Reading Speed Performance based on Interface Design Elements for Web Interfaces

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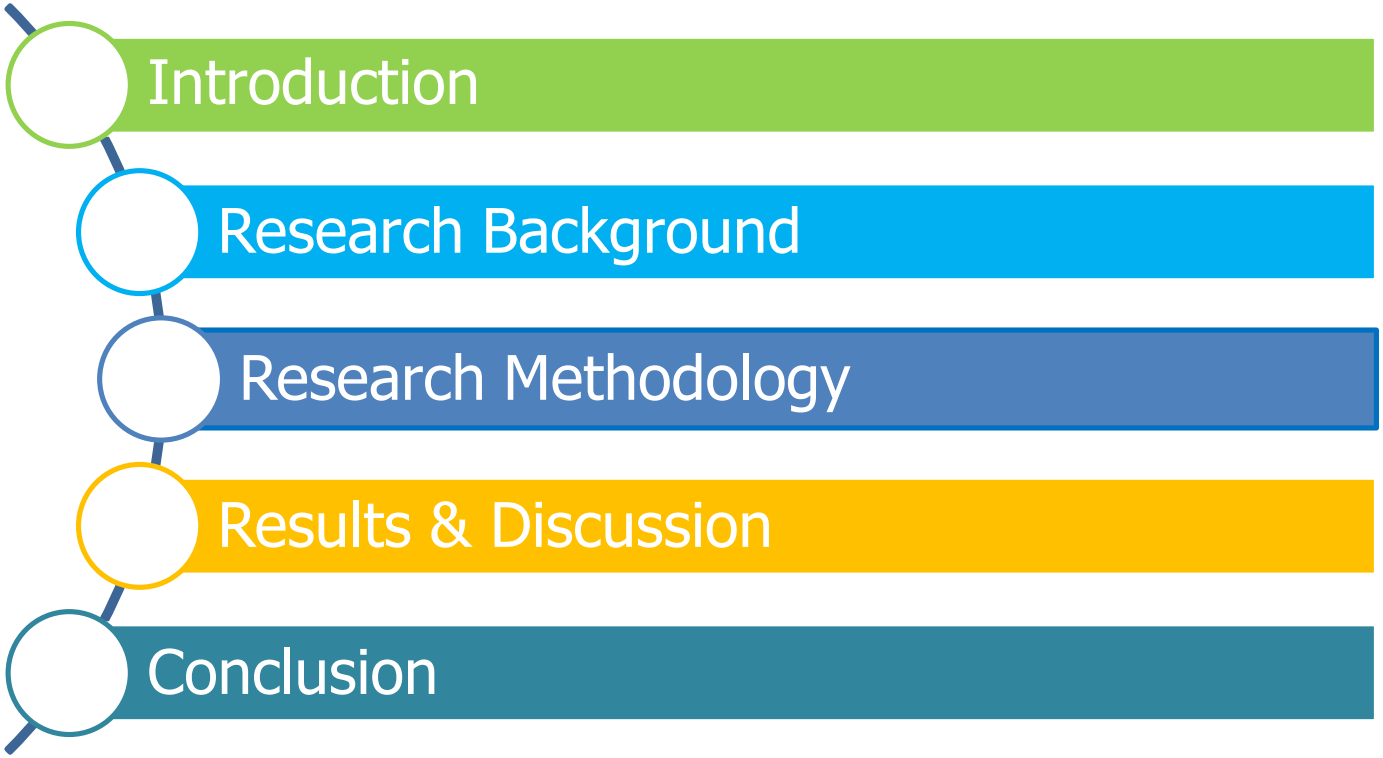
PRESENTATION OUTLINES



INTRODUCTION

01

System with a good interface design:

- ❑ Enable users understand the complex information.
- ❑ Give users a good experience while interacting with those interfaces.

02

The widely used of internet, most of the documents are viewed and read online in softcopy format.

- ❑ Visualization of text give an impact on text-based content such as the reading speed.

03

Therefore, this study aims to investigate the relationship between reading speed and interface design elements, in which the interface design elements are manipulated to analyze the users' reading speed for web interface.

RESEARCH BACKGROUND

Reading Speed

On paper : 200 words per minute
On screen : 180 words per minute
(Zelfie, 1998)

It shows that the medium of reading effected the speed of reading either by speeding it up or slowing it down

Reading Speed & Gender

A few studies have focused on gender differences related with reading skill domain such as Lynn & Mikk (2009), Roivainen (2011), Saint-Aubin, Voyer, & Roy (2012), Ghani, Muslim, & Zakaria (2020)

Taken together, from the previous studies, it is shown that females were more outstanding than males in reading skill area.

