

# Design for a Change

Shouq Al-Khuzaei  
Advisor: Dr. Susan Hagan

## Examining the effect of micro-interactions to keep students engaged in reading

### What are micro-interactions?

Short duration pauses meant to briefly refresh the reader without stopping the reading activity.

### Trigger

I was inspired to develop this work when I realized that many students on my campus, where we take our education seriously, don't complete their course readings. I wanted to see if Information Systems and design thinking might make a positive impact.

### The Gap

Researchers (Sandberg, 2011; Robertson, 2006) suggest that students don't complete course readings because of difficulties that happen when print readings are shifted to online mode. Therefore, as these artifacts change, we need to make adjustments and better support the reading experience by the addition of micro-breaks.

### Study I : Understanding Users

#### Parameters

The purpose of this study was to identify the students' reading behavior and understand what can get in their way of engagement. The method used is a pilot study contextual inquiry that consists of an observation and an interview. The participants were ten students from CMUQ with different nationalities.

#### Analysis

When students read closely, their reasons were comprehension focused, and when they skimmed and scanned, they had reasons that are task or cost-of-time focused. This result encouraged reflecting on micro-breaks that might appear more frequently for those who read closely compared to those who skim and scan.

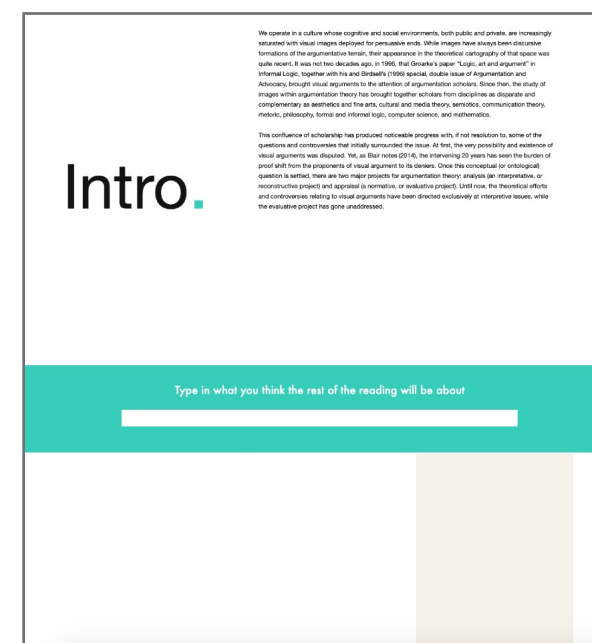
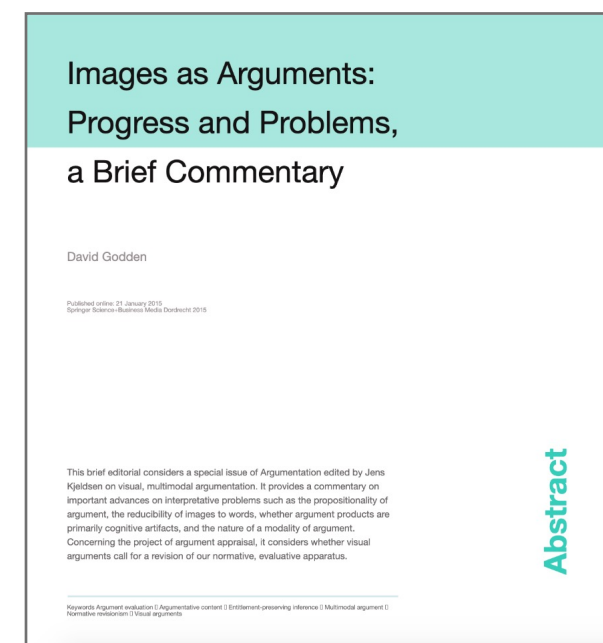
80% of the participants prefer a quiet environment while 20% prefer some background noise or light music. Reflection on micro-breaks suggested moments of light music might act as a refreshment.

For the reading strategy, the majority focused on the title, abstract, author information, and introduction. This encouraged micro breaks that start after the introduction.

When asked about factors in the reading that made them less interested in continuing, the majority of problems concerned the formatting of the text, which confirms part of the literature review that suggests that readings need to be well-organized and follow the best practices to meet the good artifact need (Wilson, Landoni & Gibb, 2000; Wilson, Landoni & Gibb, 2002; Larson, 2007).

### Prototype Development

Developing the prototype emerged from synthesizing lessons about best typographic practices (Wilson, Landoni & Gibb, 2000; Wilson, Landoni & Gibb, 2002; Larson, 2007) with insights from the participants of Study I. I created four micro-breaks; two passive and two active. The screenshots below are taken from the original prototype. They show how text is displayed for the users after adjusting its appearance and when the first active break is encountered by the users.



