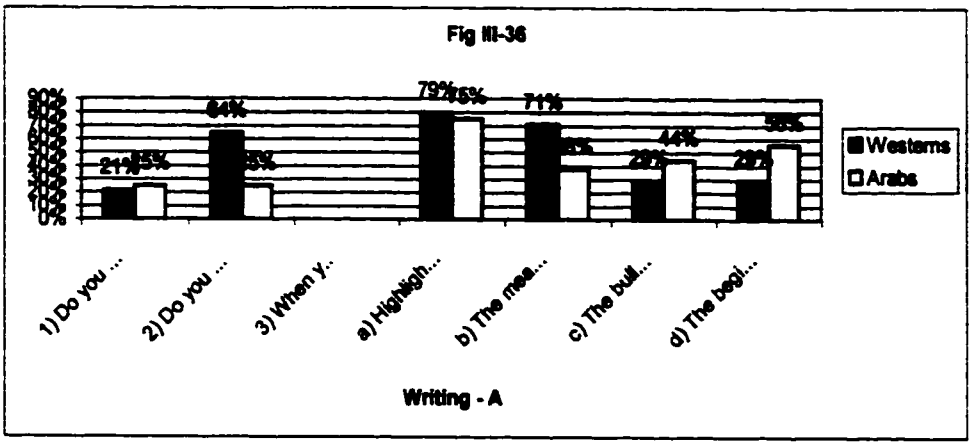
For wanting the information sorted from best to worst, the Arab respondents exceeded the North Americans by 7%.

For wanting the information from largest to smallest, the Arab respondents exceeded North Americans by 9%.

Twelve percent more Arab respondents preferred to know the author of the pages, and the number of Arab respondents who wanted to know their location at all times exceeded that of the North Americans by 7%.

Twenty-five percent more North American respondents preferred to know the purpose of a site regarding the use of home page as a source of information, 23% more North Americans than Arabs reported using it.

III.5.5. Writing:



As Figure III-36 above shows, one can conclude that 25% of Arab respondents read on-screen, compared to 21% of North American respondents, but 64% of North American respondents scanned the screen, compared to 25% of Arab respondents. This result may reflect the fact that Arabs were reading online with a second language, English, which made it more difficult to scan than to read.

Highlighted words and phrases caught the attention of 79% of North American respondents, compared to 75% of Arab respondents. Meaningful sub-headings caught the attention of 71% of North American respondents' attention, compared to 38% of the Arabs. However, 44% of Arab respondents preferred bulleted lists, compared to 29% of North Americans, and 56% of Arabs read the beginnings of the sentences, compared to 29% of North Americans.

Eighty percents of both groups preferred to have one idea per paragraph.

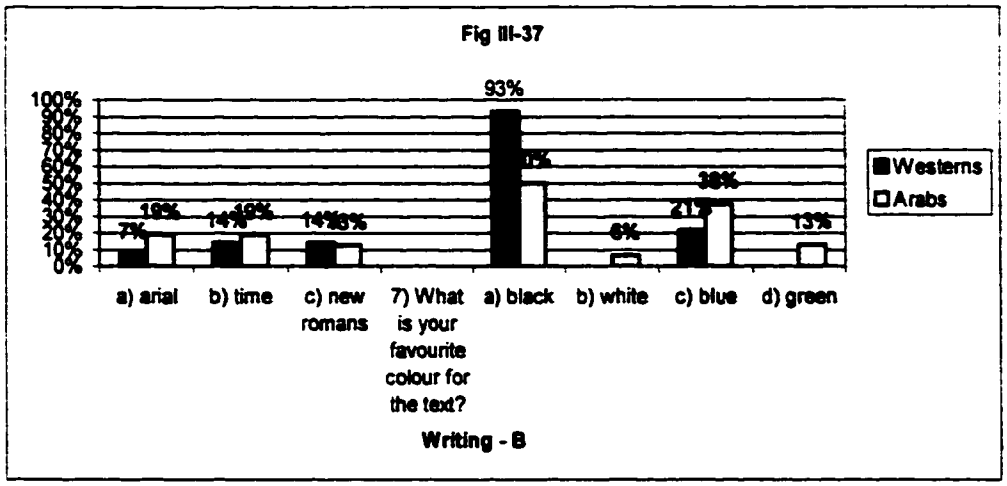


Figure III-37 shows that 19% of Arab respondents preferred the Arial typeface, compared to 7% of North American respondents. Nineteen percent of Arab respondents preferred Times, compared to 14% of North American respondents, taking into consideration that most North Americans did not answer this question and left it blank. In other words, we may not count this question for the North Americans but we can consider it for the Arabs, even though the percentage is low. However, 93% of North American respondents preferred black for the text, compared to 50% of the Arabs. Only 6% of Arab respondents preferred white. Thirty-eight percent of Arab respondents preferred blue, compared to 21% of North American respondents. Only 13% of Arab respondents preferred the color green.

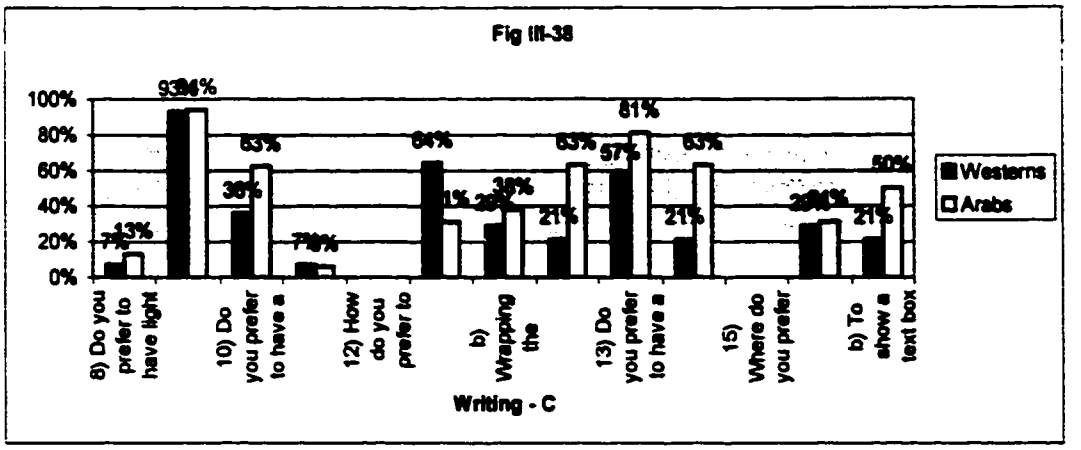


Figure III-38 illustrates how 13% of Arab respondents preferred having light text colors, compared to 7% of North American respondents. However, 94% of both groups liked dark text colors. On the other hand, 63% of Arab respondents liked colored text, compared to 36% of North Americans, and only 7% of both groups liked to have a lot of colors within a single text.

Sixty-four percent of North American respondents preferred text wrapped around graphics, compared to 31% of Arab respondents. Thirty-eight percent of Arab respondents preferred for the text to flow around the graphics from the right, compared to 29% of North American respondents. Sixty-three percent of Arab respondents liked the text to flow around the graphics from the left, compared to 21% of North Americans.

It seems that 81% of Arab respondents preferred white space around the graphics, compared to 57% of North American respondents. As well, 63% of Arab respondents preferred to have hidden text, compared to 21% of North Americans. Preference for the location of the hidden text was as follows: 50% of Arab respondents preferred a text box

on the side of the page, compared to 21% of North Americans; In addition, 31% of both groups preferred it to replace the graphic.

Fifty-seven percent of the North American respondents preferred the use of a special graphical tool such as magnify, compared to 38% of Arab respondents. Moreover, 29% of North American respondents preferred using words, compared to 25% of Arabs. Nevertheless, 69% of Arab respondents felt that hidden text was helpful to comprehension, compared to 36% of North Americans, as shown below, in Figure III-39.

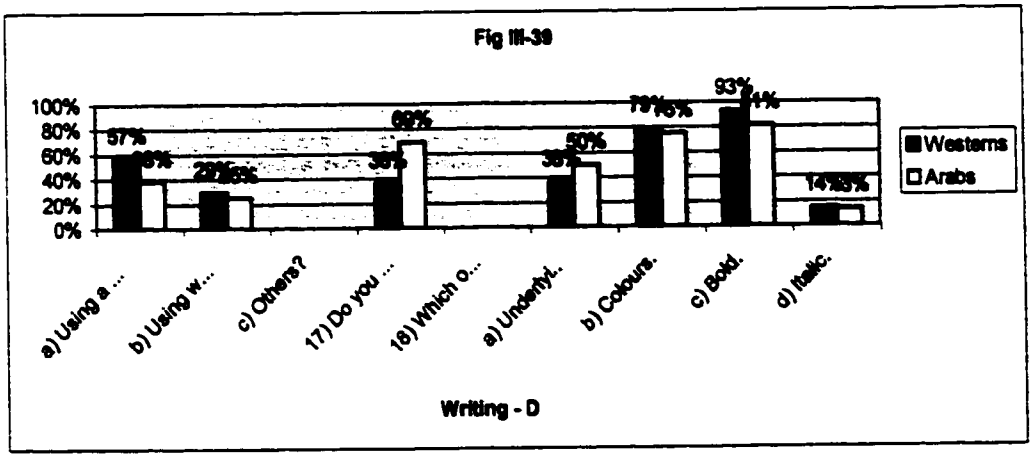


Figure III-39 shows that 50% of Arab respondents thought that underlining words caught their attention, compared to 36% of North American respondents. Meanwhile, 79% of North Americans preferred colors as an eye-catching, compared to 75% of Arabs, and 93% of North American respondents felt that bold words attracted their attention, compared to 81% of Arab respondents. Fourteen percent of both groups identified italics as an effective option for establishing emphases.

Summary:

The number of Arabs who read online exceeded that of the North Americans by 4%. It follows that more North Americans exceeded that of Arabs scanned online by a margin of 39%.

What caught the attention online:

Highlighted words and phrases caught the attention of both groups; the proportion of North Americans exceeded that of the Arabs by only 4%.

Meaningful sub-headings: the number of North Americans who were attracted by sub-heading exceeded that of Arabs by 33%.

The bulleted lists: Arabs preference exceeded the North Americans by 15%.

