

學童利用平板電腦閱讀電子書行為研究
A Study of Children Ebook Reading Behavior
Using Tablet PC

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Outline

- Introduction
- Research Method
- Research Results
- conclusion

Introduction

- The era of mobile reading

Kindle/iPad changed the reading world !

Introduction

Past research on reading

- Children showed relatively high acceptance of e-books (Chen , 2005; Chen , 2010; Wei, 2011; Druin et al., 2007; Larson, 2010)
- Reading components can be organized into two major categories, namely decoding and comprehension. (Carver, 1973; Mayer/translation by Lin, 1997; Downing and Leong, 1982; Gagné, et. al./translated by Yue, 1998; Wang ,2004)
- The higher learner's computer efficacy, the greater their intent to learn to use computers (Martocchio, 1994; Compeau, Higgins, 1995)
- Users with higher Internet self-efficacy will have higher frequency and motivation in their Internet use, and hence the better their learning achievement (Ren, 1999; Liaw, 2002; Tsai & Tsai, 2003)

Introduction

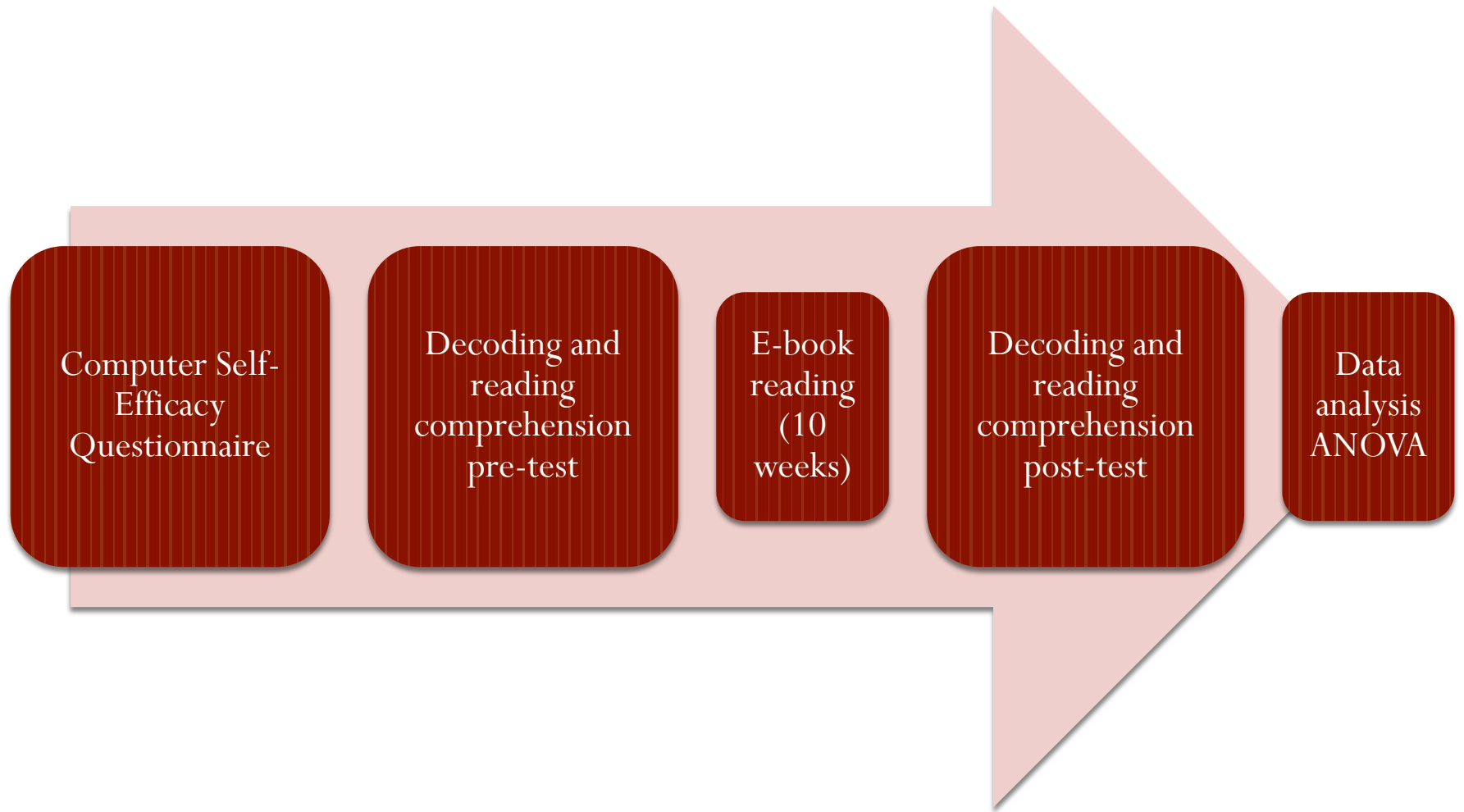
- Less studies about examining whether e-book reading improved the reading ability of children
- Mobile reading behaviors