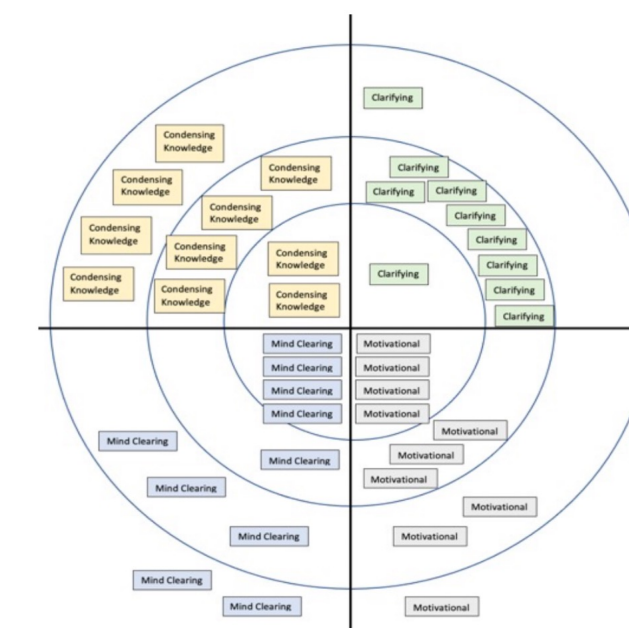
### Study II: Testing the Prototype

#### Parameters

The purpose of this usability study was to examine the prototype's usefulness and find opportunities for improvement. The method used is a usability testing contextual inquiry that consists of an observation, interview, survey, and a participatory research design method. The participants were another ten students from CMUQ with different nationalities. Results from two methods are shown below.

#### Participatory Research Design Method

Students were asked to place the micro-breaks somewhere on the radar that shows how they ranked their priority. The closer a break is to the inner circle, the higher priority it holds. The figure below is a collection of all the radars. It shows that the passive breaks are prioritized compared to the active ones.



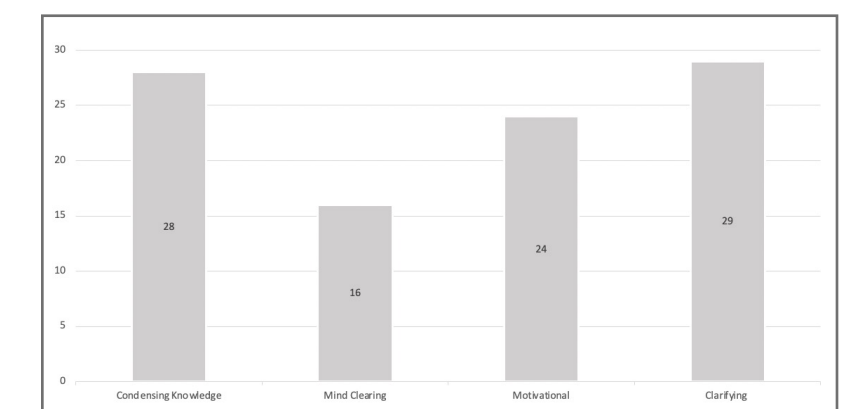
### Next Steps

All breaks had some value. Future research needs to consider options for improvement. For example, what is the right order for these breaks; should users set their own breaks; how might people with learning disabilities be helped by refinements to the prototype. After ensuring that the approach helps students complete their course readings, the next step is to test for reading comprehension.

#### Survey

The survey results indicate that although students appreciated all breaks, they have more preference for passive than active breaks. The figure below shows the total ranking of breaks. The participants were asked to rank them from 1-4, with 1 being their favorite, and 4 their least favorite. Therefore, the lowest total ranking indicates the favorite break.

Total Ranking of Breaks



### References

Sandberg, K. (2011). College student academic online reading: A review of the current literature. *Journal of College Reading and Learning*, 42(1), 89-98. Retrieved from <https://search-proquest-com.proxy.library.cmu.edu/docview/936617658?accountid=9902>

Robertson, S. (2006). What's Wrong with Online Readings? Text, Hypertext, and the History Web. *The History Teacher*, 39(4), 441-454. doi:10.2307/30037065

Wilson, R., Landoni, M. and Gibb, F. 2002. Guidelines for Designing Electronic Books. *Proceedings of the 6th European Conference on Research and Advanced Technology for Digital Libraries - ECDL (2002)*, 47-60

Larson, K. (2007). The technology of text. *IEEE spectrum*, 44(5), 26-31.