RESEARCH BACKGROUND

Interface Design Elements

Text

- Is a multimedia element that plays an essential role in distributing information for instructional software in verbal form (A. Z. M. Ali, 2013).
- Thus, necessary to carryout a research that related to text, especially for improving students' reading level.
- The readability of text on computer screens is essential to ensure effective interaction with the media.

Font Types

- Can be divided into 2 categories: Serif and San Serif.
- Both fonts were selected to be applied to the web interfaces in the present study.
- Times New Roman, Georgia, and Garamond font types represent Serif family font, whilst Arial and Verdana are on behalf San Serif family font.

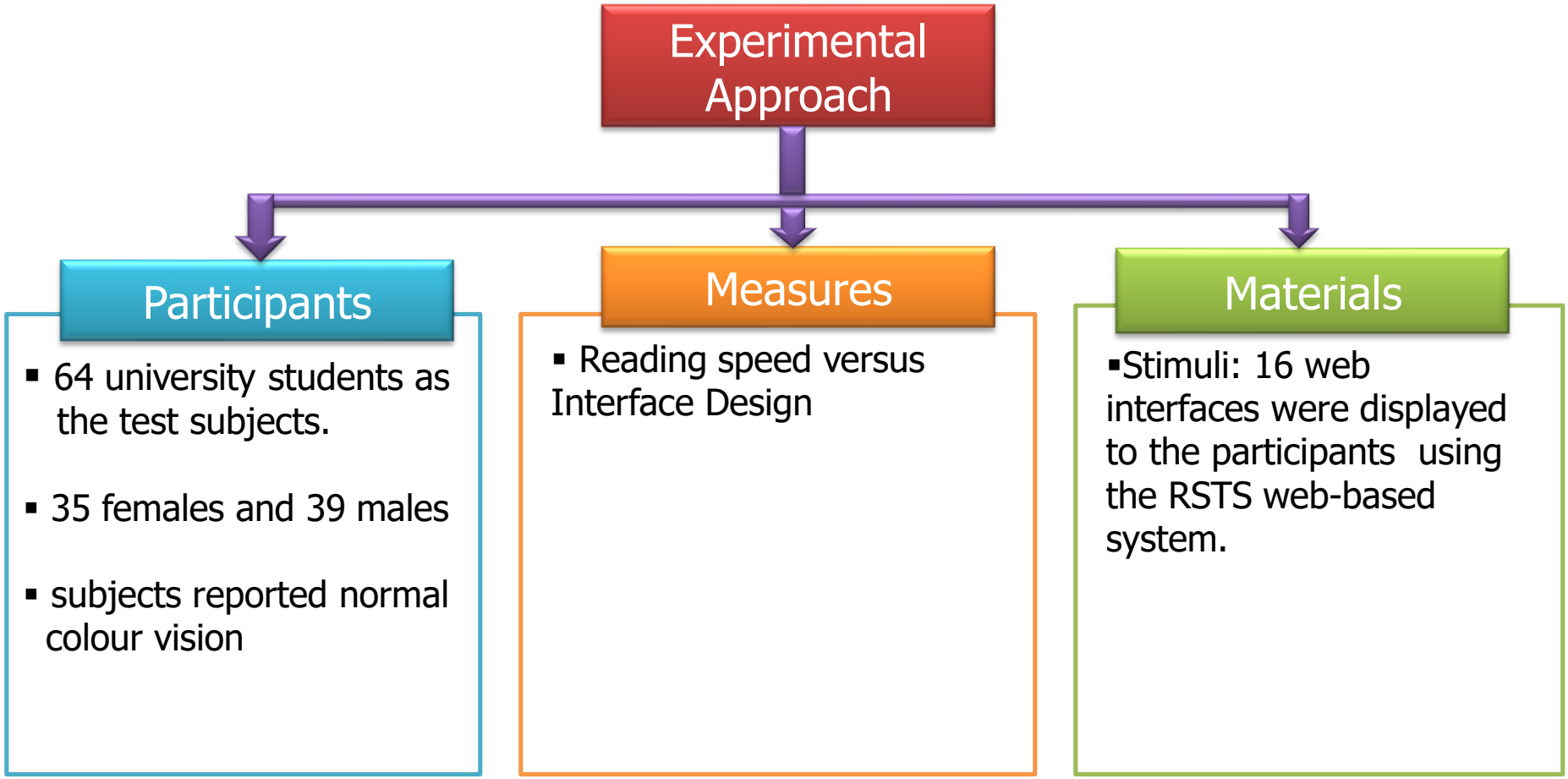
RESEARCH BACKGROUND

Font Color

- Font color and background color affect the reading speed especially when the contrast of color between the fonts and background is bigger (Scharff, Ahumada and Hill, 2000), (Wu and Yuan, 2003), (Ray, Fowler, and Stein, 2005) and (Stein, 2003).