Introduction

- Research Questions

- 1. Can e-books increase reading interest in children, and under the guidance of teachers,
- 2. Can reading e-books improve children's reading comprehension and decoding?
- 3. Does the children's computer self-efficacy affect their reading comprehension and decoding when reading e-books?
- 4. The acceptance of children toward mobile reading
- 5. The behavior of mobile reading of children

Research Method - I Experimental Design



Research Method-I

- Experimental research
- Interview

Research Method - II

- Participants
 1. 68 elementary school students from three elementary schools in northern Taiwan.
 2. One class was selected from each school.

Research Method - III

- Research Tools
 1. Tablet PC
BenQ R70



<http://www.benq.com.tw/images/bqp/tw>.
E-books

Research Method - IV

- Research Tools
 2. 120 e-books were selected and classified



https://lh3.ggpht.com/Gg-CSqmq7jVvQAiOggPeL_8eRZhho70HerQ_bJcml6F7dUUWI9LAVvCbUzhCoYgwmAyL=h230

Research Method - V

- Evaluation Tool
- 1. Computer Self-efficacy Questionnaire (Jang, 2008)
 - to determine the students' computer self-efficacy
- 2. Chinese Character Graded Word Recognition Scale(Huang,2001)
 - to evaluate the students' Chinese decoding ability.
- 3. Chinese Reading Comprehension Test(Lin and Chi, 2002)
 - to measure changes in the students' reading comprehension
- 4. Interview questions
- 5. Reading tracking log

Research Results - I

- Analysis of students' computer self-efficacy
 1. Scores of participating students ranged from 31~92
 2. average score:69.8
 3. 27th percentile : 61.00
 - 4.73th percentile : 82.00
 - 5.Number of computer self-efficacy classification :
Low-19, Intermediate-30, High-19

Research Results - II

- Analysis of students' computer self-efficacy

N	Lowest	Highest	M	S	27th Percentile/No. of students below	73rd Percentile/No. of students above
68	31	92	69.82	14.405	61.00/19	82.00/19

Research Results - III

- Changes in the children's decoding
- Decoding score indicates a significant improvement

	N	Lowest Score	Highest Score	M	S
Pre-test decoding	68	10	157	96.26	31.897
Post-test decoding	68	28	163	108.38	28.575
Effective N	68				

Research Results - IV

- Changes in the children's reading comprehension
- Reading comprehension score indicates a moderate increase

	N	Lowest Score	Highest Score	M	S
Pre-test reading comprehension	68	8	96	56.34	24.333
Post-test reading comprehension	68	22	97	62.90	22.079
Effective N	68				

Research Results - V

- the computer self-efficacy of the participants affected the decoding effect of e-book reading.

Research Results - VI

- Effect of children's computer self-efficacy on the decoding outcome of reading e-books

Variation Source	SS	df	MS	F	p
Between group	752.996	2	376.498	3.649*	.031
Within group	6706.063	65	103.170		

Research Results - VII

- Significant difference was found between the high computer self-efficacy group and low computer self-efficacy group.
- The decoding effect of the low computer self-efficacy group was greater than that of the high ability group.

