Chapter 12

Experiment 3:
Optimal Line Length for Reading
Electronic Schoolbook on Screen

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ABSTRACT

Although experimental studies have shown a strong impact of text layout on the legibility of e-text, many digital texts appearing in eBook or the Internet use different designs, so that there is no straightforward answer in the literature over which one to follow when designing e-material. Therefore, in this chapter we shall focus on the text layout, particularly the influence of line length. This experiment is divided into two parts. The first part focuses on the factor of line length by studying its effect on reading speed and accuracy using various columns [one column and two columns] with each page having the same amount of information. The second part tests a new approach which basically assumes that by using different colours for the first and last word of each line, it will improve students’ reading level. This hypothesis was based on previous findings over the difficulty of being able to immediately locate the following line (Chan and Lee 2005). In addition, this approach was based on explanation of the eye movement which, in the reading process, does not scan a line but stops for about ¼ of a second before jumping to new place such as at the end of the line when the eye goes back to the beginning of the new line.
HYPOTHESIS

The third experiment comprises seven hypotheses to be measured in order to define optimal line length for reading a school book using two reading strategies these hypotheses are;

**H1:** The efficiency of line length will be different in terms of time taken to search the same tasks.

**H2:** The efficiency of line length will be different in terms of number of correct answers made in each type of question.

**H3:** There will be a difference between the single line (SL) without colour, double line (DL) without colour, single line (SL) with colour and double line (DL) with colour in terms of the users’ satisfaction.

**H4:** Line with colour is more readable than a line without colour in terms of easy to search.

**H5:** Line with colour will be more effective than line without colour in terms of reducing the frequency of incorrect answers.

**H6:** Reading strategies affect the line length in terms of shortening task accomplishment time.

**H7:** Reading strategies, readers’ age and reading level are more effective than gender in terms of users’ stratification.

DESIGN INTERFACES

Four interfaces were designed to test. These were segmented according to the number of columns and colour. The instructional module interface was designed for experimenting using Microsoft’s expression web software. Each test had two different interfaces. Each web text module was designed in the light of the recommendations given in the literature and controlled by two independent variables: (1) line length; (2) type of questions. All the sentences were extracted from a lesson in the Libyan schoolbook. The lessons had no extremely rare words, such as names of people or exotic places, technical terms or unusual mechanisms. Table 1 shows the attributes of the experiment and the observed elements.

**First Text Interface: Double Column without Colour (DLWOC)**

A total of 19 Arabic sentences was used in the experiment. The length of the text was between 10 to 15 words (as seen in Figure 1). A total number of words approximately were 80 words using vowels.

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Observed Elements</th>
<th>Applied to Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body text</td>
<td>Font size, line length, colour of text.</td>
<td>Black font+ right alignment+ two and single column+ … Words. Words per a line.</td>
</tr>
<tr>
<td>Background</td>
<td>Colour</td>
<td>White</td>
</tr>
<tr>
<td>Margin</td>
<td>Larger than 2.5 inches.</td>
<td></td>
</tr>
<tr>
<td>Type of question</td>
<td>Information recall and reading faster.</td>
<td>Multi choices, open questions and true and false.</td>
</tr>
</tbody>
</table>