- In the current study, color of black, blue, grey and red were chose as font color. On the other hand, color of white, blue, yellow and red were selected as background colors.

RESEARCH METHODOLOGY



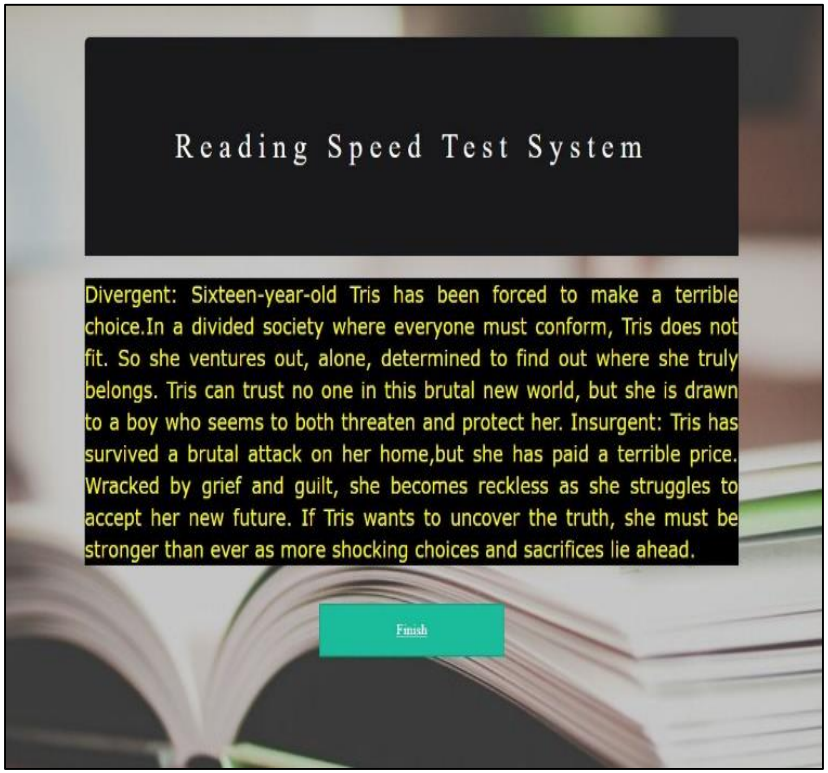
RESEARCH METHODOLOGY

Web Interfaces with Interface Design Elements

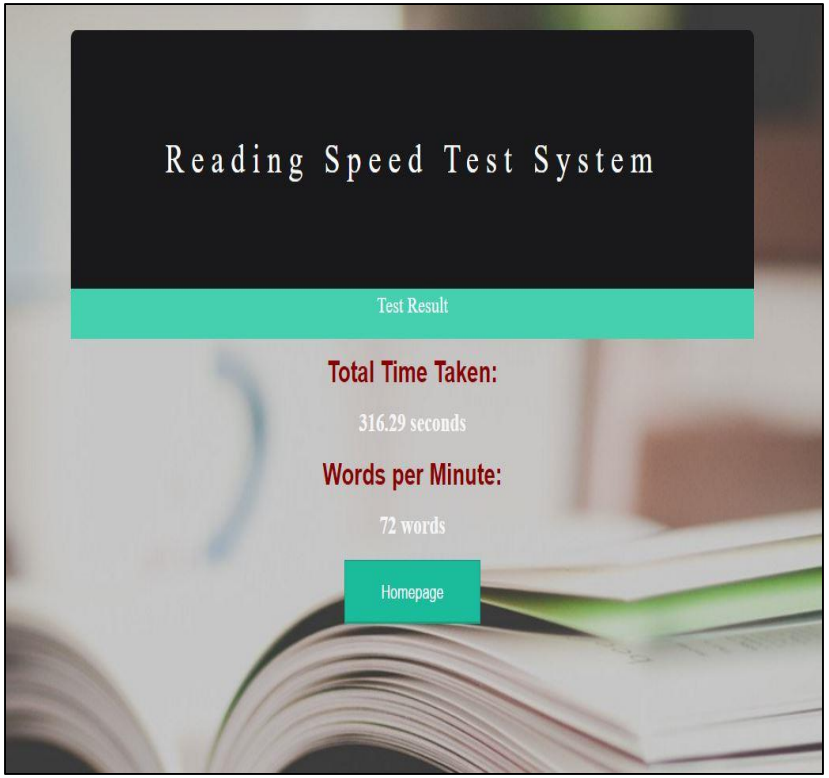
No.	Interface ID	Font Color	Background Color	Font Type
1.	itf01	Black	White	Georgia
2.	itf02	Black	White	Garamond
3.	itf03	Black	White	Arial
4.	itf04	Black	White	Verdana
5.	itf05	Blue	Yellow	Georgia
6.	itf06	Blue	Yellow	Garamond
7.	itf07	Blue	Yellow	Arial
8.	itf08	Blue	Yellow	Verdana
9	itf09	Grey	Red	Georgia
10.	itf10	Grey	Red	Garamond
11.	itf11	Grey	Red	Arial
12.	itf12	Grey	Red	Verdana
13.	itf13	Red	Blue	Georgia
14.	itf14	Red	Blue	Garamond
15.	itf15	Red	Blue	Arial
16.	itf16	Red	Blue	Verdana