The beginning of the sentences: the Arabs exceed the North American by 27%.

Underlining words: Arab respondents preference exceeded the North American by 14%.

Bold: The number of North Americans who preferred bold words exceeded that of the Arabs by 12%.

Italic: Only 14% of both groups preferred the italic.

Density of control: 80% of both groups preferred to have one idea per paragraph.

The Arabs preference for the Arial typeface exceeded that of the North Americans by 12%. Five percent more Arabs than North Americans preferred Times.

Text color:

Black: The number of North Americans who preferred black for the text exceeded that of the Arabs by 43%, even though 50% of Arabs preferred black.

White: Only 6% of Arabs preferred white.

Blue: The Arabs preference for blue exceeded that of the North Americans by 17%.

Green: Only 13% of Arabs preferred green.

Light colors: Only 13% of Arabs preferred having light text colors. The exceeded than of North American by 6%.

Dark colors: Ninety-four percent of both groups liked dark text colors.

The number of Arabs who liked colored text exceeded that of North Americans by 27%. However, only 7% of both groups liked a variety of colors within the text.

Wrapping the text with a graphic:

Wrap the text around the graphic: Thirty-three percent more North Americans preferred to wrap the text around the graphics.

The text flows around the graphic from the right: Arabs' preference for their option exceeded the North Americans by 9%.

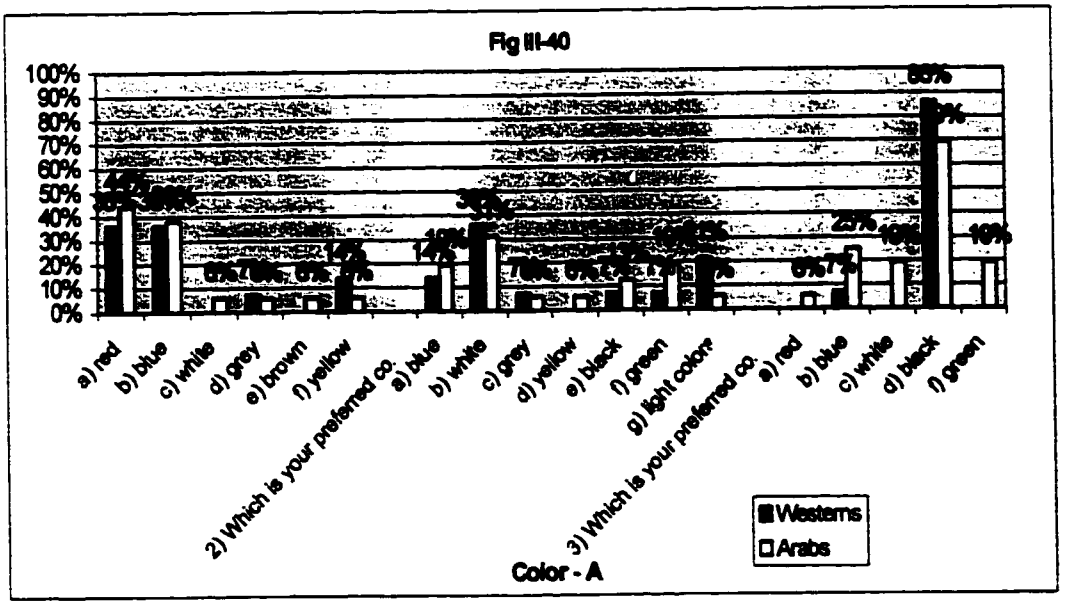
The text flows around the graphic from the left: Arabs' preference exceeded the North Americans by 42%.

It seems that the number of Arabs who preferred to have white space around the graphics exceeded that of the North Americans by 24%. Moreover, the number of Arabs who preferred to have a hidden text exceeded that of the North Americans by 42%. As

for the location of the hidden text, 29% more Arabs than North Americans preferred a text box on the side of the page. Thirty-one percent of Arabs and North Americans preferred it to replace the graphic.

On the other hand, the percentage North Americans who preferred the use of a special graphic such as magnify exceeded that of the Arabs by 19%. The number of Arabs who felt that hidden text contributes to better understanding exceeded proportions of North Americans by 33%.

III.5.6. Color:



The above Figure III-40 shows that 44% of Arab respondents preferred red as a linking color, compared to 36% of the North American respondents. Thirty-seven percent of both groups preferred blue as a linking color. Only 6% of Arabs like white. Seven percent of the both groups liked gray, but only 6% of Arabs preferred brown. On the

other hand, 14% of the North American respondents preferred yellow, compared to 6% of Arab respondents.

Nineteen percent of Arabs preferred blue as a background color, compared to 14% of North Americans. Thirty-six percent of North Americans preferred white, compared to 31% of Arabs. Seven percent of both groups preferred a gray background. Only 6% of Arab respondents preferred a yellow background. Thirteen percent of Arab respondents liked black, compared to 7% of North American respondents; 19% of Arab respondents preferred green, compared to 7% of North Americans. However, 21% of North Americans preferred light colors, compared to 6% of Arabs.

Text color preference may be summarized as follows: only 6% of Arab respondents liked red, 25% of Arab respondents liked blue, compared to 7% of North American respondents; 19% of Arab respondents liked white, and 86% of the North Americans preferred black, compared to 69% of Arabs; only 19% of Arab respondents preferred green.

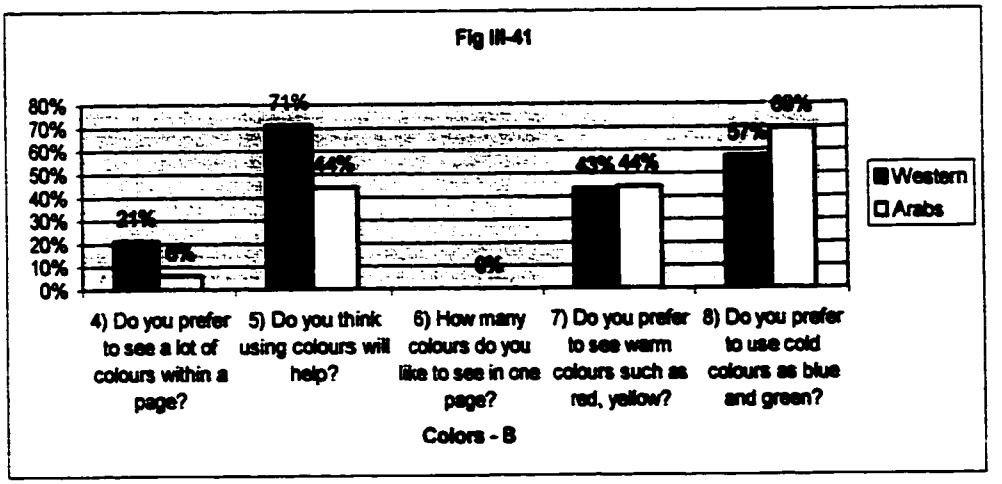


Figure III-41 shows that 21% of North American respondents preferred to see a lot of colors within a text, compared to 6% of Arab respondent. Seventy-one percent of North American respondents believed that colors helped comprehension, compared to 44% of Arabs. Forty-three percent of both groups preferred warm colors, but 69% of Arabs preferred cold colors, compared to 57% of North Americans.

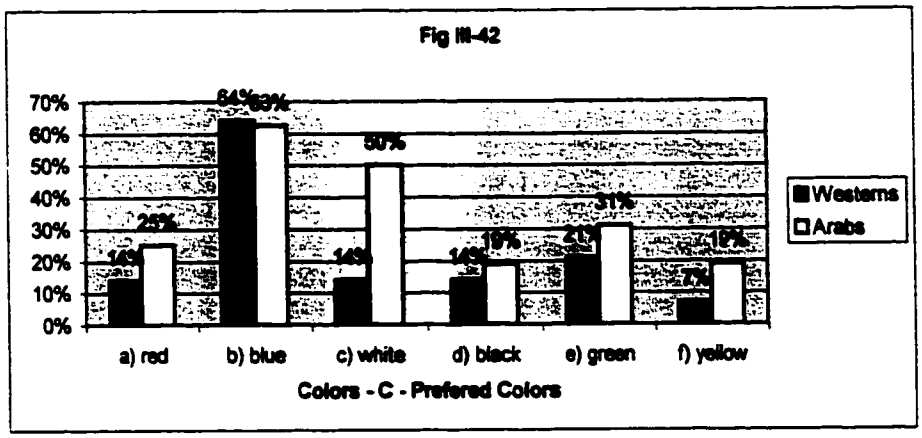


Figure III-42 illustrates that 25% of Arab respondents generally liked red, compared to 14% of North American respondents. Sixty-four percent of both groups liked blue. Fifty percent of Arab respondents liked white, compared to 14% of North Americans. Nineteen percent of Arab respondents liked black, compared to 14% of North Americans, while 31% of Arab respondents liked green, compared to 21% of North American respondents. Nineteen percent of Arab respondents liked yellow, compared to 7% of North American respondents.

Summary:

Linking Color:

Red: Arabs preference for red exceeded the North American by 8%.

Yellow: North American preference for yellow exceeded the Arab by 8%, which is considerable, only 14% of North Americans preferred yellow.

Blue: Thirty-right percent of both groups chose blue.

Background:

Green: The number of Arabs who preferred green background exceeded the North Americans by 12%.

Light Colors: The number of North Americans who preferred light colors exceeded that of Arabs by 15%.

White: Thirty-four percent of both groups preferred white.

Text color:

Blue: Arabs preference for blue text exceeded the North American by 18%, while only 25% of Arab respondents chose blue as a text color.

White: Only 19% of Arab respondents liked white.

Black: North American respondents who preferred black exceeded that the proportion of Arab by 17%, which is notable; 69% of Arabs preferred black.

Green: Only 19% of Arab respondents preferred green.

The number of North American respondents who preferred to see many colors within a text exceeded that of the Arabs by 15%. Only 6% of Arab respondents preferred to see many colors.

At the same time, the percentage of North Americans who believed that colors helped to foster better understanding exceeded that of the Arab respondents by 33%. Both 43% of North Americans and Arabs preferred to see warm colors, but the Arab preference for cold colors exceeded the North American by 12%, even though 57% of North Americans preferred cold colors.

