Text Input Technique

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Interaktionstechniken und -technologien
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Carstens-Peters, Glenn (2017):
https://unsplash.com/search/typing?photo=npxXWgQ33ZQ

Study Design

This study evaluates two text input techniques:

- Standard text input method
- Autocompletion text input method

Hypotheses:

“There is no difference in the time on task between the standard and the autocompletion text input method”

Study Design - variables

Dependent variables:
- Words per second

Independent variables:
- Mode of input method (standard vs autocompletion)
- Participants

Controlled variables:
- Keyboard (MacBook Pro 15”)
- Input phrases (MacKenzie and Soukoreff phrase set[1])
- Input characters (no punctuation as both methods have same mechanism)

[1]Mackenzie, I. S., & Soukoreff, R. W. (2003). Phrase Sets for Evaluating Text Entry Techniques, 754–755.

Study Design - implementation

QCompleter:

- dropdown with words for autocompletion
- enter, return -> selects word

Wordlist:

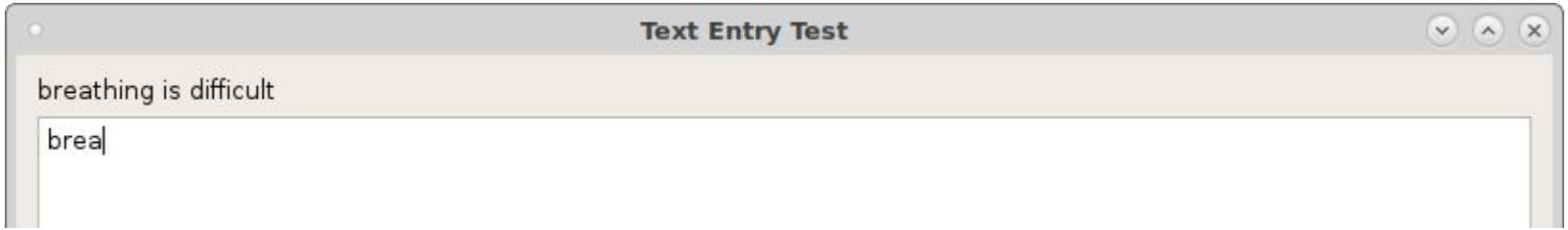
- 5000 most used english words (from http://www.wordfrequency.info)
- only use words with more than 2 characters

Words per minute:

- Yamada 1980: (self.text_length / (self.test_time / 1000.0)) * 60.0 / 5.0

Study Setup

- Participants could read phrase and type it underneath



- Time measurement:
  - start: when first key was pressed
  - pause: between enter and key press (when next phrase was shown)
  - stop: when enter after last key of last phrase was pressed
- Key presses were counted
- Use of autocompletion
- No error rate was measured (but logged)

Study Conduction

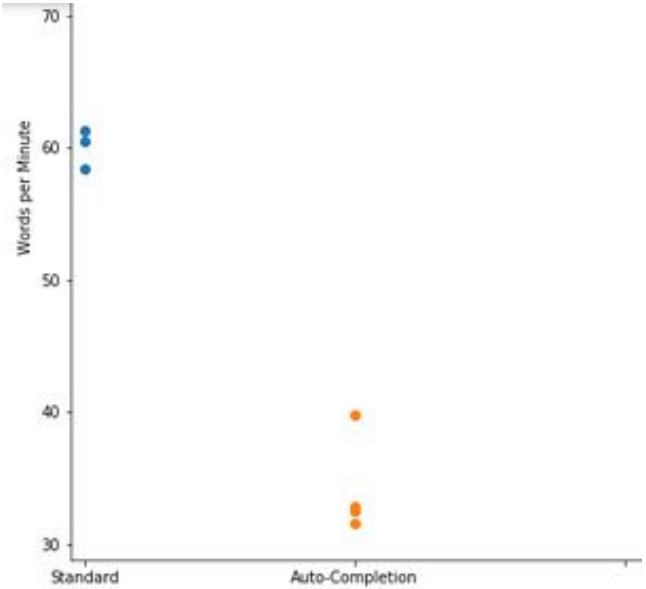
- Within subjects
- 2 blocks with 8 phrases each
- Procedure:
  - Introduction
  - training period I: 2 phrases with first input method
  - measurement period I: 8 phrases with first input method
  - training period II: 2 phrases with second input method
  - measurement period II: 8 phrases with second input method
- Participants were asked to read phrase first before starting to type

