

Reading in print and digital environment

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Summary

Due to the increased availability of devices that allow reading from the screen, the doctoral thesis investigates if there are differences in the quality of reading a scholarly and a literary text, specifically in reading comprehension and satisfaction in print and digital environment. The study will include undergraduate students of the University of Zadar. Additionally, possible differences in reading habits among respondents who read and those who do not read from the screen are going to be explored. Furthermore, dissertation explores the possible correlations of personality traits and intelligence with reading habits and the quality of reading in print and digital environment.

Introduction

In the last decade, computers, cell phones and the Internet access have become widely available. Such increased availability of technology may lead to changes in reading quality and reading habits. Possible difference in quality between reading from the screen and from the paper can have far-reaching effects on the quality of learning and thinking. Quality of reading includes not only reading comprehension but also the pleasure of reading. The enthusiasm and the pleasure of reading provide ongoing motivation not only for reading but also for lifelong learning, thus creating positive change in society (Clark, 2005; 2011; Kirsch, 2000).

Literature Review and Conceptual Framework

Theorist McLuhan points out that the medium is the message (McLuhan and Lapham, 1994). The medium adds and changes the meaning of the content by changing our perception. Such a view can be applied to explain the impact of print and digital environment on the level of comprehending the message being read.

Cognitivist approach emphasizes the structural differences between print and digital text that impose cognitive challenges to readers (Eshet-Alkalai and Geri, 2007). Unlike linear reading of printed text from the beginning to the end, digital text requires skills of non-linear reading and thinking that is branching in different directions, by skipping sentences and paragraphs, switching to other articles and returning to the previous ones. People on the Internet are "scanning", speed browsing the text to single out individual words and sentences (Morke, J. Nielsen, J., 1997; Liu, Z., 2005). Maughan (according to Eshet-Alkalai and Geri, 2007) emphasizes that the experience of using a specific information format increases the value of the information itself. This increase can be explained in a way that information becomes valuable to the user only when the user acquires, interprets and uses the information successfully. Information format or environment can facilitate or constrain the effectiveness of reading. Experience and the pleasure of reading in the digital environment are important determinants of successful reading. Young people have developed the skills and habits of working in a digital environment, and therefore the information being acquired in the digital environment has higher value for them.

In most surveys conducted before 1992 it was found that people read more slowly, with less accuracy and less understanding when reading from the screen compared with reading from the paper (Ferris, 2013). More recent research findings are less clear. Some studies found no differences or only minor differences in speed reading and reading comprehension between screen and paper (Noyes & Garland, 2008). However, in a recent study it was found that subjects who read from the paper achieved better comprehension (Mangen et al 2013). Although people still mostly prefer paper, primarily for intensive reading, attitudes are changing due to improved quality of reading devices. Meanwhile, screens and e-readers do not provide the same experience of contact with the paper (Ferris, 2013). Also, recent research shows that reading habits that people apply when reading from screen are less effective (Liu, 2005; Morineau, Blanche, Tobin, & Guéguen, 2005, according to Ackerman, R. Lauterman, T., 2012).

Purpose

Thesis is based on the following starting points:

- Differences in quality between reading in print and digital environment, primarily in reading comprehension and satisfaction can have far-reaching effects on the quality of learning, critical thinking and participating in society.
- Previous studies have not fully clarified the differences between reading comprehension from paper versus screen.

- Previous studies have not taken into consideration the interrelation of intelligence and personality traits of students with reading habits, satisfaction and comprehension in both print and digital environment.

Objectives, Research questions and Hypothesis

Objectives of this thesis are to determine possible differences in reading comprehension and satisfaction with regard to the reading environment: on screen (digital environment) and on paper (print environment); and with regard to some traits of respondents: gender, intelligence, personality. The second objective is to determine the possible interdependence of factors that affect the process of reading in print and digital environment among a sample of students from the University of Zadar.