Generally,

Red: Arabs preference exceeded the North Americans by 11%, where only 14% of North Americans liked red.

Blue: Sixty-four percent of both groups liked blue.

White: Arab preference for white exceeded the North American by 36%.

Black: Arabs preference for black exceeded the North American by 5%.

Green: Arabs preference exceeded the North American by 10%.

Yellow: Arabs preference exceeded the North American by 12%, where only 7% of North Americans chose yellow.

III.5.7.Graphics:

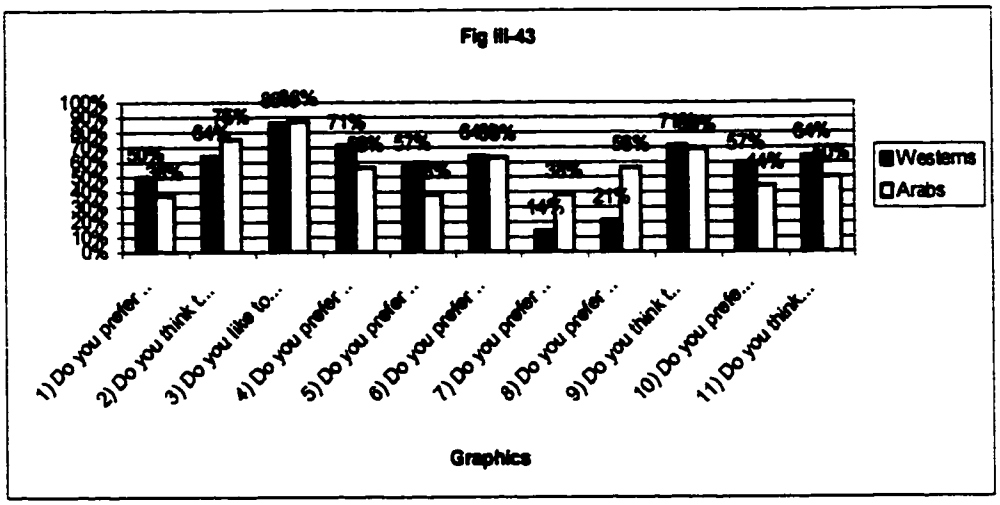


Figure IIII-43 shows that 50% of North American respondents preferred to see a lot of graphics, compared to 38% of Arab respondents. However, 75% of Arab respondents believed that graphics helped in better understanding, compared to 64% of North American respondents. At the same time, 86% of both groups liked to see graphics supporting the text. Seventy-one percent of North American respondents wanted a warning if a link leads to a larger graphic file, compared to 56% of Arab respondents. Fifty-seven percent of North American respondents preferred to have alternative text for each image, compared to 38% of Arab respondents. Sixty-four percent of both groups preferred to have graphical bullets, but 38% of Arab respondents preferred graphical divider bars, compared to 14% of North American respondents. While, 71% of both Arabs and North Americans liked a fancy background, 56% of Arab respondents preferred a fancy background, compared to 21% of North Americans respondents. At the same time, 57% of North American respondents felt that the background plays an important role in attracting attention, compared to 44% of Arabs. Regarding the use of

animation, 64% of North American respondents preferred it, compared to 50% of Arab respondents.

Forty-four percent of Arab respondents liked paint graphics, compared to 36% of North American respondents, while 81% of Arab respondents liked photos, compared to 64% of North American respondents. Forty-three percent of North American respondent liked drawn graphics, compared to 31% of Arabs. Fifty-seven percent of both groups liked clip art, and 37% of both groups liked line art graphics.

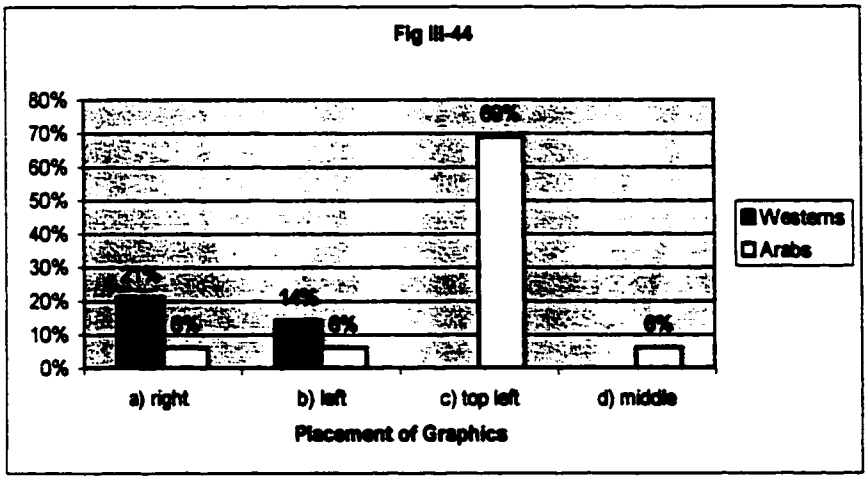


Figure III-44 illustrates preferences regarding the placement of graphics, which was broken up as follows: Twenty-one percent of North American respondents liked the right, compared to 6% of Arab respondents, 14% of North American respondents liked the left, compared to 6% of Arab respondents. Sixty-nine percent of Arab respondents preferred the top left, while 6% preferred the middle.

Summary:

The number of North American respondents who preferred to see a lot of graphics exceeded that of Arabs by 12%, though 38% of Arab respondents liked graphics, and more Arabs believed that using graphics helped readability than North Americans by 11%. At the same time, 86% of both groups liked to see graphics supporting the text. Thirteen percent more North Americans liked to be warned if a link leads to a larger graphic, and 19% more North Americans preferred to have alternative text for each image.

Graphical bullets: Sixty-four percent of both groups preferred to have graphical bullets.

Graphical divider bars: The percentage of Arabs who preferred graphical divider bars exceeded that of North Americans by 24%.

Fancy background: Seventy-one percent of both groups liked fancy backgrounds.

Nevertheless, the number of North Americans who felt that the background played an important role in attracting attention exceeded that of Arabs by 13%. Similarly, 14% more North Americans liked animation.

What kind of graphics would like to see?

Paint graphics: Arabs preference for paint graphics exceeded the North American by 8%.

Photos: The number of Arabs who liked photos exceeded North Americans by 17%.

Drawn: North American preference for drawn graphics exceeded the Arab by 12%.

Scanned images: North American preference for scanned images exceeded the Arab by 13%.

III.5.8. Placement of Elements:

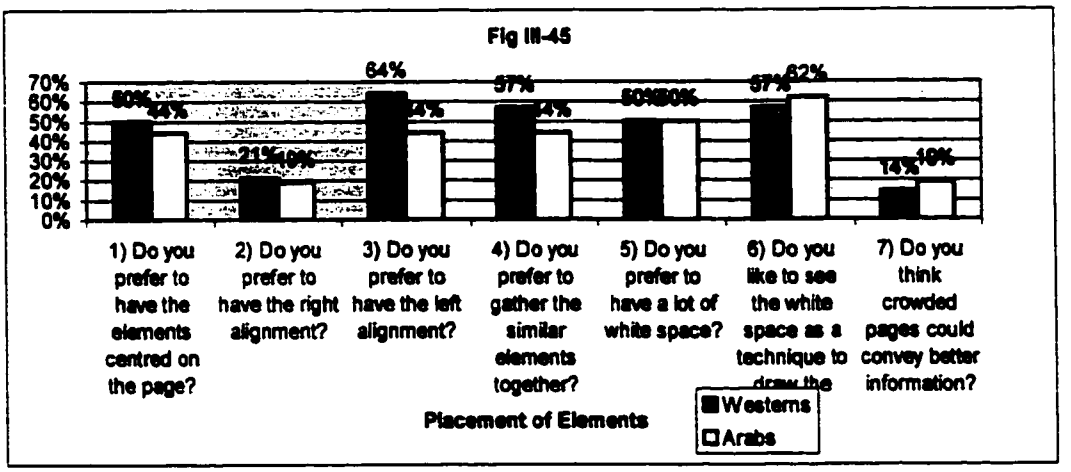


Figure III-45 shows that 50% of North American respondents preferred to centre elements on the page, compared to 44% of Arab respondents. Twenty percent of both groups preferred a right alignment, but 64% of North American respondents preferred a left alignment, compared to 44% of Arab respondents. Fifty-seven percent of North American respondents preferred to gather similar elements together, compared to 44% of Arab respondents. However, 50% of both groups preferred to have a lot of white space, while 62% of Arab respondents liked white space as an attention-drawing technique, compared to 57% of the North Americans. Nineteen percent of Arab respondents felt that crowded pages could better convey information, compared to 14% of North Americans.

Summary:

Preferences for the placement of elements:

Centered: The number of North Americans who preferred to have elements centered on the page exceeded that of Arabs by 6%.

Right alignment: Twenty percent of both groups preferred a right alignment.

Left alignment: North American preference for left alignment exceeded the Arab by 20%, though 44% of Arabs chose a left alignment.

Similar elements: Thirteen percent more North Americans than Arabs preferred to gather the similar elements together.

Fifty percent of both groups preferred a lot of white space, but 5% more wanted to see the white space used as a technique to draw the attention, compared to 57% of North Americans.