Participants

- 4 participants (two male, two female)
- Average age: 23.25
- Counterbalanced order of tasks:
  - Participant 1 and 3:
    - First input method: auto-completion text input method
    - Second input method: standard text input method
  - Participant 2 and 4:
    - First input method: standard text input method
    - Second input method: auto-completion text input method

Results - words per minute

Words per minute (wpm):

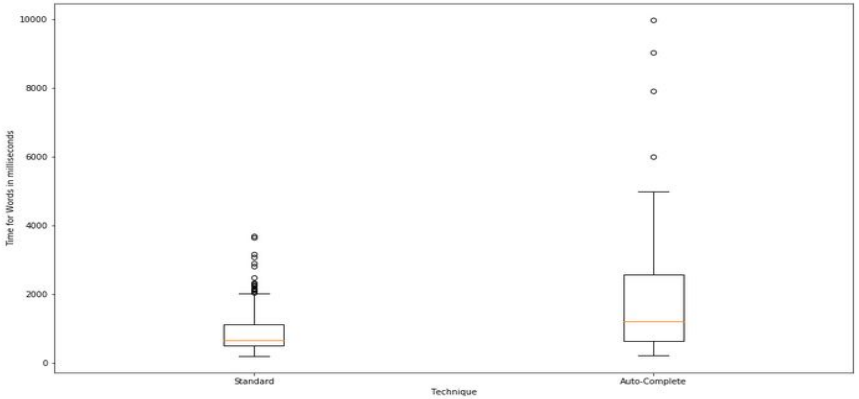


	Standard (wpm)	Autocompletion (wpm)
Participant 1:	60.4487	32.5411
Participant 2:	82.8348	39.7532
Participant 3:	58.4238	32.8347
Participant 4:	61.2536	31.5657

Results - times for words and sentences

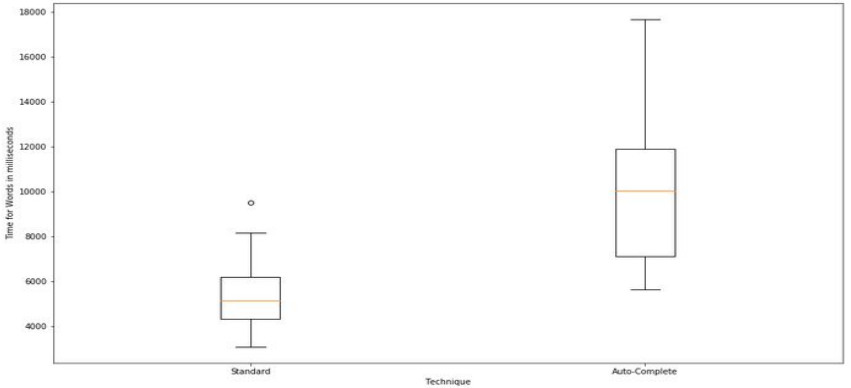
Average time needed for words (in milliseconds):

	Standard	Autocompletion
Mean:	946.4576	1779.7430
Standard Deviation:	688.1042	1563.6221
p-value	0.00000000031303471738081 1	



Average time needed for sentences (in milliseconds):

	Standard	Autocompletion
Mean:	5270.5484	9999.7742
Standard Deviation:	1491.5592	3301.4468
p-value	0.00000000138696901091063 9	



Results - summary

- ➔ Participants needed significantly longer with the autocompletion method
- ➔ Words selected with autocompletion by all 4 participants:
  best, breathing, chemistry, difficult, east, never, physics, thin, water
- ➔ Even experienced participant (82.83 wpm using the standard technique) couldn’t achieve a rate of 40 words per minute with autocompletion
- ➔ Learning effect might improve the speed

Limitations

- ➔ Our autocompletion wasn’t implemented good enough (Popup, End of word/sentence)
- ➔ Wordlist for QCompleter very important (Learning from/Adjust to the user)
- ➔ Participants might need a longer testing period