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Sociological insights on the comparison of writing/reading on paper with writing/reading digitally

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ABSTRACT

The aim of this article is to investigate the impact of digital technologies on writing and reading within an educational rather than business environment. It explores the affordances of writing and reading on paper and those of writing on a keyboard and reading on a screen. The analysis is based on an exploratory study carried out with a class of Masters Students in Multimedia Communication and Technologies of Information at the University of Udine (Italy) who were asked to write an essay on this topic. The methodology applied in this study is qualitative content analysis of the essays produced by the students. The principal results of this study show that reading and writing competencies are changing with the use of digital technologies but that paper and digital interactions are not mutually exclusive. Students are more productive textually with writing than with reading, however, they still see the virtues of writing on paper which they continue to use extensively. It appears that chirographic writing and paper is more multi-sensorial and metacommunicative than using the keyboard or screen. Further research is recommended to explore this complementarities of writing on paper and on screen/keyboard as well as the perceived changes in preferred sources of reading material.

1. Introduction

Using personal computers began to be more prevalent in the 1980s and since that decade a certain amount of research has been published on the impact of this new digital technology on reading/writing. This early research identified the changes in approach to reading in particular that were necessitated by the lack of haptic qualities of a book and the ergonomic differences between human interaction with a computer and keyboard and with paper and pen (Gould and Grischowsky, 1984; Suchman, 1987; Gaver, 1991; Dillon, 1992; O'Hara and Sellen, 1997). In our present study we aim to explore beyond this physical human interaction between humans and computers towards the perception of the specific affordances of paper and digital tools in reading/writing. We begin by examining some of the extant literature on the topic and in particular an important study which compared the affordances of writing on paper and through digital technologies carried out by Abigail Sellen and Richard Harper (2002). As the introduction of personal computers, and then mobile phones, gathered apace they analyzed the work activities in office settings for which paper and digital technologies were particularly well suited. They discovered that the life cycle of a document includes a close intertwining of paper and digital versions: digital for searching, paper for integrating multiple sources; paper for planning, digital for drafting; paper for editing/proof reading, digital for finalizing; mostly digital for distribution and workflow; paper for reading (especially longer documents) and digital for archiving/filing. While their study remains a seminal work it must be noted that it was conducted over 10 years ago,

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and in offices, since when there has been a huge change in the types of digital devices as well as in the locations where they can be used. The development of e-reading devices highlights this well, exemplified by further research by Sellen and others (Hillesund, 2010; Mangen, 2008; Chen et al., forthcoming) that we explore later in this article. Another more recent approach to studying paper and digital technologies is that of Robert Waller (2012) who reflects on the different organization of the spatial setting of words and images between paper and screen. Waller asserts that the presentation of material online requires an understanding of graphic literacy that is generally lacking in most users; indeed, the know how required for interpreting online layout is more the prerogative of publishers (Duffy and Waller, 1985; Baron, 2008), making effective reading less straightforward.

Other studies on writing done in workplaces during the last decade were less focused on the contrast between paper and digital writing and reading than Sellen and Harper. Moatty and Rouard (2009), for example, studied the role of reading and writing inside workplaces with a group of technicians involved in engineering training. They found that among this group there was a general lack of training regarding these two activities, especially writing, which involves linguistic, technical, cultural and social competences (2009, p. 61). Furthermore, according to these scholars, organizations tend to underestimate the work that reading/writing implies. Another study carried out by Moatty et al. (2007, pp. 204–205) showed that when competing with the screen, use of paper was sustained with regard to several typologies of written communication: the loose sheet, the form, printed scientific journals, and the diary. Finally a recent article, again published by Moatty and Rouard (2010, p. 50), reveals that writing continues to be an intense activity in all industrial sectors because it enables the formalization of exchanges, the development of procedures and the provision of traceability processes.