III.5.9. Balance:

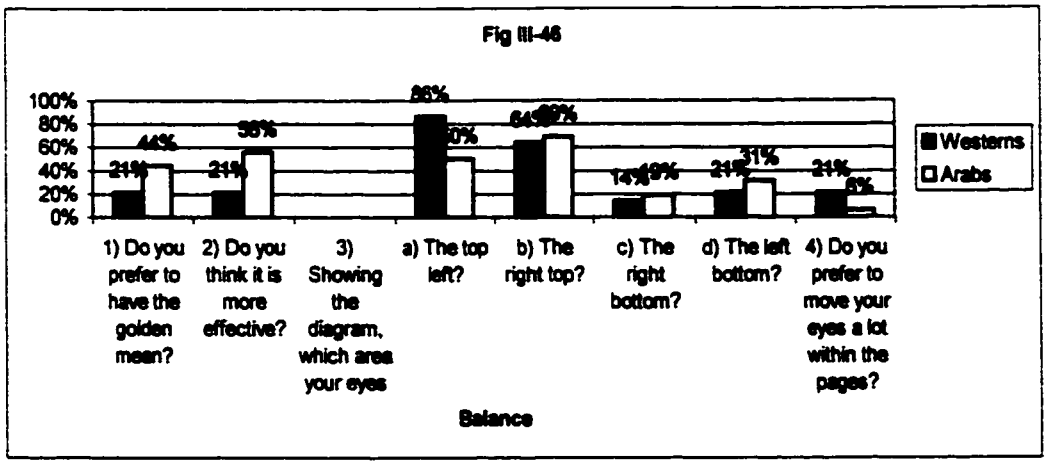


Figure III-46 indicates that 44% of Arab respondents preferred the use of the golden mean, compared to 21% of North American respondents. Fifty-six percents of Arab respondents thought the golden mean was most effective, compared to 21% of North American respondents. It is noteworthy that a significant percentage of both groups (but, especially the North Americans) did not answer the question on the golden mean presumably they did not understand the term. At the same time, 86% of North American respondents believed that their eye was attracted to the top left, compared to 50% of Arab respondents. Meanwhile, 69% of Arab respondents preferred the top right, compared to 64% of North American respondents; 19% of Arab respondents preferred the bottom right, compared to 14% of North Americans, but 31% of Arab respondents chose the bottom left, compared to 21% of North American respondents. Twenty-one percent of North American respondents said they preferred to move their eyes a lot on a page, compared to 6% of Arabs.

Summary:

The number of Arabs who preferred the golden mean exceeded that of North Americans by 23%, but the number of Arabs who felt the golden mean was most effective exceeded that of North Americans by 35%.

Main area of attraction of the eye:

Top left: The number of North Americans who felt their eye was attracted to the top left exceeded that of Arabs by 36%, where 50% of Arabs chose the top left.

Top right: Five percent more Arabs chose the top right exceeded that of North Americans, though 64% of North Americans chose it.

Bottom right: the number of Arabs who chose the bottom right exceeded that of North Americans by 5%.

Bottom left: the number of Arabs who chose the bottom left exceeded that of North Americans by 10%.

III.5.10. Contrast:

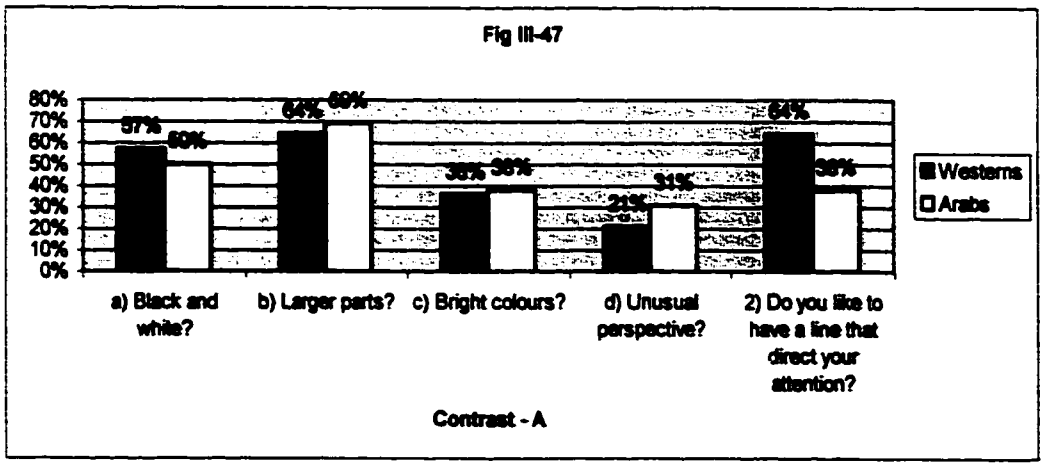


Figure III-47 shows that 57% of North American respondents preferred the use of black and white to achieve contrast, compared to 50% of Arab respondents. Sixty-nine percent of Arab respondents preferred the use of larger parts to achieve contrast, compared to a similar figure of 64% of North American respondents. Thirty-seven percent of both groups preferred bright colors, and 31% of Arab respondents preferred unusual perspective, compared to 21% of Arab respondents. Sixty-four percent of North American respondents liked a line to direct attention, compared to 38% of Arab respondents.

When a line was used, 93% of North American respondents preferred it from left to right, compared to 38% of Arab respondents. Only 19% of Arab respondents wanted a line drown from right to left. Fifty-six percent of Arab respondents preferred the line from top to bottom, compared to 43% of North American respondents, and 19% of Arab respondents preferred it from bottom to top, compared to 7% of North Americans.

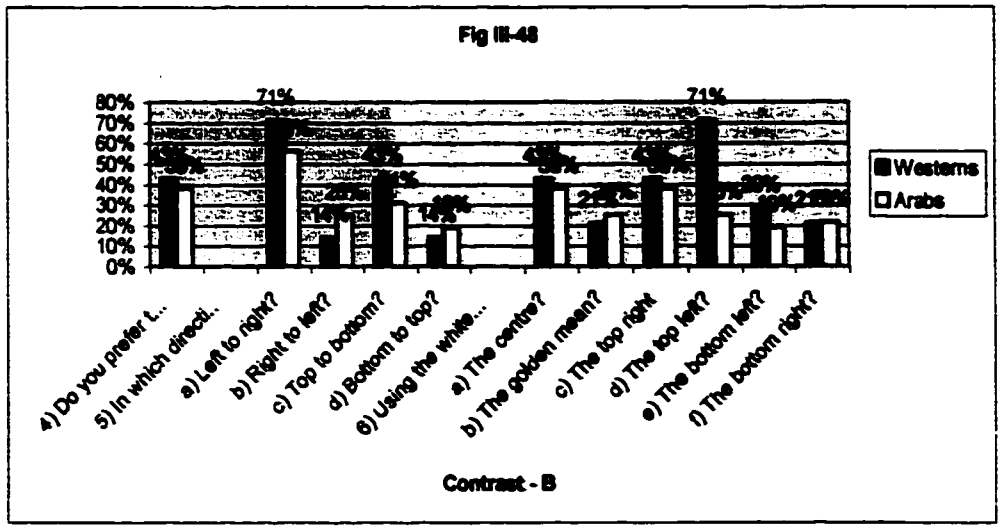


Figure III-48 illustrates that 43% of North American respondents preferred motion, compared to 38% of Arab respondents. When motion was used, 71% of North American respondents felt comfortable with a motion left to right direction, compared to 56% of Arab respondents; 25% of Arab respondents preferred motion from right to left, compared to 14% of North American respondents; 43% of North American respondents liked motion from top to bottom, compared to 31% of Arabs. Finally, 19% of Arab respondents liked motion from bottom to top, compared to 14% of North American respondents.

When white space was used as a way to direct attention, 43% of North American respondents preferred information in the center, compared to 38% of Arab respondents. Twenty-five percent of Arab respondents preferred the golden mean, compared to 21% of North American respondents, a difference of only 4%. Forty-three percent of North American respondents, compared to 38% of Arab respondents preferred to place information on the top right. Seventy-one percent of North American respondents preferred the top left, compared to 25% of Arab respondents. Twenty-nine percent of North American respondents preferred the bottom left, compared to 19% of Arab respondents. Twenty-one percent of both groups voted for placing information on the bottom right.

Forty-three percent of North American respondents preferred to place information on the top right, a figure that is only 5% greater than the Arab preference. Seventy-one

percent of North American respondents chose a top left location, which figure is 46% greater than the Arab preference for this location.

Summary:

Black and white contrast: The number of North Americans who preferred the use of black and white to achieve contrast exceeded that of Arabs by 7%, where the Arabs figure was 50%.

Larger parts: The number of Arabs who preferred the use of larger parts to achieve contrast exceeded that of North Americans by 5%, where 64% of North Americans agreed with the use of larger parts.

Bright colors: Thirty-seven percent of both groups preferred this.

Unusual perspective: The number of Arabs who preferred unusual perspective exceeded that of North Americans by 10%.

The number of North Americans who wanted a line to directs attention exceeded that of Arabs by 26%.

From left to right: The number of North Americans who liked the line from left to right exceeded that of Arabs by 18%.

From right to left: The number of Arabs who liked the line from right to left exceeded that of North Americans by 19%.

From top to bottom: The number of Arabs who preferred the line from top to bottom exceeded that of North Americans by 13%.

From bottom to top: Twelve percent more Arabs than North Americans preferred a line from bottom to top.

North American preference for motion exceeded the Arab by 5%.

From left to right: The number of North Americans who preferred motion from left to right exceeded that of Arabs by 15%.

From right to left: Eleven percent more Arabs than North Americans preferred motion from right to left.

From top to bottom: Twelve percent more North Americans than Arabs liked motion from top to bottom.

Regarding the use of *white spaces* as a way to direct attention:

The center: The number of North Americans who wanted information in the center exceeded that of Arabs by 5%.

The golden mean: The number of Arabs who preferred information on the golden means exceeded that of North Americans by 4%.

The top right: Preference for information placed on the top right was stronger in the North American group than in the Arabs by 5%.

The top left: North American preference exceeded the Arab by 46%.

The bottom left: North American preference exceeded the Arabs by 10%.

The bottom right: Twenty-one percent of both groups voted for having the information on the bottom right.

III.5.11. Page Length

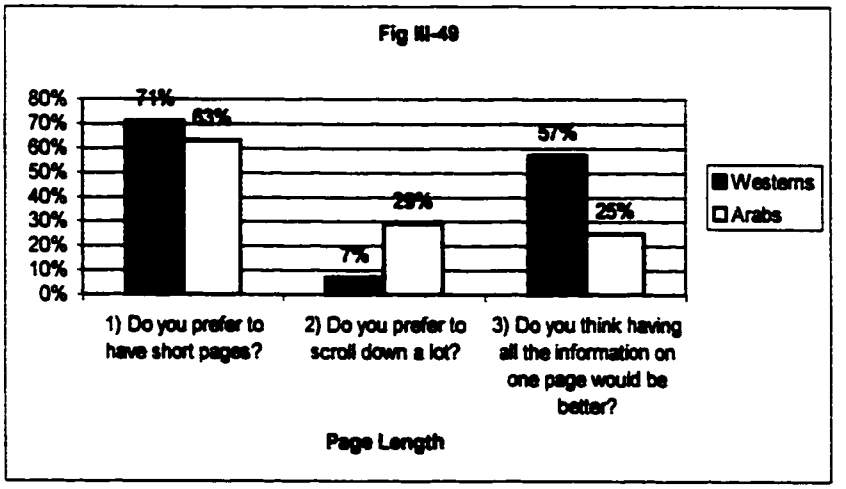


Figure III-49 shows that 71% of North American respondents preferred short pages, compared to 63% of Arab respondents. Twenty-nine percent of Arab respondents preferred to scroll down a lot, compared to 7% of North American respondents.