Research Results - VIII

- Post-hoc comparison of decoding effect

	(I) Computer self-efficacy Group	(J) Computer self-efficacy Group	Mean Deviation (I-J)	Standard Error	Significance	95% Confidence Interval	
						Lower Limit	Upper Limit
Scheffe's Method	Low	Intermediate	5.958	2.978	.143	-1.50	13.42
		High	8.632*	3.295	.038	.38	16.89
	Intermediate	Low	-5.958	2.978	.143	-13.42	1.50
		High	2.674	2.978	.670	-4.79	10.13
	High	Low	-8.632*	3.295	.038	-16.89	-.38
		Intermediate	-2.674	2.978	.670	-10.13	4.79

*Mean Deviation showed .05 significance level

Research Results - IX

- The effect of computer self-efficacy on e-book reading comprehension effect was inconclusive.

Research Results - X

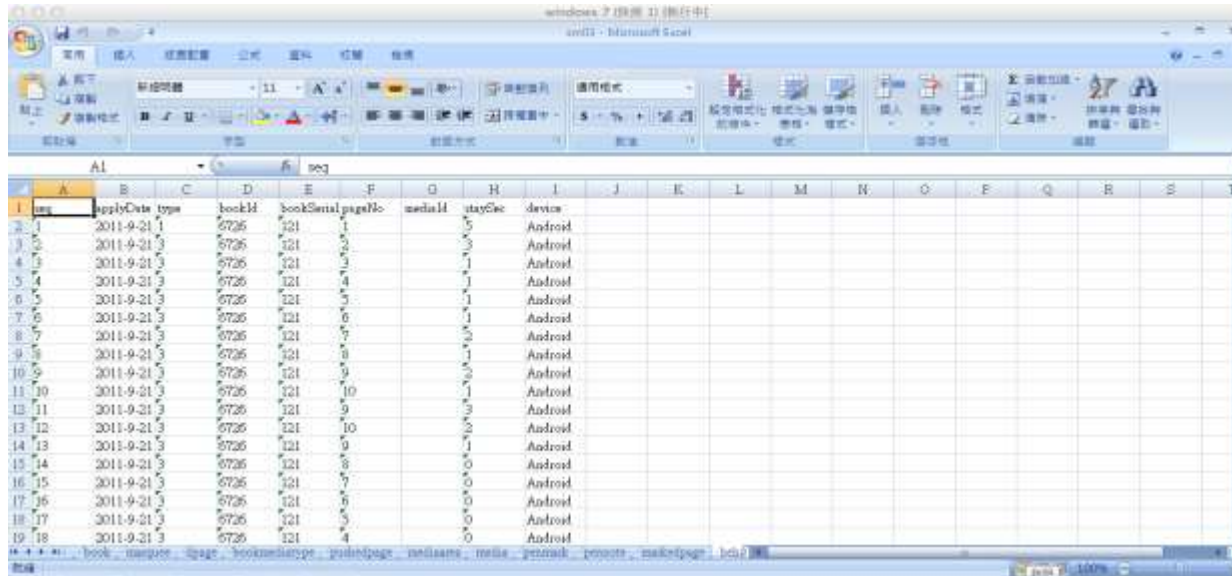
- Effect of differences in children's computer self-efficacy on comprehension effect of reading e-books

Variation Source	SS	df	MS	F	p
Between group	64.002	2	32.001	.396	.675
Within group	5250.763	65	80.781		

Research Results - XI

prefer	students
Prefer e-books	12
Prefer printed books	5

Track records analysis



The screenshot shows a Microsoft Excel spreadsheet with the following data:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	time	appDate	type	bookId	bookSerial	pageNo	mediaId	staySec	device											
2	1	2011-9-21	3	5726	121	1		5	Android											
3	2	2011-9-21	3	5726	121	2		3	Android											
4	3	2011-9-21	3	5726	121	3		1	Android											
5	4	2011-9-21	3	5726	121	4		1	Android											
6	5	2011-9-21	3	5726	121	5		1	Android											
7	6	2011-9-21	3	5726	121	6		1	Android											
8	7	2011-9-21	3	5726	121	7		5	Android											
9	8	2011-9-21	3	5726	121	8		1	Android											
10	9	2011-9-21	3	5726	121	9		2	Android											
11	10	2011-9-21	3	5726	121	10		1	Android											
12	11	2011-9-21	3	5726	121	9		3	Android											
13	12	2011-9-21	3	5726	121	10		2	Android											
14	13	2011-9-21	3	5726	121	9		1	Android											
15	14	2011-9-21	3	5726	121	8		0	Android											
16	15	2011-9-21	3	5726	121	7		0	Android											
17	16	2011-9-21	3	5726	121	6		0	Android											
18	17	2011-9-21	3	5726	121	5		0	Android											
19	18	2011-9-21	3	5726	121	4		0	Android											

