Text mining assisted reading comprehension and experience

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BACKGROUND

"Digital reading will completely take over. It's lightweight and it's fantastic for sharing. Over time it will take over." — Bill Gates

- Text mining is a digital tool that can **assist comprehension**, vocabulary learning, recall, organization of text and summarization with non-fictional texts in classroom setting (Edyburn, 2007; Biancarosa & Griffiths, 2012; Cheung & Slavin, 2012; Ben-Yehudah & Eshet-Alkalai, 2021).
- TM methods like **keyword extraction, summary of the text,** vocabulary builder, word meaning assistant, concept maps etc **are used as reading assistants** (Reategui et al., 2012; Reategui et al., 2019; Reategui et al., 2022).
- Text mining are being implemented with fictional text with no clear reports on impact on comprehension and reading experience.

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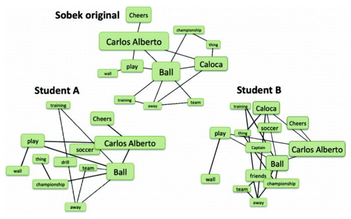

AIM

TO EVALUATE THE INFLUENCE OF TEXT MINING ON READING COMPREHENSION AND EXPERIENCE

RQ 1: Can keywords extracted using text mining improve reading comprehension and experience

RQ2: Can graphic organizers extracted using text mining improve reading comprehension and experience.

EXPERIMENT 1

Control group
No text mining (NTM)

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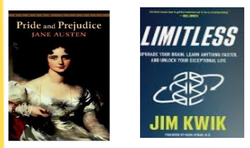

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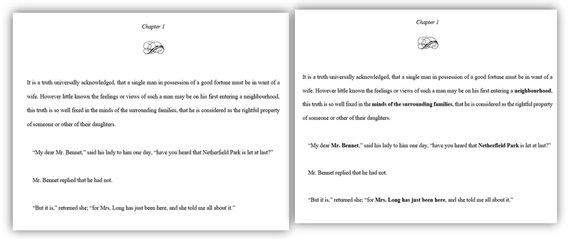

Experimental group
bold with text mining (TM)

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MEASURES

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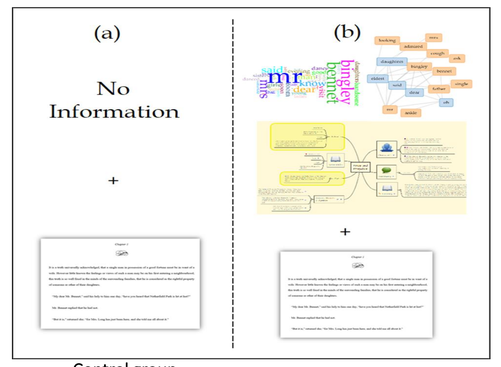
1. Comprehension test
2. Story World Absorption Scale, SWAS (Kuijpers et al.,2014)
3. Adapted Literary quality scale (Gavaler & Johnson, 2017)
4. Adapted user experience questionnaire (Schrepp, Hinderks, & Thomaschewski, 2017)

Eye tracker: SMI RED
500 Stationary eye tracker



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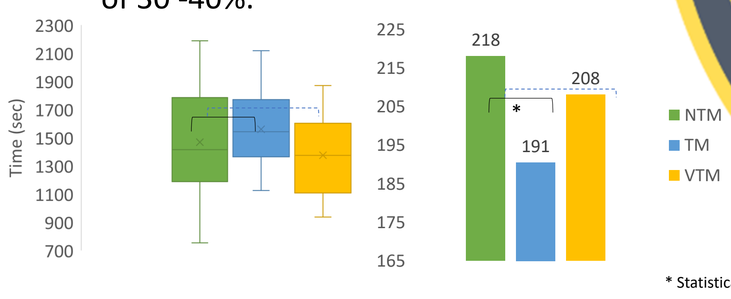
*Same control group and measures, as experiment 1

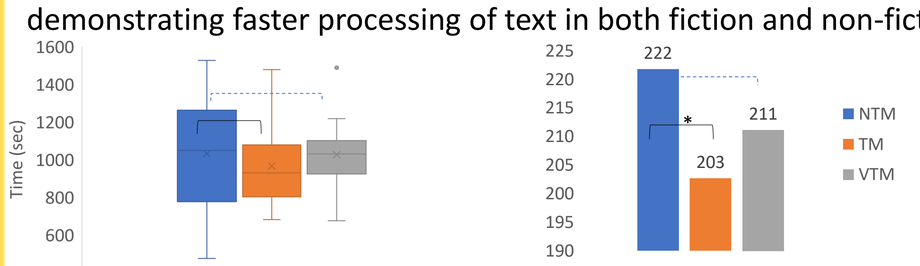
RESULTS

Reading time has high standard deviation of 30 -40%.