However, 57% of North American respondents thought that having all the information on one page was preferable, compared to 25% of Arab respondents.

III.6. Statistics Findings:

Item	Chi-square Likelihood Ratio	Descriptive Arabs	Descriptive N. American
White background	.796	31%	36%
BACK and NEXT buttons	.259	56%	36%
Group information into categories	.257	94%	100%
Navigation technique/icons	**.001 ***	**50%**	**79%**
Direct line from left to right	.305	75%	93%
Prefer the table of content on the left of a page	**.060 ***	**38%**	**71%**
Prefer graphics on the top left side of a page	1.04 **	69%	0%
Black text	**.001 ***	**50%**	**93%**

Item	Mann-Whitney U. test	Descriptive Arabs	Descriptive Westerns
Eye-catching/ Bold	.915	81%	79%
Centre information with white space	.883	38%	43%
Prefer a warn for larger graphics	.833	56%	71%

Prefer fancy background	**.008** *	**56%**	**21%**
Prefer hidden text on the side of a page	.148	50%	21%
Direct motion from left to right	.982	56%	71%
Prefer graphic bullets	.723	63%	64%
Eye-catching/colored	.591	75%	79%
Prefer larger parts for contrast	.673	69%	64%
Prefer left alignment	.501	44%	64%
Prefer photo graphics	**.067** *	**81%**	**64%**
Read the beginnings of sentences	.181	56%	29%
Prefer a space around graphics	.184	81%	57%
Prefer top left of a page	.316	50%	86%
Eye-catching/underlining	.643	50%	36%
Prefer worm colors	.275	44%	43%
Prefer text flow around graphics from the left	.703	63%	21%
Prefer scanning online	**.088** *	**25%**	**64%**
Prefer meaningful sub-headings while scanning	.461	38%	71%

Prefer bulleted lists while scanning	**.074 ***	**44%**	**29%**
Prefer colored text	.448	63%	36%
Prefer hidden text	**.002**	**63%**	**21%**
Do you believe colors help?	.178	44%	71%

The above table shows that the qualification test shows difference between the Arabs and North Americans for few items. Icons, black text and the table of the content on the left, are the items that the Chi-square showed differences between Arabs and North Americans. It is note worth that the item "prefer to place the graphic on the top left side of a page" was not significant although the descriptive test shows that there is a difference, but since there is no North American voted for it, the result was not shown in the Chi-square test.

The Mann-Whitney U. test showed differences between the two groups only for fancy backgrounds and preferring hidden text. The item "preferring photo graphics" was close to .05, but not significant. Similarly, the items "Prefer bulleted lists while scanning" and "scanning online" were not significant though they were so close. It is worth mentioning that the descriptive test showed that there were differences between the two groups for the items "prefer text flow the graphic from left" and "prefer colored text", "prefer meaningful sub-headings" and "believe that colors help", though Man-Whitney U. test did not show any significant differences between the two groups regarding the previous mentioned items.

IV. Discussion:

IV.1. Designers and Arab Users:

It is noticeable, throughout the collected data, that the designers' Arab target audience and the Arab participants are male. This may reflect a cultural issue, where men still dominate most professional fields, including education and, particularly, work involving technology such as the Internet. It may limit the generalizability of the findings.

Arab users seem to prefer using NEXT and BACK buttons, on which the designers do not rely. This could affect the way the designers deal with their products, since Arab respondents seem to feel more comfortable using two buttons that take them either way, step by step, to the other materials. It may be that language differences affect this preference, since it is easier to follow the NEXT and BACK buttons than to repeatedly read through the available options.

Arab respondents vote for icons, buttons and maps as navigation techniques. Their choice of the map as a tool is particularly unexpected. Even the designers were not aware of this tendency, since they, themselves, do not pay much attention to the maps when they design Web sites for Arab users.

The results do not clearly indicate how the designers prefer to organize information online. However, the majority of Arab participants prefer to have information organized alphabetically and grouped into categories. This may signal a need for the designers to do

more research on their target audience, and to obtain more information about their learning needs.

There are, however, differences in the way the designers and the Arab participants prefer to find the information online. The designers prefer to use bullet lists and meaningful subheadings to make reading easier, but the majority of Arab participants prefer to use highlighted words. Once again, this may show the designers' lack of knowledge about their audience's learning needs in an important way. Similarly, the designers' choices for creating emphasis do not correspond with the Arab participants' preferences for the use of color and bold text. Also, the majority of Arab participants prefer to have the text flow around the graphic while designers state other preferences. It is possible that the designers make design decisions based on well-known facts about what attracts and suits users. However, the research shows that Arab participants demonstrate different preferences and make different choices in some areas.

IV.2. Arab and North American Users:

It is worth mentioning again that data collection for the Arab respondents took place in the United Arab Emirates, which is considered one of the richest Arab countries in its geographical region. At the same time, the fact that the people of the Emirates enjoy owning technology and following world technological developments, may explain why all Arab respondents have computers and why they even exceed the number of North American respondents who have regular access to the Internet. However, the data shows that more North American respondents than Arabs visit the Internet on a regular basis,

especially for the purpose of doing assignments. It is useful to remember that the Arab respondents are students at the United Arab Emirates University, where the educational staff are urged to incorporate the latest technology in their teaching methods. This result may also show how the educational system in North America depends on Internet use, especially for the completion of assignments. In the UAE, the situation is different, despite a government push, and despite the provision of the technology and facilities necessary for the acquisition of the latest learning procedures.

Nevertheless, the data show that a greater number of North American respondents use chat rooms more frequently than do the Arab respondents. As a frequent visitor to some of the institutes and libraries around town (including the UAE University library), while fulfilling the requirements of my research, I noticed that most of the students (mainly female students) are using chat rooms in order to get connected to the rest of the world. In recognition of this trend, the decision-makers have forbidden access to chat rooms and uncontrolled e-mail services in these libraries. Thus, the result indicating that the number of North American participants using chat rooms exceeds that of Arab participants may have less credibility, since Arab respondents may be giving the officially sanctified answer instead of the true answer. In the same vein, that more Arab respondents than North American consider the Internet a good window to the world may be explained by taking into consideration that half the Arab respondents are women who do not have the same physical freedom that North American women have. Thus, the Internet provides them with more freedom and it is, for them, a good window to the world. Meanwhile, more North American respondents than Arab respondents consider the Internet a means

of quick access to information. Cultural issues are clearly at play here. The Arab people, who suffer from different boundaries, see in the Internet a good window to the world, while North American people look at it as a means of access to information. With regard to specific elements of interface design, the literature review and some contributions could lead us to expect some differences between Arabs and North Americans for color preferences. Differences in the writing scripts of the groups and the consideration that Arabs users are operating in a second language, would lead us to anticipate some differences for placement of elements and regarding choosing the items such as icons, and bulleted lists.

Indeed, it seems, for example, that more Arab respondents than North American respondents prefer to have the NEXT and BACK buttons, and to have a palette of graphics. It may be easier for them (since they are reading in different language) to have the NEXT and BACK buttons and to see the graphics rather than reading.

Regarding the placement of the table of contents, as expected, most of the North American participants prefer to have the table on the left side of the page. However, the situation of Arab respondents is different since they read the Arabic language from right to left. This should affect their reading habits. Nevertheless, most of the Arab participants are used to visiting English-language Web sites, which may affect their placement choice for the table of contents, since they are used to seeing it in certain places. In contrast to that of North American participants, Arab participants' preferred location for the table of contents varies between the top, left side, and right side of the page.

An unexpected result is that Arab participants more frequently choose the map as a preferred technique for navigation, than do North American participants, although the majority of Arab (and North American) participants choose icons. Still others choose buttons, which is quite understandable. The choice of the map, however, is a different and unexpected choice by Arab participants.

On the other hand, the results show that Arab respondents like the idea of hypertext and consider these links within the text to be very useful and understanding the material. Arab respondents, like North American respondents, prefer information to be grouped into categories and alphabetically. Very few North American participants read online (21%), a figure comparable to that of Arab participants (24%). However, the percentage of North American respondents who scan online is high compared to that of Arab respondents for whom this behavior is still low, which does not make sense. If Arabs do not read online, they should scan, but the result does not reflect that. Either Arab respondents misunderstand the question, or they neither read nor scan because it is difficult to scan information online in a language other than their mother tongue. Nevertheless, what catches the attention of Arab respondents while they are scanning is surprising. The majority of the Arab respondents choose highlighted words and beginnings of sentences. A much smaller percentage chooses bullet lists. Again, this could be because Arabs are reading in a different language and thus, need to read the beginnings of sentences in order to know the contents of the page. While we expected to see a preference for bullet lists, since they are easier to read and recognize, the result is

not as we expected. And users also do not find meaningful subheadings to be particularly useful as a mean of situating themselves, in contrast with North Americans. Perhaps subheadings do not provide context for Arabs who are reading in their second language.

The results regarding typeface preference are disappointing since the majority of North American and Arab participants did not answer the question. Either they did not understand the question, or they did not pay enough attention to the typeface itself while reading. As Smith and Yoder (1998) mention, some documents are difficult to read because of the typeface, causing readers to look for excuses to stop reading. However, the majority of all respondents prefer black text, and, unexpectedly, some of the Arab respondents prefer blue text. More Arab than North American participants prefer colored text, but they prefer not to have many colors on the page.

Cultural issues appear to be at play again when the majority of Arab respondents vote for wrapping the text around the graphic from the left, and prefer to see white space around the graphics, while North American participants prefer to wrap the text around the graphic, and few of them prefer to have white space around the graphics.

Also unexpected were the results showing that more Arab than North American respondents prefer to have hidden text, and think it promotes better understanding. Moreover, the majority of Arab respondents want the box containing such text to appear on the side of the anchor page. This could be because they are using a second language to read, so they do not want to lose the topic and have a different page for more information.

