

전통 인쇄텍스트와 하이퍼텍스트 독해력 비교

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요약

인쇄텍스트의 여러 제약들이 혁신적인 컴퓨터 기술의 발달로 인해 해결 방법이 제시되고 있다. 하이퍼텍스트는 온라인에서 발견되어 지는 전자 텍스트로서 비선형적 방법으로 정의되어 질수 있다. 전통적인 인쇄텍스트와는 대조적으로 전자방식의 쓰기는 약간의 변형이 필요한 새로운 기술에 의존하고 있다. 그러나 불행하게도 아직도 많은 연구들이 지식의 축적을 위한 목적으로 하이퍼텍스트 형태로 문서들을 해독할 때 독자가 가지고 있는 경험들을 필요로 하고 있다. 이 분야에 대해 지금까지 여러 연구들이 있어왔지만 독해를 위한 항법과 그 대책에 관한 방법을 제시하고 있지는 않는 것 같다. 본 논문은 독해력을 위한 전통 인쇄텍스트와 하이퍼텍스트간의 차이를 실험을 통해 밝히고자 한다. 실험 대상자들이 하이퍼텍스트와 인쇄텍스트를 해독할 때 가지는 경험을 근거하여 볼 때 텍스트의 형태는 독자의 독해력 기억에 매우 중요한 관계를 가지고 있다는 것을 밝히고자 한다.

The Contrast between Traditional Printed Text and Hypertext Reading Comprehension

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Abstract

The constraints of printed text have been lifted through developments in computer technology which has been identified as a revolutionary force. Hypertexts can be simply defined as electronic text that is found online, in a non-linear manner. In contrast to traditional printed texts, electronic writing depends upon an emergent technology, which is still subject to transformation. Unfortunately more research is needed on the experiences readers have when reading documents in hypertext formats for the purpose of knowledge retention. This study is to research the contrast between the traditional printed texts and hypertexts. Other areas where the literature has been relatively silent will be explored such as the experiences subjects have in reading hypertexts, and printed texts. It was clearly founded that the format of text does significantly influence the recall comprehension level of readers in the Printed Text and Hypertext Groups.

Keywords : reading comprehension, hypertext, text format, navigation, printed text

1. Introduction

There have been numerous noted differences between printed texts and hypertexts, with particular emphasis on the way readers interact

in these two different environments. Hypertext reading environments primarily differ from traditional printed text environments in that the hypertext learner has the ability to self-select the type and sequence of information to be acquired rather than following the path provided by the author of the text, which is a standard characteristic of printed texts.

Unfortunately many researchers have failed to investigate the level of knowledge retention, and reading comprehension gained from reading hypertexts and whether hypertexts are more

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suited for this purpose than printed texts.

This study is to investigate whether hypertext documents are suited for the purpose of reading comprehension and knowledge retention tasks. This is investigated through a comparison of printed texts regarding this issue.

Differences in performance are identified in terms of recall and reading comprehension for participants reading material in hypertext, compared to those reading the material in printed text format([9]Singer J. 1998].

The two groups in the study were of a similar composition, in the areas of age, gender, previous computer usage, and reading history. Both groups were given the same post-recall comprehension test, after reading the stimulus material in the given format. They were then given questionnaires according to the text format they read which explored their experiences in reading the stimulus material.

The level of reported understanding for the Hypertext Group was overstated by the participants when compared to actual comprehension scores of the Hypertext Group. This finding may be statistically significant when measured in a larger sample size.

2. Technology and Literacy

Jay Bolter is exploring the concept to address a common problem experienced by readers of hypertexts, an increasingly popular term referring to any nonlinear electronic text that provides readers with options to explore links between individual segments of text.([1]Jay Bolter, 1991)

There are many different manipulations of the term 'text'. It is seen as a communicative function between others and ourselves, or with in the private arena of the self. It is the social construction of meaning. The development of new technology has fostered the creation, annotation, and exchange of new texts within the community of users([4]Forman et al, 1993]).

2.1 The Technology of Reading and Writing

Reinking identifies four fundamental differences between printed and electronic texts.([7]Reinking, 1992) These differences lay the groundwork for the claim that conventional print based conceptions of literacy should be expanded to include electronic literacy. He argues that these differences are substantial enough to alter current conceptions of literacy but are not obvious to the print based mind.

The connection between technology and literacy seems to be a new topic because previously in our lifetimes, the technology of print was unchallenged. Like a fish that is unaware of the water in which it swims, the technology of print and its effects on us have been transparent. Electronic forms of reading and writing begin to make technology's effects on literacy opaque. For example, many people report a conscious awareness of changes in their writing when they become competent users of a word processor or when they begin to regularly use e-mail. The emotion inserted in the title of this article, but it is right at home in an email communication that, like other forms of electronic prose, is by nature more informal, conversational, and visual([Johnson. 1997]).

Such awareness may lead to reflect about how technology affects reading and writing, which in turn affects the concepts of literacy and how it should be taught.

