

Examining the users' reading experiences with ebook readers

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Abstract—This study evaluates the usability of ebook readers in the context of comic book reading through experimental designs and interviews to understand the digital reading behaviors with e-readers. 11 adults participated in the experiment as the subjects, and their reading behaviors were recorded and analyzed. The results suggested that all participants were positive to read manga with e-readers for the reasons of reading mobility, mass storage and the interface of the ebook readers. Also the users reflected that more intuitive control other than clicking to turn page would be preferable for mobile reading and learning.

Keywords—ebook reader; comic book; mobile learning; usability study

I. INTRODUCTION

For many people, reading comic book is an essential entertainment for leisure time [1]. Among the text-based media, comic book stands for a unique genre with its presentation combining panels, page, graphic and text [2]. Panel is the frame that shows fragments of a story, and the arrangement of panel serves as the reading cue for readers to follow [3]. Usually the context of stories is presented with exaggerating, direct and vivid touch to be appealing [4]. The interaction between these physical grammars of comic book composition and the artistic expressions of the authors makes reading comic books very different an experience from other leisure reading such as novels and essays. In addition to print

books, currently comic books are published in electronic formats such as the World Wide Web and the mobile devices of smart phones. Online comic books are popular with the young generations for the quick accessibility to updating content. However, most of the users are not satisfied with their reading experiences with the screens, and reported problems of digital reading inefficiency [5]. Electronic book readers with monochrome display seemed to fit the image of ordinary comic book, but the presentation of pages as well as the interaction between users and devices are still calling upon more intuitive solutions. The purpose of this study is therefore, to evaluate the usability of ebook readers under the specific context of comic book reading through experimental designs and interviews to understand the digital reading behaviors with ebook readers.

II. EXPERIMENT DESIGN

A. Participants

11 users, aged 21-29, participate in the experiments through purposeful sampling. They come from different academic disciplines including science, humanities and arts, and the proportion of male: female is 3: 8. All the participants are experienced readers with print comic books, and have recently read comic books in the past six months. Although all

the participants have heard of ebook readers, none of the them has ever used Kindle, Kindle DX or Kindle 3 before.

These participants are required to wear an eye-tracking device while reading the experimental materials by Amazon Inc.'s Kindle DX. The sample content for the reading experiment consists of 19 pages in total, and 4.38 panels/page averagely. And the proportion of text and graphic is 1:1.

Users' reading behaviors during the experiments are recorded using both video and eye tracker for cross testifying. The participants take the post-test of comprehension after the experiment, and the questionnaires and interviews are conducted to verify users' motive behind their reading behaviors.

III. RESULTS AND DISCUSSION

A. Reading experience with print and electronic media

70% of the participants have read comic books in the recent month, and they read averagely 3-4 comic books in every month. 50% of the participants spend 10-20 minutes to finish reading a comic book, 30% of them need 20-30 minutes, and 20% would spend more than 30 minutes nonstop when reading a comic book. However, 45% of the participants have the habit of paused reading for physical reasons such as tired feeling eyes and reading positions. And they will go back to the reading shortly, while they tend to mark the recent reading status by putting the comic book upside down on the desk, using the bookmarks or learning the page number by heart.

All the participants have experiences of reading comic books using computer and the Internet in the recent six months. But they have never read comic books by mobile devices including cell phones, PDA and ebook readers. 40% of the participants gave up online comic book because they feel uncomfortable with screen-based reading. Different from their reading with print books, most of the participants read comic books nonstop voluntarily when reading online, mainly due to the difficulty to mark the reading status.

B. Reading comic books with Kindle DX ®

The average reading time to finish the 19-paged materials is 452.91 seconds. Participants read with the direction from right top to the left bottom, and their attentions go to text in the dialogue balloon then the graphic all the times. This result is consistent with the interview while the participants reported they usually just scanned the graphic parts and focused on the facial expressions of the characters.

Only 3 participants answered all questions correctly in the comprehension test, while 7 participants got one question wrongly. The worst and the only participant answered two questions wrongly. However, what worth of noticed is that all these mistakes converged on certain questions which are more contextual than factual problems.

The results of the usability test suggested that all participants think ebook readers as good devices to read comic books. The advantages of ebook readers include its mobility, storage and displays. Most of the participants agree that Kindle is sufficiently, easily and conveniently to read.

They are satisfied with the current size and position of the button and keyboard. However they think the speed of page turning and showing is still too slow and sometimes annoying that distracts their attention from the content to the device, which is evident from the eye tracking data.

C. User preferences over ebook readers and content

Most participants preferred reading comic books in print format, for the physical touch of turning pages, and more importantly, to skip and search back and forth across the pages. Other reasons such as the lighter weight and portability are also reported. The second preferable medium is Kindle DX, and the least is personal computers as summarized in Table 1.

As for the preference on contexts, text-based publications such as novels and textbooks are more preferable to be read with ebook readers than graphic-based ones. Most participants also reflected on the inconvenience of taking notes with the current ebook readers. The current input by typing with keyboard is not as intuitive as writing with a pen.

TABLE 1

Reading devices and contents	The preferences mean of reading devices and content		
	<i>Manga</i>	<i>Novel</i>	<i>Textbook</i>
On paper	2.9	2.6	2.4
Kindle	2	2.1	2.4
Computer	1.3	1.4	1.3

The current study examined the users' reading experiences with the ebook readers under the specific context of comic books. In the future, different contexts will be examined to obtain a thorough understanding toward the digital reading phenomena.

IV. REFERENCES

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