RESEARCH METHODOLOGY

The RSTS is a web-based system was used in this experiment to collect and analyse the data in the current study.



Reading Test Page

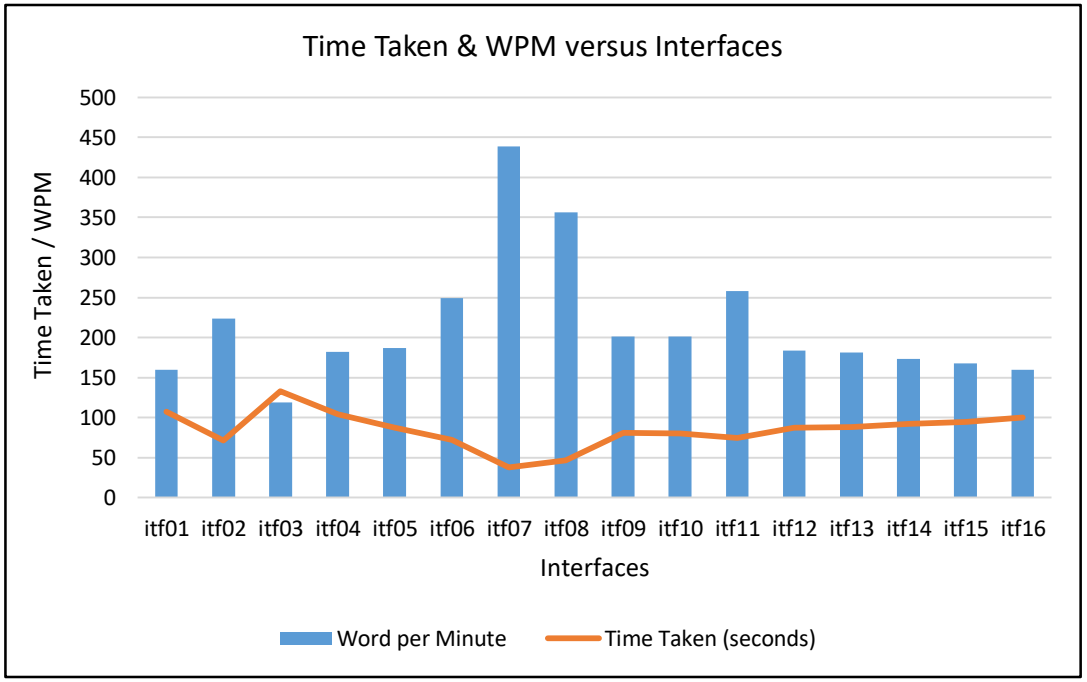


Test Results Page

RESULTS & DISCUSSION

Result of Reading Speed versus Interface Design

No.	Interface ID	Word per Minute	Time Taken (seconds)
1.	itf01	160	107.20
2.	itf02	224	71.22
3.	**itf03**	**119**	**132.82**
4.	itf04	182	103.74
5.	itf05	187	87.54
6.	itf06	249	71.72
7.	**itf07**	**439**	**37.40**
8.	itf08	356	46.55
9	itf09	201	80.71
10.	itf10	201	79.97
11.	itf11	258	74.70
12.	itf12	184	87.06
13.	itf13	81	87.89
14.	itf14	173	92.34
15.	itf15	168	94.72
16.	itf16	160	100.00