2.2 The Influence of Technology

Most theorists argue that reading on a computer screen is more dynamic, more interactive, essentially more visual and often even auditory([7]Reinking, in Verhoeven & Snow, eds., 1991). In comparison, the experience of reading printed materials, especially books as Nielsen has argued is silent, static, and introspective([8]Nielsen. J. 1995).

There were a number of factors that influenced

the reading process for readers in the Printed Text Group that read the text in a linear format. These factors were; technical language, insufficient explanation of concepts, text structure and the interest level of the piece. These factors may all impact the recall and comprehension levels of the participants. Conklin, further reported that the physical tangibility of the structure of the text also contributes to the reading process for readers of printed texts([3]Conklin 1987).

Such changes inevitably, imperatively require new ways of reading, new relationships to the written word, new intellectual technique([2]Chartier, 1995, p115).

Chartier defines the extensive reader as "one who consumes numerous and diverse print texts, reading them with rapidity and avidity and exercising a critical activity over them that spares no domain from methodological doubt."

Kress provides significant insights in four main areas related to the existing and developing technologies([6]Kress Gunter):

- (a) The features of new forms of communication
- (b) The importance of visual and 'multimodal' texts
- (c) Breaking down the barriers between reading and writing

Generally information technology hardware and software are having an effect of literacy. Johnson argues that English teachers should be exploiting information technology for the development of those reading and writing skills necessary for the future([5]Johnson, 1997).

3. Stimulus Material and Text Format

The study consisted of reading the material then completing a post-recall text and answering questions designed to probe issues in reading the texts.

Of the 66 volunteers, 50 students were a

combination of second, and third year Bachelor of Arts, and Bachelor of Education students, taking education papers.

The website used for the hypertext portion of the study was 'readingonline.org'- where the stimulus material for the hypertext portion of the study was accessed in original hypertext format. No graphical changes were made to the hypertext. The article in hypertext format contained various links to different parts of the text.

Following the student's response to the initial contact by the researcher, they were each individually contacted via email and telephone, and meeting were arranged between themselves and the researcher. At this meeting, participants were allocated to either the Printed Text Group or the Hypertext Group, through order, that is, every second subject was allocated to the Printed Text Group.

3.1 Printed Text Format

The 20 participants allocated to the Printed Text Group were given the stimulus material in printed text format. The subjects were given up to 20 minutes to answer the questions as best they could from memory. The post-test consisted of 6 multiple choice questions and 4 open-ended questions. This was structured in two parts. The first asked for general information such as age, gender, past reading and computer usage history. The second part asked the participant more detailed questions on their experiences of reading the printed text.

3.2 Hypertext format

The 20 subjects allocated to the hypertext group were given the task of reading the article in hypertext format. After 20 minutes has passed, the computers were turned off, and the same post-test were given to the subjects. However, the second part asked questions specifically designed for the Hypertext Group, to probe their experiences in reading the material in hypertext form.

4. Text Group Performance on tasks

Ninety percent of the participants in the Printed Text Group were in the 18-25 age bracket while then percent of the participants were in the 26-33 age bracket.

<Table 1>Age intervals for printed and hypertext groups

	printed text group		Hypertext Group	
	Percentage	Number	Percentage	Number
18-25	90.0	27	76.7	23
26-33	10.0	3	20.0	6
34-41	0.0	0	0	0
42 and above	0.0	0	3.3	1
TOTAL	100.0	30	100.0	30

The Hypertext Group had a similar composition to that of the printed text group with 66.7% of the group being comprised of females and 33.3% of the Hypertext Group were male.

<Table 2>Gender proportions of printed text and hypertext groups

	printed text group		Hypertext Group	
	Percentage	Number	Percentage	Number
Male	30.0	9	33.3	10
Female	70.0	21	66.7	20
TOTAL	100.0	30	100.0	30

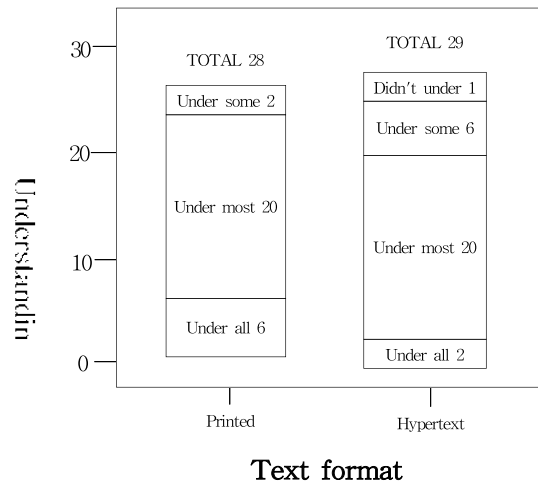
The reported number of hours spent each week on reading printed materials, and on the Internet was recorded and compared for the Printed Text and Hypertext Groups. The mean number of hours spent per week reading printed materials was 2.9 hours for the Printed Text Group, and 2.7 hours for the Hypertext Group.

