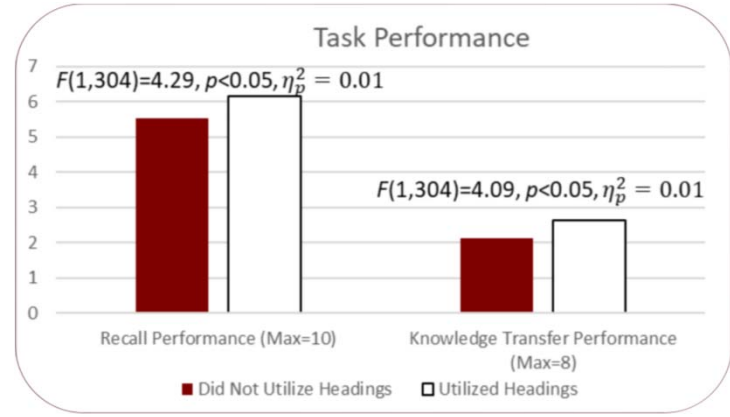
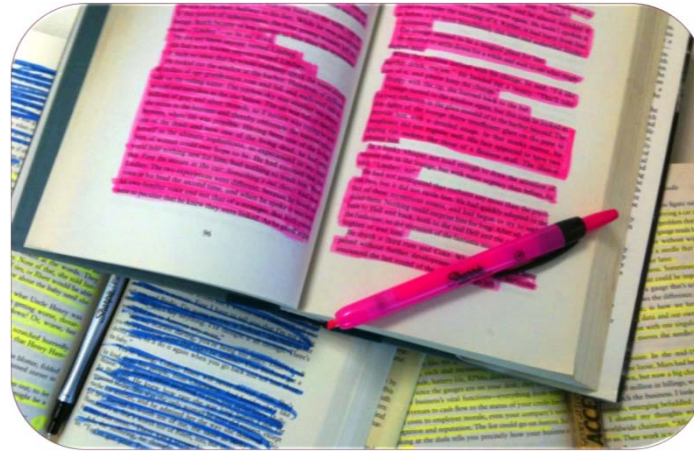


INTRODUCTION

- Highlighting is often considered an ineffective studying strategy
- The problem might be that students do not know how to highlight
- Questions:
 - Would teaching students heading structure promote effective highlighting behavior?
 - Does more effective highlighting behavior translate to learning gains?



METHOD

Design & Materials (n=306)

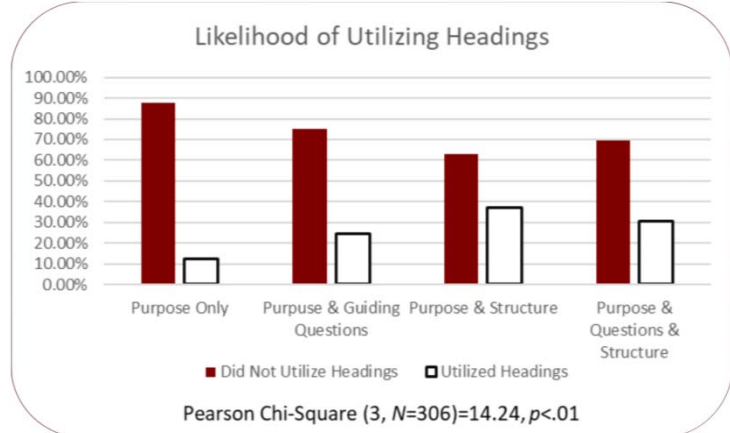
Between-subjects design with four conditions: 1) Purpose Only, 2) Purpose + Guiding Questions, 3) Purpose + Structure, and 4) Purpose + Guiding Questions + Structure.

Procedure

1. Teaching Material Presentation
2. Reading & Highlighting
3. Recall Task
4. Knowledge Transfer Task

RESULTS

- *Highlighting strategy likely has low utility despite heading structure instruction*
- Teaching APA-style text structure increased the likelihood of effective highlighting strategy
- Effective highlighting strategy led to better recall and knowledge transfer (but the effect was small)



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General Headings

1. Abstract
2. Introduction
3. Method
 1. Participants
 2. Materials
 3. Procedure

heading or fail to recognize that a heading has been presented. Although the ultimate goal of improving the comprehension of headings is to support good text comprehension, the goal of this study was to test the hypothesis that the highlighting strategy is more effective when the heading is clearly presented. Thus, we focus in this study on the awareness of heading structure.

The second issue concerns the relative utility of alternative methods of rendering heading information. For example, Chen and Lomax (2012) showed that reading quality improves if each heading is preceded by a unique mark (e.g., a star) that serves as the opening heading and signals the hierarchical level. The current study replicates the test of manipulation and compares it to two other methods of communicating heading information: Experiment 1 compared verbal labels to the use of tones to signal headings. Experiment 2 compared labels to the use of changes of position to signal headings.

1. Experiment 1

Presenting headings with verbal labels that have the same unique signal for every heading (i.e., Level 1 heading is the age of redwater) should aid listeners' identification of section boundaries. In addition, there is no need to repeat information because the label provides that information directly. However, verbal labels are not audibly distinctive from spoken text content as an alternative tone might be. Additionally, a heading is detected at the time a label is spoken. An alternative way to signal headings is to provide a heading with a tone whose frequency indicates the hierarchical level of the opening heading. Tones may be particularly effective at helping listeners identify headings because the distinctive auditory signal should alert listeners when the heading is present.

1.1. Method

1.1.1. Participants

Seventy-two volunteers from the Psychology subject pool participated in the experiment to satisfy a research participation requirement. Participants' ages ranged between 18 and 24. Data from four participants were dropped because they failed to follow instructions. A third participant's data were dropped because of experimenter error.

1.1.2. Materials

Two audio test files were created. One that was on the topic of energy problems and their solutions, the second test was on the topic of highlighting and presentation. Each test was organized into three hierarchical levels with 2 top-level headings, 4 mid-level headings and 14 bottom-level headings (i.e., 20 headings in total). In the control version, the average test was 1386 words with a Flesch reading score of 38.8; the highlighting test was 1344 words with a Flesch reading score of 39.3. Lower-level headings were effect relatively longer sentences with longer words. Values in the range of 30-50 are generally considered appropriate for high school and early college readers (Kincaid et al., 1975).

The audio tests were created by converting Word document files using Amazon Kindle's GTTS function in its default setting (i.e., an average speech rate of 230 words/minute) and a female voice with an average pitch frequency of 163.7 Hz. The audio output from Kindele was recorded in a standard computer using Windows tools in audio recording. In their control versions, the average test was 1386 words and the highlighting test was 1344 words.