Along the lines of the objectives, research questions are to determine whether there are:

- 1.) differences in the reading satisfaction and reading comprehension with regard to the reading environment: on paper and on the LCD computer screen?
- 2.) differences in reading habits, reading satisfaction and reading comprehension in two reading environments with regard to some personal characteristics of the respondents (gender, personality traits and intelligence)?
- 3.) interactive effect of personal characteristics and reading environment on these dependent variables: reading habits, satisfaction and comprehension?
- 4.) differences in reading habits among respondents who read from the screen and those who do not read the screen?

Hypotheses about the expected results:

- 1.) Reading comprehension will be the same in the two environments because students have substantial experience in reading both from screen and paper. Reading satisfaction is going to be higher in print environment.
- 2.) In the digital environment, correlations of some personality traits (openness to new experiences and intelligence) with higher satisfaction and reading comprehension are expected to be positive.
- 3.) Intelligence, gender and / or certain personality traits are mediator variables between the reading habits and the reading environment, on the one hand, and reading comprehension and reading satisfaction on the other.
- 4.) Respondents who more often read from the screen have developed the habit of superficial reading, and will have lower scores on tests of reading comprehension both from screen and paper. However, respondents who at least occasionally read e-books have a habit of thorough reading, and will have a better reading comprehension.

Methodology

Participants

Undergraduate students at the University of Zadar are going to participate in the research. Up to 300 participants is the sample size needed to achieve good statistical power. University students were chosen for this study because they have experience in reading from the screen, and in addition, future cultural and economic development of a society largely depends on the student population.

Methods

The impact of digital and print environment on the level of comprehension and satisfaction is going to be examined by using experimental design combined with a correlational study.

Procedures

Two separate, but identical research procedures are planned, one with scholarly text and the other with literary text. Each procedure should be carried out in two stages. During the first stage participants from both groups are going to take the intelligence and personality tests and fill out a reading habits survey. During the second stage, one group reads a text from the computer screen with the instruction: "Please read the article carefully, because your reading comprehension is going to be examined afterwards." After reading, participants are going to fill out a short questionnaire about reading satisfaction, followed by a comprehension test. Then, participants are going to read another text from paper, with the identical procedure as in reading from the screen. Second group of participants is going to read from paper the same text that first group reads from screen, and vice versa. Computer screens used in this research are going to be LCD, since most of the Croatian population has the possibility to read on LCD screens. Planned analysis of results includes multivariate statistical analysis in order to test research hypothesis.

Instruments

Reading satisfaction is going to be examined with Likert scale questions relating to personal assessment of the reading experience satisfaction. Also, perception on how easy it was to read from paper or screen is going to be examined.

Comprehension tests are going to be specially designed for each text material and verified in a preliminary research. Questions are partly based on Bloom's taxonomy of cognitive processes and outcomes. Bloom's taxonomy is useful for asking questions that test the different levels and types of thought processes, recall and comprehension. In order to achieve test validity, questions for the final version of the test will be those that can be objectively scored and having a good variability of the results.

Reading habits survey will include questions about reading frequency, hours a day spent in reading, reading preferences, and attitudes about reading in print and digital environment. Also, participants will estimate whether they are reading more or less today due to the increased availability of digital text.

"Big Five Questionnaire" is going to be used for testing personality traits, and a culturally unbiased intelligence test is going to be used to test general intellectual factor (Caprara, 2005; Vonkomer., 1995)

Significance of the Study

The results will contribute to a better understanding of the process of reading in print and digital environment. New insights are expected regarding the interrelation of personality traits and intelligence with reading habits, satisfaction and comprehension in both print and digital environment in a student population. Findings will upgrade existing theoretical point of view related to reading habits, which are a key element of lifelong learning and the development of a knowledge society.

Keywords: reading comprehension, reading satisfaction, personality traits, digital, print

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Curriculum Vitae

Mate Juric has been a research assistant at the Department of Information Sciences at the University of Zadar since July 2011. His former occupation was as Psychologist in a Primary School. As of September 2012, he is enrolled in the PhD study programme of 'Knowledge Society and Information Transfer'. His teaching and research interests include cognitive science, research methods, statistical analysis, and user studies in library and information sciences.