<Table 3>Number of hours spent on reading printed materials

Hours spent (on average in a week)	Mean	
	Printed Text Group	Hypertext Group
On reading printed Materials	2.9	2.7
On the Internet	2.1	2.2

4.1 The Effect of Format Difference

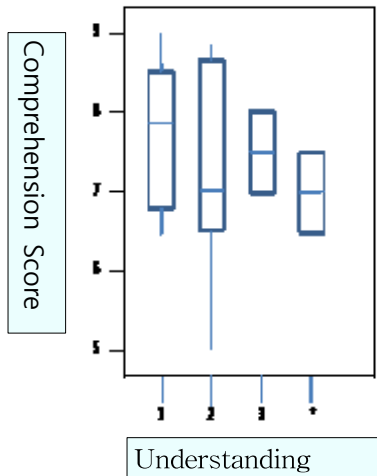
Participants from the Printed Text Group and the Hypertext Group were asked to report on their level of understanding of the text. Six of the 28 respondents from the printed text group stated they understood all of the text while 20 of the respondents stated they understood most of the text, with two respondents reporting only understanding some parts of the text. Within the Hypertext Group, two out of the 29 respondents from the Hypertext Group understood all of the text. Twenty of the respondents understood most of the text.



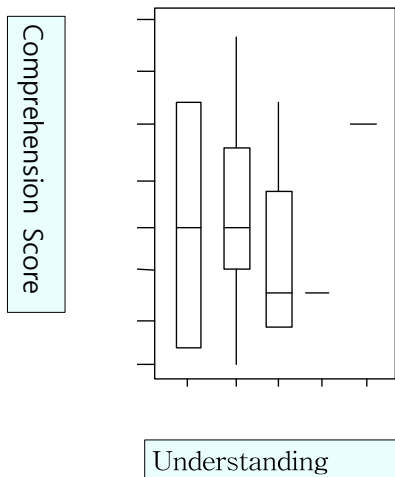
<Figure 1>Text format and reported understanding

A Chi-square test further supported the finding that the type of format does not have a large impact on the participants reported understanding of the text($\chi^2=4.984, p>0.005$)

Participants that reported understanding some parts of the article had an actual mean score of 4.1. There was one respondent that reported that they did not understand any parts of the text, their actual mean score was 3.5.



<Figure 2> Understanding and comprehension score of the PTG



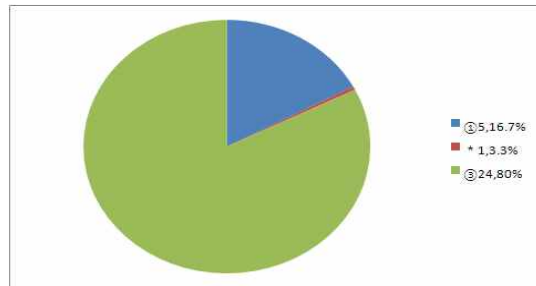
<Figure 3> Understanding and comprehension score of the HG

The one-way for actual understanding of text and comprehension score for the PTG(Printed Text Group) showed that there was no significant relationship between the two($F(2)=0.32, p>0.05$).

Overall, it can be seen that most participants reported that they understood most of the text for both the Printed Text and the Hypertext Groups, yet the participants in the Printed Text Group had a closer correlation between their reported understanding of the text and their actual understanding of the text, in comparison to the Hypertext Group.

4.2 Issues in reading hypertext

The participants in the Hypertext Group were asked to report whether they faced navigational problems while reading the material in hypertext format. Out of 30 participants, 17.2% reported that they did face navigational problems, and 82.8% reported that they did not face navigational problems while reading the material.



Key:
 1- Yes
 2- No
 *- Non-Response

<Figure 4> Navigational problems during the reading process

<Table 4> Hypertext group facing navigational problems

Navigational Problems	Number	Percentage
Yes	5	16.7
No	24	80.0
Non response	1	3.3
TOTAL	30	100.0

Hypertext readers reported the way in which they overcame the navigational problems they faced. Of the five respondents that did encounter navigational problems, only one of these respo

ndents tried to overcome this by using the 'back key', while another respondent tried to overcome this by following the instructions present on the web page.

5. Conclusion

The study discovered several interesting features related to the format of the texts given to the participants and the level of reader understanding. It was clearly established that the format of text does significantly influence the recall comprehension level of readers in the Printed Text and Hypertext Groups. Participants in the Printed Text Group had significantly higher comprehension scores than participants in the Hypertext Group.

The format of the text impacted the comprehension scores of the Printed Text and Hypertext readers. Participants in both the Printed Text and the Hypertext Groups both reported that they understood most parts of the text, but the relationship between their understanding and comprehension scores showed that Printed Text group had a better concrete or actual understanding of the text in comparison to the Hypertext Group.

In conclusion, the results of the study indicate that format does have an impact on the level of comprehension and recall from the text. Furthermore, the format of the text influences the way in which the material is read, which in turn affects recall and comprehension scores of the participants. The practical implications for this study are within educational contexts. Students may need to be taught strategies in reading hypertexts, in order to make full use of their features rather than be disadvantaged by their structure.

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