百分位數	5	10	15	20	25	30	35	40	45	50	55
秒數	1	1	1	1	2	2	3	4	5	6	8
百分位數	60	65	70	75	80	85	90	95	97.5	100	
秒數	10	12	16	20	25	33	46	82	146	332304	

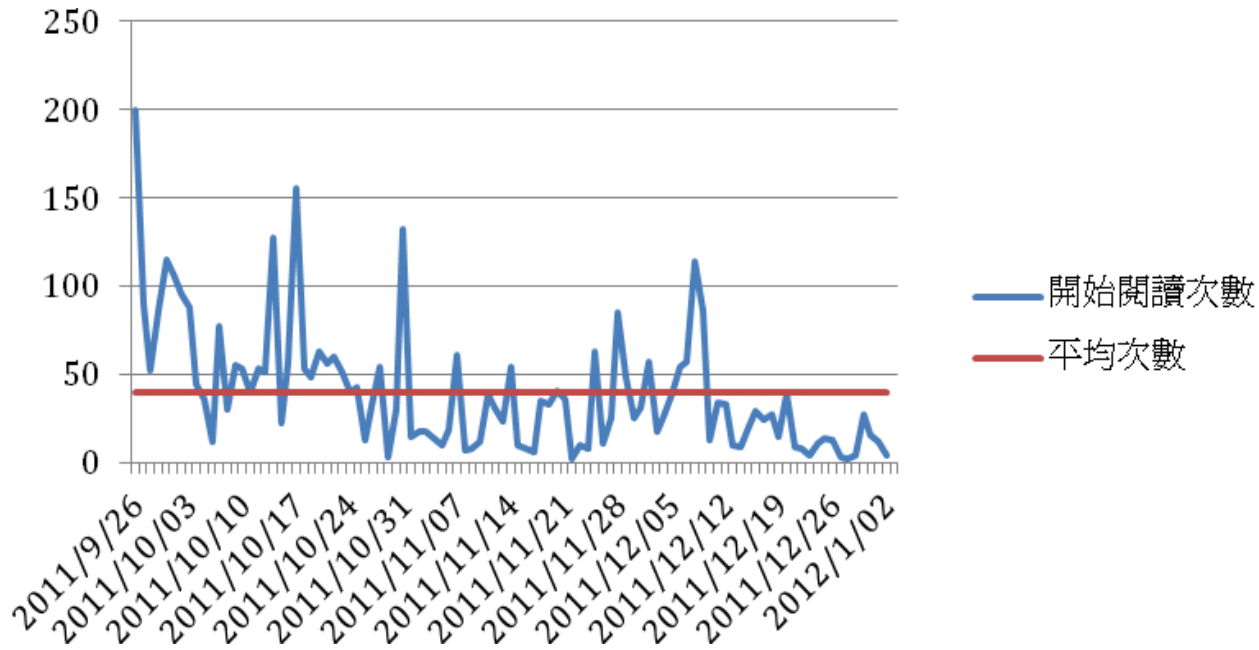
閱讀動作紀錄百分位數與所對應每頁停留秒數

Average stay time per page

平均每頁停留時間

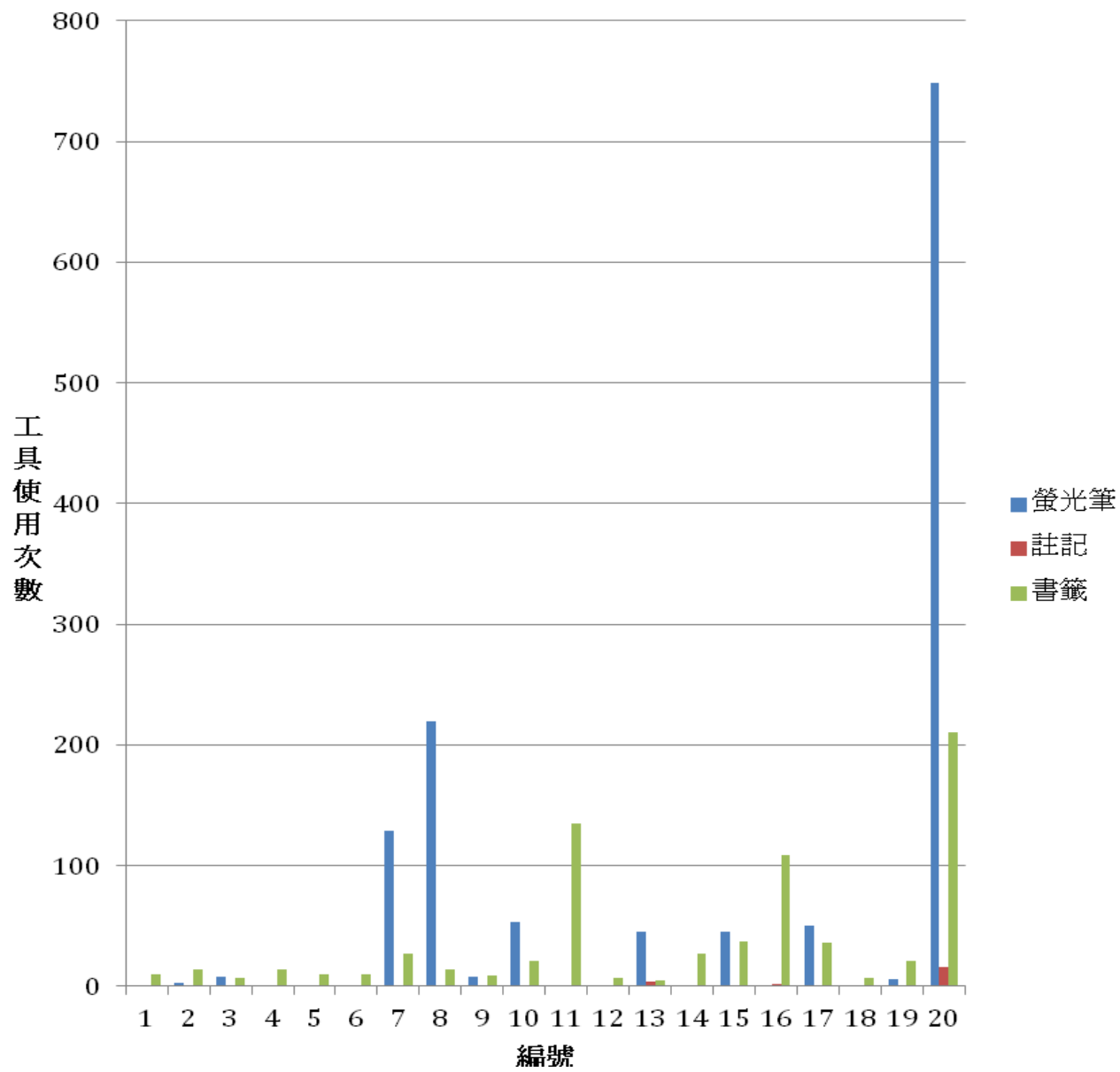
時間	1-6	7-20	21-
百分比	51%	25%	24%

Reading frequency of e-books



Reading behavior to liked or disliked e-books

- 遇到喜歡的讀本，會從第1頁開始逐頁閱讀，並穿插許多滑頁、跳頁與來回翻頁的動作
- 遇到不喜歡的讀本時，瀏覽幾頁就跳出



Conclusion - I

- Using tablet PC to read e-books had a positive effect.
- The students' computer self-efficacy had significant impact on decoding effect of reading e-books but had no significant impact on reading comprehension effect.
- The students with high computer self-efficacy had less decoding effect than those with low self-efficacy.
- Most children like e-books more than printed books.
- Reading one page cost 1-6 seconds
- Children use bookmark, highlighter, and notes functions.

Conclusion - II

- Possible explanation
 1. E-book reading increased reading interest in children, and subsequently those with lower computer self-efficacy increased their vocabulary through reading.
 2. The higher the students' computer self-efficacy, the more eager they were to explore the functions of the tablet PC, and correspondingly the less time and effort they spent reading e-books.

Conclusion - III

- Comprehension is a more advanced ability that is not affected by computer self-efficacy.

Thank You