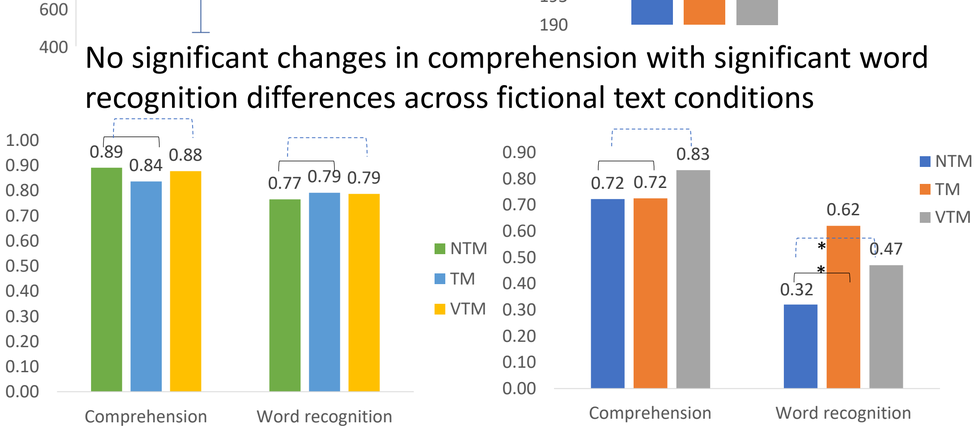


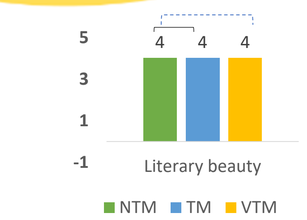
* Statistically significant @ $p < 0.05$

Fixation duration was significantly smaller with highlighting, demonstrating faster processing of text in both fiction and non-fiction.

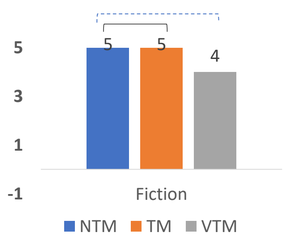


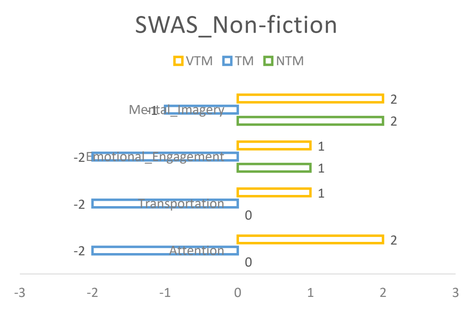
No significant changes in comprehension with significant word recognition differences across fictional text conditions



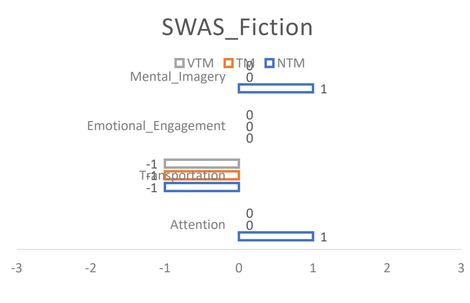


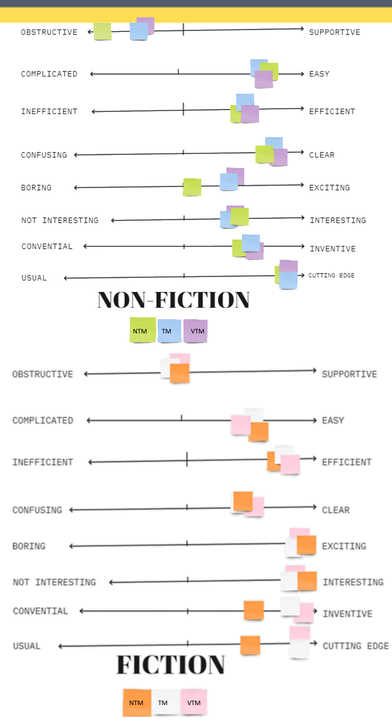
No difference in literary beauty ratings across fiction and non-fiction





Poor SWAS ratings in all conditions





CONCLUSION

- **Comprehension: No significant differences** were noted in **comprehension** while reading with keywords across fiction and non-fictional text **(RQ1).**
- **Experience: Perception of reading** was significantly **poorer with keywords in both fiction and non-fictional** text reading with obstructive process of reading **(RQ1) .**
- **Comprehension: No significant differences** were noted in **comprehension** while reading with graphic organizer across fiction and non-fictional text **(RQ2).**
- **Experience: Perception of reading** was significantly **poorer for both fiction and non-fictional** text with graphic organizers **(RQ2) .**
- **Interpretation:** Participants reported that their experience was poor due to the **restriction of head movements** and expected that reading in a relaxed comfortable environment would improve their ratings. Reading perception differences are yet to be evaluated in more natural environment using a e-reader platform.

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CONTACT

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Empirical study of Literature Training Network

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