But what has happened in the educational environment with students while these tensions between writing and reading on paper and screen were being researched in the business environment? The aim of this article is to fill this gap and to investigate how the use of digital devices is reshaping the traditional modes of using paper for reading and writing among students. Students are perhaps the most exposed to reading and writing as their whole life revolves around studying. Although they learned to read and write on paper, at a certain point in their life (depending on which digital generation they belong) they encountered digital devices which, as we know from other research on uses of information and communication technologies (ICT) they use extensively, (Vincent and Fortunati, 2009; Fortunati and Taipale, forthcoming; Hargittai, 2010; Helsper and Eynon, 2010). But what is still unclear and understudied is the impact of these students' encounters with the computer/Internet, mobiles, tablets and other devices and what it has produced in their practices of reading and writing.

As Naomi Baron (2013, p. 135) recalls, so far research on writing has focused on three main factors: language style and writing rules such as spelling, punctuation, editing; length of texts; genre such as formal letter, work report and so on. On reading, Baron suggests the factors that were considered are more numerous: mode of reading, length of text read, genre, reading speed, memory for and understanding of text and likelihood of annotating or re-reading. However, one first issue around which a consistent part of the debate on writing developed was the attempt to understand if the new digital technologies (mainly the computer/Internet) were damaging writing practices among students or not. Indeed, concerns have been expressed in several countries that as a consequence of the diffusion of these ICTs the capacity of students to write in a correct way – orthography, grammar, spelling and syntax errors – is deteriorating (Crystal, 2012). In the new millennium this concern highlighted the growing need to measure students' academic capabilities as well as the possibility to compare students' abilities in many countries.

While a number of cross-cultural studies about the reading/writing capabilities of students is available (i.e. Programme for International Student Assessment (Pisa tests)[1] promoted by OCSE at international level, PIRLS[2], The Nation's Report Card,[3] Kaiser Family Foundation Report,[4] National Endowment for the Arts Study[5] and PEW Research[6] in US) their results are not easily comparable and indeed, analysis of this data creates more confusion and contradiction than it does similarities. What we can learn from these studies, however, is that the new generations of digital natives in certain countries have improved their capability to read and write while in other countries it has deteriorated.

Furthermore, as national standards for literacy pedagogy and the adoption of digital devices such as lap tops and mobile phones can be expected to vary by country, the results we discuss herein may be different from countries where taught chirographic writing is being replaced by word processing at a young age. Indeed, in countries such as the US, Canada and the UK, teaching excellence in grammar and syntax has been less valorized than the advancement of cross cultural literacy diversity and the availability of learning via multi-model communications channels open to all globally. For example there is a continuing debate in the US and Canada about cursive writing and whether keyboard skills should be taught instead.[7] In addition the adoption of digital technologies has followed a different trajectory globally, for whereas Italian youth were among the voracious early adopters of mobile phones before the US, in contrast laptops and the Internet were more commonly used in US schools ahead of Europe – a difference that is less noticeable nowadays. Thus the extent to which this study conducted in Italy is wholly exemplary of the experiences in other countries is a matter for further study.

[1] http://www.oecd.org/pisa/ (accessed 1. 2. 13).
[2] http://www.iaea2008.cambridgeassessment.org.uk/ca/digitalAssets/180462_Neuschmidt.pdf (accessed 1. 2. 13).
[3] http://nces.ed.gov/nationsreportcard/pdf/main2005/2007468.pdf (accessed 1. 2. 13).
[4] http://www.kff.org/entmedia/upload/Executive-Summary-Generation-M-Media-in-the-Lives-of-8-18-Years-olds.pdf (accessed 1. 2. 13).
[5] http://www.nea.gov/news/news04/ReadingatRisk.html (accessed 1. 2. 13).
[6] http://www.pewinternet.org/~/media/Files/Reports/2008/PIP_Writing_Report_FINAL3.pdf.pdf.
[7] See for example http://www.slate.com/articles/health_and_science/science/2011/04/is_cursive_dead.html (accessed 9. 2. 13).