Rather, they prefer to have the additional information in a hidden text on the side of the page.

Bold, colored, then underlined words were, in order of preference, what caught the attention of the majority of Arab and North American respondents.

More North American participants than Arabs prefer to have motion on the page. They also prefer the motion to be from left to right and from top to bottom more often than do the Arab participants. Nevertheless, while using white space as a technique, more North American participants place the information center and top-left. The result regarding Arab preference for the placement of information while using white space as a technique to draw attention was not clear. Some voted for the center, the same percentage for the top left, and the same again for the top right. The expected results here were not achieved since Arab participants' perceptions may be confused from their use of English sites.

Both North American and Arab participants prefer short pages, though more North American participants believe that having all the information on one page is useful. It is good to mention that most Web sites designed in Arabic are put up by the government of United Arab Emirates, and most have very long pages and contain a great deal of information.

V. Conclusion and Recommendations

Based on the results of the survey and personal interviews conducted for the purpose of this research, I am putting forward several recommendations for the design of educational Web sites for Arab users.

Before stating these recommendations, for designing for Arab users, it is good to mention that this study demonstrates a difference in the way that Arabs and North Americans see and prefer things online. Culture can have a significant impact on the way the individual sees and interprets various issues, and on what motivates the individual to make a given choice. Sometimes, the results of the data from North Americans was similar to that from the Arabs. However, the slight difference in results is not negligible when one takes into consideration the small number of subjects. For example, both groups of subjects preferred blue text, but the percentage of Arabs who preferred blue was greater than that of North American participants.

V.1. Recommendation of Designing Issues:

V.1.1. General Information:

It is good to keep in mind, while designing Web sites for Arab users, that, due to their lifestyle, Arabs use the Internet less than do North Americans. They also use the Internet much less to do their assignments, even though they do visit educational sites. A lesser number visit entertainment sites.

Most Arab respondents did not have personal Web sites, but would have liked to have one. They believed that the Internet offers a good window onto the world, and quick access to information.

Given the small sample size and the necessity to use nonparametric statistics, it is noteworthy that nonetheless a few differences across cultures did emerge. The differences relate primarily to colour and graphic element preferences and, perhaps more importantly, to the placement of items on the screen and the use of different mechanisms to provide emphasis, promote understanding and navigate.

In considering these latter differences, it is good to bear a few points in mind. First, the Arab users often visit sites designed by North Americans, and so their preferences maybe influenced by this experience. Take, for example, the item concerning placement of elements such as a table of contents. North American respondents voted uniformly for the top left side of the page to place information. Arab respondents chose several options, including the one we might have anticipated based on the Arabic script (i.e., the right-hand side), but also the one they may be familiar with from visiting North American sites.

Second, some of the differences may be attributable to the particular exigencies of reading in a second language. As such, they may not reflect specific cultural differences *per se*. Nonetheless, they are important considerations to recognize and they may generalize to the context of reading sites written in the user's second language. The

relevant results include the following: the Arab users' preference for hidden text, displayed on the anchor frame or screen; the Arab users' lack of approval for subheadings as a mechanism to situate them within the site; the importance of first sentences for Arab users, and; the limited use of scanning techniques by Arab users and the preferrnce of the NEXT and BACK buttons. Some other related differences were found, also, but they were not large enough to justify any conclusions.

Given the points elaborated above, it would be interesting to conduct a cross-cultural study with respondents who have not had extensive experience of North American web sites, and who are using the web in their own first language. However, it would be difficult, if not impossible, to conduct such as study today, and while this kind of study would have better internal validity, it would have far less external validity.

V.1.2. Navigation:

For navigation, I recommend placing a document header on the top of each page, and including a table of contents on each page. It is also preferable to include a palette of graphic navigation tools. A search service should not be omitted.

The use of NEXT and BACK buttons is preferable.

With regards to navigation techniques, it is a good idea to include, first, icons, then buttons. Finally, maps may also be helpful. In addition it would be helpful to include alternate text for graphics.

V.1.3. Links:

It is helpful to have links within the text, but not in too great a number. All linking text should be in one color throughout the document.

V.1.4. Organizing Information:

For Arab users, it is recommended that information be grouped into categories, or that it be listed alphabetically. Listing information from best to worst may also be helpful, but this method of sorting was not as popular as the others.

It is recommended that the author of the pages and the purpose of the site always be noted, and that users be reminded of their location at all times.

It is helpful to provide a home page with full information about the site.

V.1.5. Writing:

When Arab users read and scanned online, what caught their attention were, in order, highlighted words and phrases, the beginnings of sentences, and bulleted lists.

Having only one idea per paragraph is recommended, as is using black or blue for the text. In general, dark colors are favored for text.

When graphics are used, it would be helpful to Arab users if the text flowed around the graphic from the left, with white space used around the graphic.

Hidden text is helpful to Arab users since they feel it helps them to understand, but the text box should be on the side of the text.

To attract Arab users' attention, the use of bold words is key. However, colored and underlined words are also quite functional.

V.1.6. Colors:

Red and blue should be used for linking text, but, for the background, white is preferable. Additionally, black is the best text color, while blue remains an acceptable option for Arab users (as mentioned earlier).

For colored text, which may help the user to better understand, cold colors, such as blue, are preferred.

In general, blue is the color that Arab users prefer to see on-screen, although white is also a fine (acceptable?) choice.

V.1.7. Graphics:

The use of graphics may be very helpful to Arab users, especially if the graphics are used to support the text. Links that lead to graphics are also a good idea.

Graphical bullets and graphical divider bars are a good choice for organizing the page for easier reading. In addition, some Arab users like fancy backgrounds.

Photos were preferred by most Arab users, but clip art may also be used successfully. Graphics positioned on the top left of the page would best suit Arab users.

V.1.8. Placement of Elements:

Center, right, or left alignments are preferred by Arab users. At they same time, they like to see a lot of white space on a page, especially if the white space is used as an attention-drawing technique. Important information may be positioned in the center or in the top right section of the page.

V.1.9. Balance:

The placement of important information on the golden mean may be effective for Arab users, however, it is the top right portion of the page that attracts the attention of Arab users.

V.1.10. Contrast:

Using larger parts may help to achieve contrast, but using black and white may also be useful. When using motion, it is preferable to use it from left to right.

V.1.11. Page Length:

While short pages may be helpful, Arab users did not mind very much scrolling down the page.

V.2. Problems Encountered During Research Work:

Data collection was one of the main difficulties faced by this study. The first part of the research took place in the United Arab Emirates. It took a long time to obtain the necessary approval to gain access to university classes, in order to conduct the survey and some of the interviews. However, after the questionnaires were finally handed to the students, the responses were returned within a week. The subjects were very cooperative. Data collection in North America was also difficult, albeit in a different way. About a hundred questionnaires were sent out, but only 14 subjects replied, which caused some delay in the study. It may be that the data collection process reflects another cultural difference, since the Arabs took the questionnaires more seriously and returned their responses within a short time, while the Westerners did not really cooperate with the questionnaire process, and some ignored the answers completely.

The sample obtained from the sampling procedures employed in this study imposes limitations on the generalizability of the study. In addition to the limitations of the small sample size, given that only about ten percent of the individuals surveyed responded, it is questionable how representative is the sample obtained.

Due to time constraints, expense, and some physical constraints, one-on-one interviews were not possible with all subjects. Questionnaires were distributed through e-mail, or by hand. I feel that many questions would have had different results had I had the opportunity to interview all the subjects. For example, the question regarding the golden

mean was not answered by most North Americans even a pilot test and revisions does not ensure all respondents will understand all the items, or interpret them the same way.

V.3. Significance of the Study:

This research is just an initial step to find out whether culture impacts on people's interpretations of materials posted online: for example, how culture affects preferences for color, graphic, placement of information, and so forth.

This study comprises a general survey of issues relating to potential differences across two cultures as regards standards for interface design for Web-based delivery of instruction. As such, it might be considered a component of a needs analysis to determine how standards need to be adapted to the Arab population. A more thorough needs analysis would begin from stated goals of an Arab educational system or systems: for example, to apply traditional cultural approaches to instruction in the context of web-based delivery, or to modify traditional approaches in certain ways based on Western approaches or innovations. This kind of needs analysis, which would be both broader and more focused, would require a thorough look at what constitutes traditional practices (either to conserve them or to understand the implications of trying to modify them) -- through the observation and analysis of Arab traditions, educational practices and organization, and educational artifacts, and possibly even broader elements of Arab culture: for example, the political, social and aesthetic.

The literature reviewed in the first chapter highlighted the fact that culture can make a difference in reading and in interpreting different issues, such as graphics. Thus, colors can mean differently for people of different cultural backgrounds, and people may react differently to the same color. In addition, color preference may also vary by culture.

Similarly, the placement of graphic elements, and what catches people's attentions may vary from one culture to the next. This may be especially relevant when we take into consideration that Arabs read from right to left.

The results obtained here could be helpful to designers who are interested in designing for cultures other than the North American, and especially those designing for Arab users. This study could also be the beginning of a series of studies that are necessary if we are to achieve our educational goals and deliver our intended message.

Additionally, we may also help to clarify the confusion and misunderstandings that plagues Non-American people who have to use American educational sites.

V.4. Implications For Further Research:

For the above-mentioned reasons, I suggest using the same questionnaires, but with a larger number of both Arab and North American subjects, in order to verify if the results would be consistent. On the other hand, a next step could concentrate on different audiences, such as various age groups, educational backgrounds, etc. Interviews and

observations should be part of the methodology in order to obtain more specific, clear-cut results.

Use of the observation method would be helpful in testing eye movement, with both Western and Arab users, to see where the eye first goes. The study could then be taken to the next level, and other interface elements could be tested until we are certain that everything related to the Arab audience's response to the Internet has been covered.

At the same time, a similar study conducted with people of various cultures, such as Asians, might bring out some interesting results.

I believe it is time to admit that cultural differences shape us, shape our mentality, our beliefs, our world- view, and our interpretation of things around us. Even though this is the age of globalization, we are still shaped by our environments, societies and belief structures. These differences affect the way we deal with various issues, and education is the most important issue of which we should be aware, if we - as educators - do not want to lose time, effort and money.

