
The effect of e-dictionary font on vocabulary retention

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Easy-to-read information displays are considered more effective

- ‘students tend to gauge the relative success of a learning session based on the ease of encoding information rather than subsequent performance’

(Bjork, 1994; Diemand-Yauman et al, 2010)

Typographers aim for maximum legibility

e.g. 'Subjective and objective measures were recorded from 18 users who spent 60 minutes reading fiction from each of three different displays. When reading from an LCD, users preferred text rendered with ClearType. ClearType also yielded higher readability judgments and lower ratings of mental fatigue.'

(Microsoft's Typography group website)

Are e-dictionaries too easy to use?

Plenty of evidence that teachers think so –

- e.g. Taylor and Chan (1994), Sharpe (1995), Zhang (2004), Stirling (2005).

The feeling that if information that is quickly found is quickly forgotten.

Print dictionary consultation is more laborious, so learners invest more in the process, so they remember better.

The levels-of-processing effect

(Craik & Lockhart 1972)

- **Shallow processing**, based on just the typeface or the sound of the word, only leads to fairly short-term retention
 - **Deep processing** involves more meaningful analysis (e.g. the creation of associations) and leads to better recall.
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Fortune favours the **bold** (*and the italicized*)

Diemand-Yauman et al 2011

- Two studies comparing the performance of learners who worked in 'fluent' and 'disfluent' conditions.
 - 'Disfluency can be produced merely by adopting fonts that are slightly more difficult to read'
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Study One

- 28 participants presented with facts to memorize

In the fluent condition: 16 point Arial

In the disfluent condition: 12 point *Comic Sans MS* greyscale or 12 point *Bodoni* grayscale

(participants not expected to notice font)

- Tested after 15 minutes

Result

- Participants in the disfluent condition recalled 14% more information than those in the fluent condition

Study Two

- 222 high school students in six classes, various disciplines (not languages)
 - Learning material on worksheets, slides
 - Students randomly assigned to
the fluent condition: Arial
the disfluent condition: *Comic Sans italicised*
Haettenschweiler or *Monotype Corsiva*
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Result

- Students in the disfluent condition scored higher on classroom assessments than those in the control ($p < .001$)
 - No reliable difference between the disfluent fonts
 - Questionnaire showed no liking or motivational differences based on fluency
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Conclusion

‘superficial changes to learning materials could yield significant improvements in educational outcomes’

Diemand-Yauman et al 2011: 111

Implications of Diemand-Yauman et al's findings

- They might apply to dictionary use
 - It might be feasible for users to create their own disfluency conditions in an e-dictionary, (especially when using it in vocabulary learning mode)
 - But would they want to choose disfluent fonts?
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Research Question

- Is dictionary information retained better if it is presented in a disfluent font?

Study One

- 96 participants studying in the medium of English at a Malaysian University
 - Five words and their Malay translations – yawn, frown, shrug, crouch, beckon
 - Five 13.5 point fonts – Arial, **Arial black**, Comic Sans MS greyscale, **Impact**, *Impact italics*
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Rotations across five versions

	Arial	Arial black	Comic Sans	Impact	<i>Impact italics</i>
Version 1	yawn	frown	shrug	crouch	<i>beckon</i>
Version 2	beckon	yawn	frown	shrug	<i>crouch</i>
Version 3	crouch	beckon	yawn	frown	<i>shrug</i>
Version 4	shrug	crouch	beckon	yawn	<i>frown</i>
Version 5	frown	shrug	crouch	beckon	<i>yawn</i>

Results

- Words presented in Arial and *Comic Sans MS greyscale* were remembered significantly better than words presented in **Impact** and ***Impact italics***. ($p = <0.05$)
- Not what we predicted!
- Arial was the fluent condition!

Study Two

- 36 participants studying in the medium of English at a Malaysian University
 - Five words and their MED online definitions – grin, beckon, crouch, sneeze, fidget
 - 5 fonts – Arial, **Arial black**, Comic Sans MS greyscale, **Impact**, *Bradley Hand*
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Grin

VERB [INTRANSITIVE]

/grɪn/

to smile showing your teeth

grin at:

Ruth grinned at him as she waved goodbye

Beckon

VERB [INTRANSITIVE/TRANSITIVE]

/'bekən/

to signal to someone to come towards you

He beckoned the waiter to ask for another bottle of wine.

beckon (to) someone to do something:

She beckoned me to join her.

Participants tested one week later – asked to provide the meaning of the words using translation, a definition, synonyms and/or drawings.

Results

- The meanings presented in **Arial black** and *Bradley Hand* were remembered best.
- The meanings presented in **Impact** were least well remembered.
- Significant difference between **Arial black** and **Impact** ($p < 0.01$)
- Difference between **Arial black** and *Bradley Hand* nearing significance ($p = 0.08$)

Did they notice the font used?

	YES	NO
Arial	3	3
Arial black	1	5
Comic Sans MS greyscale	1	5
Impact	6	0
<i>Bradley Hand</i>	6	0

Users' views on font choice

2. Did you think the choice of font could affect how well you learnt the words?

Yes/~~No~~

3. The font was Arial, eg. 'Grin'. Do you think this was a good font

for presenting vocabulary learning materials? Why?It is good
because it can be seen clearly and can
be understood instantly.

1. Did you notice the font used for the dictionary definitions? ☒ Yes ☐ No
2. Did you think the choice of font could affect how well you learnt the words?
☒ Yes ☐ No
3. The font was Bradley Hand, eg. 'Grin'. Do you think this was a good font for presenting vocabulary learning materials? Why? No, because
the ~~h~~ font is suitable for text that is
hand-written like letters. It is also suitable
for the text that has beautiful meaning like
poems.

1. Did you notice the font used for the dictionary definitions? ☒ Yes ☐ No

2. Did you think the choice of font could affect how well you learnt the words?

☒ Yes ☐ No

3. The font was Impact, eg. ' **Orin** '. Do you think this was a good font

for presenting vocabulary learning materials? Why? No, because it is

too bold and narrow. This font is suitable for the

purpose ~~of~~ ~~see~~ like ~~give~~ ~~a~~ as a warning sign.

It is because the font stress the word out.

Experimental method needs to be refined?

- The test was open-ended, some subjects indicated partial recall of word meaning (exactly as one might expect)
- In the post-test questionnaire, participants were told the names of the fonts. That affected their attitude in some cases.

Although typographers would like to pride themselves on the logic and precision of their profession, it is in fact not so clear-cut.

Typography seems exact because much of it has been done in the same way for so long.

There are really only a few fundamentals that are set: we read from left to right and from top to bottom. Letter shapes and letter sizes are reasonably limited. But beyond that we rely primarily on emotion.

Unger, 1992

An example of test response

Instructions: Provide the meaning of the words and answer the questions that follow. You may resort to translation, definition, synonym or even drawings, to show your understanding of the meaning of the word.

1. Grin
smile

2. Beckon

calling ppl with this slight hand gesture.

3. Crouch

lying on your side of the head



4. Sneeze

or release

quick ~~burst~~ blow from the nose



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