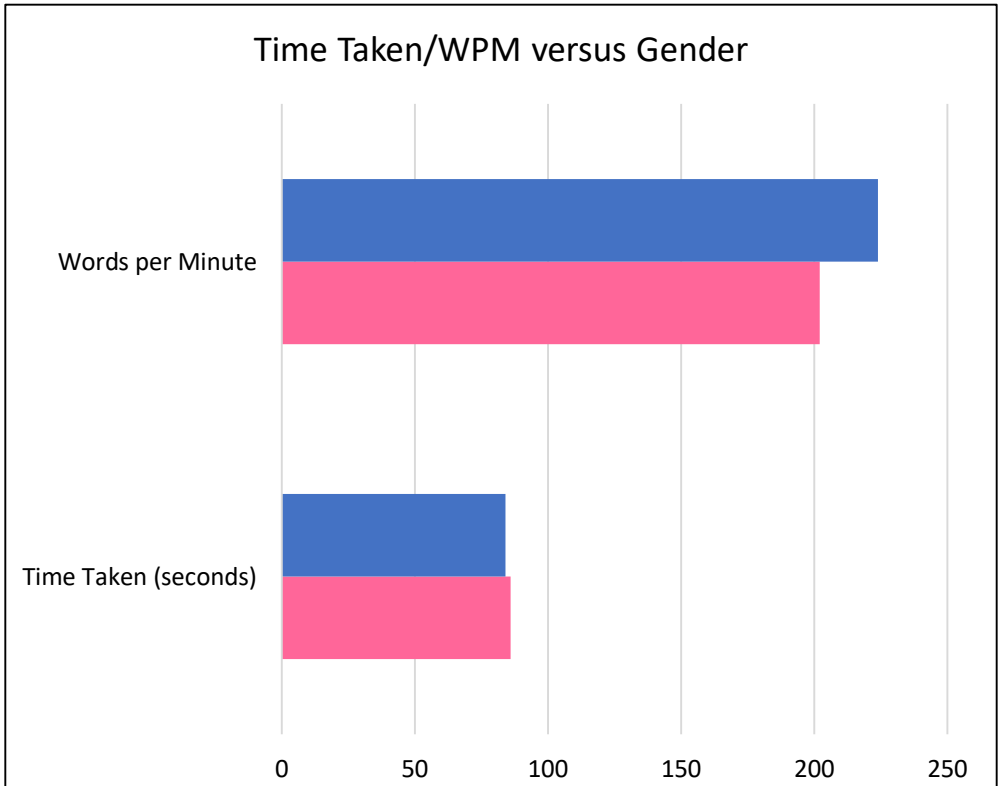


- InterfaceItf07 had the highest wpm and the shortest/lowest time taken.
  - blue font color, yellow background color and Arial font type

- Interface itf03 had the lowest wpm and the longest/highest time taken
  - black font color, white background color and Arial font type

RESULTS & DISCUSSION

Result of Reading Speed versus Gender



	Time Taken (seconds)	Words per Minute
Male	84	224
Female	86	202

The difference in time taken between male & female is **2 seconds**.

Male participants had a **slightly higher wpm** compared to female participants.

The **reading speed** is **inversely proportional** to the **time taken** for reading through the text. The **higher the time taken**, the lower the wpm will be obtained.

The **reading speed** of **male** participants was **higher than the female** participants.

Contradict results with the **previous studies** which found that females were more perform than males in reading skill area (R. Lynn and J. Mikk, 2009), (E. Roivainen, 2011) & (J. Saint-Aubin, D. Voyer, and M. Roy, 2012).

Due to the environmental factor during the experiments such as subjects' posture, distance from the screen and room illumination. Those aspects might influence the participants' eye vision and indirectly influence their reading performance.

CONCLUSION

This study had investigated the association between reading speed and interface design elements for web pages.

This study showed that the interface design element contribute a significant impact on the students reading speed for web pages.

The combination of blue font color and yellow background color and Arial font type achieved the highest reading speed whilst, black font color, white background color and Arial font type obtained the lowest reading speed.

This study also found that the males are outperformed than females in reading speed.

THANK YOU