In the field of education we should be particularly attuned to these issues and their effects. It is ironic that after decades of progress in recognizing and responding to cultural diversity in the classroom and widespread criticism of colonial educational systems and their vestiges, information technology (i.e., the Internet) should have the effect, through globalization, of placing these issues in the background, again.

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Appendix

Questionnaires for the designers

These questions are made on the purpose of research on "Different Standards for Educational Web Sites for Arab Users". Your co-operation is highly appreciated. Answering the questions would require taking into consideration that you are designing for Arab users.

Please circle your answer.

I. Target audience

1. Do you know enough about your target audience? Yes no
2. Are the majority of your target audience male? Yes no
3. Are they well-educated? Yes no
4. Do you collect data about your target audience before start designing? Yes no
5. Do you use feedback? Yes no

II. Navigation

1. Do you include document and chapter headings to help navigation? Yes no
2. Do you place the header at the top of the pages? Yes no
3. Do you duplicate the header at the bottom of the pages too? Yes no
4. Do you prefer to use the BACK and NEXT buttons only a lot? Yes no
5. Do you prefer to use a palette of graphic navigation buttons? Yes no
6. Do you prefer to use alternate text for graphic navigation buttons? Yes no
7. Do you prefer to add a brief table of content? Yes no
8. Where do you prefer to add the table of content?
9. Do you prefer to use a title header on each page? Yes no
10. Do you prefer to provide a search service? Yes no

11. Which of the ways do you prefer to use to help navigation? Maps / backgrounds / buttons / borders / icons?

III. Links

1. Does the idea of links affects your way in writing? Yes no
2. Do you usually prefer to include a lot of links in the text? Yes no
3. Did you find it helpful to add links to the text? Yes no
4. Do you prefer to highlight the different text? Yes no
5. Do you prefer to stay with one text link colours? Yes no

IV. Site Structure

IV.1. Organising Information:

1. Do you prefer to organise your content by:
   a) Listed alphabetically? 1-2-3-4-5-6-7-8-9-10
   b) Group the information into categories? 1-2-3-4-5-6-7-8-9-10
   c) Sort from best to worst? 1-2-3-4-5-6-7-8-9-10
   d) Sort from largest to smallest? 1-2-3-4-5-6-7-8-9-10
2. Do you prefer to play with different structures to find the best design? Yes no
3. Do you prefer to give the reader information about who you are? Yes no
4. Do you prefer to give the reader information about where they are? Yes no
5. Do you prefer to give information about the purpose of the site? Yes no
6. Do you use a home page to give the previous information? Yes no
7. Do you use different structures for different purposes? Yes no
8. What is your favourite structure for education sites?

V. Page Structure

V.1. Writing

1. To make it easier for reading, do you:
   a) Highlight the words? 1-2-3-4-5-6-7-8-9-10
   b) Use meaningful sub-headings? 1-2-3-4-5-6-7-8-9-10
   c) Use bulleted lists? 1-2-3-4-5-6-7-8-9-10

d) Use Inverted pyramid writing style? 1-2-3-4-5-6-7-8-9-10

2. Do you use one idea per paragraph? 1-2-3-4-5-6-7-8-9-10
3. Do you count half of the words? 1-2-3-4-5-6-7-8-9-10
4. Which typeface you prefer to use?
5. How many typefaces do you use per page?
6. How many typefaces do you use per document?
7. What is the favourite colour do you use for the text?
8. Do you prefer to use light text colours? 1-2-3-4-5-6-7-8-9-10
9. Do you prefer to use dark text colours? 1-2-3-4-5-6-7-8-9-10
10. Do you prefer to use a coloured text? And why? Yes no
11. What do you use to brighten the text?
12. Do you prefer to use many colors within a text? Yes no
13. How do you prefer to wrap the graphic with the text?
    a) Wrapping the text around the graphics? 1-2-3-4-5-6-7-8-9-10
    b) Wrapping the graphic from the right? 1-2-3-4-5-6-7-8-9-10
    c) Wrapping the graphic from the left? 1-2-3-4-5-6-7-8-9-
14. Do you prefer to have a white space around the graphic? Yes no
15. Do you prefer to use a hidden text? Yes no
16. Where do you prefer to put the hidden text?
    a) To replace a graphic? 1-2-3-4-5-6-7-8-9-10
    b) To show a text box on the side of the page? 1-2-3-4-5-6-7-8-9-10
    c) Others?
17. How would you prefer to direct for the hidden text?
    a) Using a special graphic such as a magnify? 1-2-3-4-5-6-7-8-9-10
    b) Using words? 1-2-3-4-5-6-7-8-9-10
    c) Others?
18. Do you think the hidden text would help better in providing more information? Yes no
19. Do you use for emphasis:
    a) Underlying words, or phrases? 1-2-3-4-5-6-7-8-9-10
    b) Colours? 1-2-3-4-5-6-7-8-9-10

c) Bold? 1-2-3-4-5-6-7-8-9-10

d) Italic? 1-2-3-4-5-6-7-8-9-10

V.2.Colour

1. Which is the preferred colour you use for linking buttons?
2. Which is the preferred colour you use for background?
3. Which are the preferred colours you use for the text?
4. Do you prefer to use a lot of colours within a page? Yes no
5. Do you think using colours will help? Yes no
6. How many colours do you use in one page?
7. Do you prefer to use warm colours? Yes no
8. Do you prefer to use cold colours? Yes no
9. Do you think that your target audience react emotionally to the colours? Yes no
10. Have you noticed if TA reacts differently towards certain colours? Yes no
11. Which colours they react positively?
12. In general which are the preferred colours you think for you TA?

V.3.Graphics

1. Do you prefer to use a lot of graphics? Yes no
2. Do you think that using graphics will help? Yes no
3. Do you use graphic to support the text? Yes no
4. Do you prefer to use a limit number of graphics in one page? Yes no
5. Do you prefer to warn the users if the link leads to a large graphics? Yes no
6. Do you prefer to use alternate text for each image? Yes no
7. Do you prefer to use graphical bullets? Yes no
8. Do you prefer to use graphical divider bars? Yes no
9. Do you prefer to use fancy background? Yes no
10. Do you think the background could play a role in attracting the attention? Yes no
11. Do you prefer to use animation? Yes no

12. Do you think using animation will help in conveying information? Yes no

13. Do you prefer to use:

a) Paint graphics? 1-2-3-4-5-6-7-8-9-10

b) Drawn graphics? 1-2-3-4-5-6-7-8-9-10

c) Line art graphics? 1-2-3-4-5-6-7-8-9-10

d) Clip art graphics? 1-2-3-4-5-6-7-8-9-10

e) Scanned images? 1-2-3-4-5-6-7-8-9-10

f) Photos? 1-2-3-4-5-6-7-8-9-10

14. Where do you think is the best place to put the graphics?

V.4.Placement of elements

1. Do you prefer to centre the elements on the page? Yes no
2. Do you prefer to use the right alignment? Yes no
3. Do you prefer to use the left alignment? Yes no
4. Which of the mentioned above you considered it to be the most effective?
5. Do you prefer to gather the similar element together? Yes no
6. Do you prefer to use a lot of white space? Yes no
7. Do you use the white space as a technique to draw the attention? Yes no
8. Do you think crowded pages could convey better information? Yes no

V.5.Balance

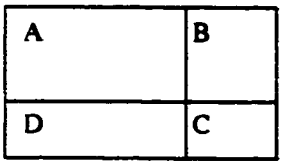
1. Do you prefer to use the golden mean? 1-2-3-4-5-6-7-8-9-10
2. Do you think it is more effective? 1-2-3-4-5-6-7-8-9-10
3. Showing the diagram below, in which area you put the most important information:

a) The top left? 1-2-3-4-5-6-7-8-9-10

b) The top right? 1-2-3-4-5-6-7-8-9-10

c) The bottom right? 1-2-3-4-5-6-7-8-9-10

d) The bottom left? 1-2-3-4-5-6-7-8-9-10



4. Do you prefer that TA to move their eyes a lot within the pages? Yes no

V.6.Contrast

1. To achieve contrast, do you prefer to use:
   a) Black and white? 1-2-3-4-5-6-7-8-9-10
   b) Larger parts? 1-2-3-4-5-6-7-8-9-10
   c) Bright colours? 1-2-3-4-5-6-7-8-9-10
   d) Unusual perspective? 1-2-3-4-5-6-7-8-9-10
2. Do you use the line to direct the attention of the user? Yes no
3. If Yes, what is the direction you use it:
   a) Left to right? Yes no
   b) Right to left? Yes no
   c) Top to bottom? Yes no
   d) Bottom to top? Yes no
4. Do you prefer to use the motion? Yes no
5. If so, do you use it to direct the attention of the user to a particular side? Yes no
6. In which direct the motion:
   a) Left to right?
   b) Right to left?
   c) Top to bottom?
   d) Bottom to top?
7. Using the white space as a way to direct the attention of the user, do you put the important information of:
   a) The centre?
   b) The golden mean?
   c) The top right
   d) The top left?
   e) The bottom left?
   f) The bottom right?

V.7.Page length

1. Do you prefer to make short pages? 1-2-3-4-5-6-7-8-9-10
2. Do you prefer to make the TA to scroll down a lot? 1-2-3-4-5-6-7-8-9-10
3. Do you think having all the information on one page would be better for the user to stick with the site? 1-2-3-4-5-6-7-8-9-10

Questionnaires for Users

Thank you very much for taking few minutes to answer the following questions. The answers of these questions will help in the research that trying to build "different standards for designing educational web sites for Arabian users". All the answers will be treated in care to keep the personal information away from publication, at he same time the names of the volunteer will not be mentioned.

Would you please circle your answer taking considering that you will answer the way you fill towards the different web sites you have been in. The answers will not be taken against anyone, they are just for the purpose of the research.

Thanks again for your cooperation

I. General Information

Please circle your answer:

1) Sex: Male female
2) Education: Elementary high school university post graduate working others
3) Do you have a computer? Yes no
4) Do you have an access to a computer on regular bases? Yes no
5) Have you been on Internet? Yes no
6) Do you use the www on a regular basis? Yes no
7) Do you use the www daily? Yes no
8) How many time do you use the www weekly? 3-5-8-10
9) Do you have to use www for school purposes? Yes no
10) Which sites you visit regularly?
    a) Educational
    b) Entertainment
    c) Chat rooms
    d) To do an assignment?

e) Others (specify)

11) Do you feel comfortable using www? Yes no

12) Which sites you visit mostly?

a) Arabic language sites

b) English languish sites

c) Other language sites

13) Do you have your own web page? Yes no

14) Would you like to make one? Yes no

15) Does www give you more freedom? Yes no

16) Do you think it does help you in your life Yes no

17) How does it help? Time consuming good window to the world quick access to the information others

18) Did you attend class on line? Yes no

19) If so how many times?

20) Did you like it? Yes no

II. Navigation

1) Do you prefer to have a document heading on each page? Yes no

2) Do you like to have the header on the top of the page? Yes no

3) Do you prefer to have a duplicate header at the bottom of the page? Yes no

4) Do you prefer to have a "back" and "next" buttons only? Yes no

5) Do you prefer to have a palette of graphic navigation buttons? Yes no

6) Do you prefer to have alternate text for the graphic? Yes no

7) Do you prefer to have a table of content on each page? Yes no

8) Where do you prefer to have the table of content? Top right left bottom

9) Do you prefer to have a search service? Yes no

10) Which of the following you feel comfortable to help you navigating? Maps /background / buttons / borders / icons?

III. Links

1. Do you the idea of having links in your text? Yes no
2. Do you prefer to include a lot of links in the text? Yes no
3. Did you find the links helpful to get more information? Yes no
4. Do you prefer to stay with one text link colours for all the pages? Yes no

IV. Site Structure:

IV.1. Organization Information

1. Do you prefer to have the information listed alphabetically? Yes no
2. Do you prefer to have the information grouped into categories? Yes no
3. Do you prefer to have the information organised from best to worst? Yes no
4. Do you prefer to have information sorted from largest to smallest? Yes no
5. Do you prefer to know who is the author? Yes no
6. Do you like to know where you are always? Yes no
7. Do you like to know the purpose of the site? Yes no
8. Do you use a home page to get all the needed information? Yes no

V. Page Structure

V.1. Writing

1) Do you read all the text on the screen? 1-2-3-4-5-6-7-8-9-10
2) Do you scan a lot? 1-2-3-4-5-6-7-8-9-10
3) When you are scanning which of the following catch your eyes mostly:
   a) Highlight words and phrases? 1-2-3-4-5-6-7-8-9-10
   b) The meaningful sub-headings? 1-2-3-4-5-6-7-8-9-10
   c) The bulleted lists? 1-2-3-4-5-6-7-8-9-10
   d) The beginning of the sentences? 1-2-3-4-5-6-7-8-9-10
4) Do you prefer to have one idea per paragraph? Yes no
5) Which typeface you prefer to have?
6) How many typefaces do you like to see per page? 1-2-3-4-5-6-7-8
7) What is your favourite colour for the text?
8) Do you prefer to have light text colours? 1-2-3-4-5-6-7-8-9-10

9) Do you prefer to have dark text colours? 1-2-3-4-5-6-7-8-9-10

10) Do you prefer to have a coloured text? 1-2-3-4-5-6-7-8-9-10

11) Do you prefer to use a lot of colours within a text? 1-2-3-4-5-6-7-8-9-10

12) How do you prefer to wrap the graphic with the text?

a) Wrapping the text around the graphics? 1-2-3-4-5-6-7-8-9-10

b) Wrapping the graphic from the right? 1-2-3-4-5-6-7-8-9-10

c) Wrapping the graphic from the left? 1-2-3-4-5-6-7-8-9-10

13) Do you prefer to have a white space around the graphic? 1-2-3-4-5-6-7-8-9-10

14) Do you prefer to have a hidden text? 1-2-3-4-5-6-7-8-9-10

15) Where do you prefer to the hidden text?

a) To replace a graphic? 1-2-3-4-5-6-7-8-9-10

b) To show a text box on the side of the page? 1-2-3-4-5-6-7-8-9-10

c) Others?

16) How would you prefer to get direction for the hidden text?

a) Using a special graphic such as magnify? 1-2-3-4-5-6-7-8-9-10

b) Using words? 1-2-3-4-5-6-7-8-9-10

c) Others?

17) Do you think the hidden text would help in understanding? 1-2-3-4-5-6-7-8-9-10

18) Which of the following your eyes catch and find it comfortable:

a) Underlying words. 1-2-3-4-5-6-7-8-9-10

b) Colours. 1-2-3-4-5-6-7-8-9-10

c) Bold. 1-2-3-4-5-6-7-8-9-10

d) Italic. 1-2-3-4-5-6-7-8-9-10

V.2. Color

1) Which is your preferred colour you use for linking buttons?

2) Which is your preferred coloured you use for background?

3) Which is your preferred colours you for the text?

4) Do you prefer to see a lot of colours within a page? 1-2-3-4-5-6-7-8-9-10

5) Do you think using colours will help? 1-2-3-4-5-6-7-8-9-10

6) How many colours do you like to see in one page?

7) Do you prefer to see warm colours such as red, yellow? 1-2-3-4-5-6-7-8-9-10

8) Do you prefer to use cold colours as blue and green? 1-2-3-4-5-6-7-8-9-10

9) Which are the colours you feel comfortable and like to see?

V.3.Graphic

1) Do you prefer to see many graphics in one page? 1-2-3-4-5-6-7-8-9-10

2) Do you think that using graphics help you to understand better? 1-2-3-4-5-6-7-8-9-10

3) Do you like to see graphic that supports the text? 1-2-3-4-5-6-7-8-9-10

4) Do you prefer to see warn when link leads to a large graphic? 1-2-3-4-5-6-7-8-9-10

5) Do you prefer to have alternate text for each image? 1-2-3-4-5-6-7-8-9-10

6) Do you prefer to have graphical bullets? 1-2-3-4-5-6-7-8-9-10

7) Do you prefer to have graphical divider bars? 1-2-3-4-5-6-7-8-9-10

8) Do you prefer to have fancy background? 1-2-3-4-5-6-7-8-9-10

9) Do you think backgrounds play a role in attracting attention? 1-2-3-4-5-6-7-8-9-10

10) Do you prefer to have animation? 1-2-3-4-5-6-7-8-9-10

11) Do you think using animation help to convey information? 1-2-3-4-5-6-7-8-9-10

12) Which of the following graphics you would like to see:

a) Paint graphics? 1-2-3-4-5-6-7-8-9-10

b) Drawn graphics? 1-2-3-4-5-6-7-8-9-10

c) Line art graphics? 1-2-3-4-5-6-7-8-9-10

d) Clip art graphics? 1-2-3-4-5-6-7-8-9-10

e) Scanned images? 1-2-3-4-5-6-7-8-9-10

f) Photos? 1-2-3-4-5-6-7-8-9-10

13) Where do you think is the best place to put graphics?

V.4.Placement of Elements

1) Do you prefer to have the elements centred on a page? 1-2-3-4-5-6-7-8-9-10

2) Do you prefer to have a right alignment? 1-2-3-4-5-6-7-8-9-10

3) Do you prefer to have a left alignment? 1-2-3-4-5-6-7-8-9-10

4) Do you prefer to gather similar elements together? 1-2-3-4-5-6-7-8-9-10

5) Do you prefer to have a lot of white space? 1-2-3-4-5-6-7-8-9-10

6) Do you like to see white space as a technique to draw attention? 1-2-3-4-5-6-7-8-9-10

7) Do you think crowded pages convey better information? 1-2-3-4-5-6-7-8-9-10

V.5.Balance

1) Do you prefer to have the golden mean? 1-2-3-4-5-6-7-8-9-10

2) Do you think it is more effective? 1-2-3-4-5-6-7-8-9-10

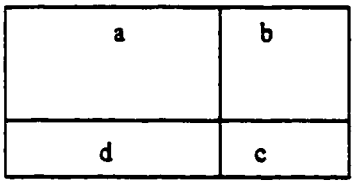
3) Showing the diagram, which area your eyes are attracted to:

   a) The top left? 1-2-3-4-5-6-7-8-9-10

   b) The right top? 1-2-3-4-5-6-7-8-9-10

   c) The right bottom? 1-2-3-4-5-6-7-8-9-10

   d) The left bottom? 1-2-3-4-5-6-7-8-9-10



4) Do you prefer to move your eyes a lot within a pages? 1-2-3-4-5-6-7-8-9-10

V.6.Contrast

1) To achieve contrast, do you prefer to see:

   a) Black and white? 1-2-3-4-5-6-7-8-9-10

   b) Larger parts? 1-2-3-4-5-6-7-8-9-10

   c) Bright colours? 1-2-3-4-5-6-7-8-9-10

   d) Unusual perspective? 1-2-3-4-5-6-7-8-9-10

2) Do you like to have a line that direct your attention? 1-2-3-4-5-6-7-8-9-10

3) If yes, what is the direction you use it:

   a) Left to right? Yes no

   b) Right to left? Yes no

   c) Top to bottom? Yes no

   d) Bottom to top? Yes no

4) Do you prefer to have motion for direction? 1-2-3-4-5-6-7-8-9-10

5) In which direction you would feel comfortable to show the motion:

a) Left to right? 1-2-3-4-5-6-7-8-9-10

b) Right to left? 1-2-3-4-5-6-7-8-9-10

c) Top to bottom? 1-2-3-4-5-6-7-8-9-10

d) Bottom to top? 1-2-3-4-5-6-7-8-9-10

6) Using white space as a way to direct attention, do you put important information on:

a) The centre? 1-2-3-4-5-6-7-8-9-10

b) The golden mean? 1-2-3-4-5-6-7-8-9-10

c) The top right 1-2-3-4-5-6-7-8-9-10

d) The top left? 1-2-3-4-5-6-7-8-9-10

e) The bottom left? 1-2-3-4-5-6-7-8-9-10

f) The bottom right? 1-2-3-4-5-6-7-8-9-10

V.7.Page Length

1) Do you prefer to have short pages? 1-2-3-4-5-6-7-8-9-10

2) Do you prefer to scroll down a lot? 1-2-3-4-5-6-7-8-9-10

3) Is having all information on one page would be better? 1-2-3-4-5-6-7-8-9-10