

Highlighting And the Effects of The Color of The Highlighter on Retention: A Review of Literature

Dr. Nidhi Roy Choudhury¹, Nirali Bhansali^{2*}

ABSTRACT

This objective of this study is about how “highlighting and the colour of the highlighters” effects on retention. The use of highlighting is being used by many students and different text is being used by different colours. It is essential to know does highlighting actually helps, does the colour actually helps to remember better and are these techniques actually helpful during examination for the children. Highlighting the textbooks and notes is very subjective and a choice of an Individual. However, Highlighting did result in a better memory, especially during a test it was recollected better as it was visualised in that way. Colour also plays an important role, as they could recollect it better, adding colourful pictures and text in textbook has a great impact on remembering. This study deals with how highlighting helps and colour impacts on the retention.

Keywords: *Highlighting, Colour, Text Highlighting, Retention, Memory*

Atkinson & Shiffrin, 1968 talked about the structure of memory which includes sensory memory, short-term memory, and long-term memory. Information first reaches to the sensory memory then it will give a short amount of attention and then move the information to the short-term memory for recognition and labelling and later rehearsal leads the information to the long-term memory.

Textbooks contains a lot of different cues like some are in bold texture, italics, capital letter and some are underlined, as it is said that there is affect in the retention for an individual for the one using highlighting. One of the reasons to highlight is to help to review later in the test. For some it helps to increase concentration or improves comprehension. Some of them Highlight with bright colours like yellow, blue, or red. Studies have revealed that the colours trigger human working memory in learning.

Several studies have shown that highlighting has a huge impact on retention. There are studies that has proved that hat memory and comprehension of the highlighted information

¹Assistant Professor, Department of Psychology, School of Allied Healthcare and Sciences, Jain Deemed-to-be University, Bengaluru, Karnataka, India

²M.Sc. Clinical Psychology, Department of Psychology, School of Allied Healthcare and Sciences, Jain Deemed-to-be University, Bengaluru, Karnataka, India

*Corresponding Author

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are improved, whereas memory and comprehension of the nonhighlighted information are unaffected (Foster, 1979; Fowler & Barker, 1974). As highlights information leads to more attention than the nonhighlighted.

However, some of the studies also found that there is no benefit of highlighting, The students who have highlighted during test has performed really bad during test.

Advantages of highlighting

One of the reason highlighting is really effective as it leads to depth of processing. As when the student is highlighting something they process the text deeper and more evaluative way rather than just reading it, which was explained by Craik and Lockhart. When the individual is highlighting, they perform better in a test rather than those who have not highlighted, as there is a lot of cognitive process going on.

Another reason is from the Stroop effect that is called as Von Restroff, this happens when the highlighting will make the marked portion of text more memorable as that information will stand out from the non-highlighted text, which helps them to recall better.

This also helps in encoding a text very well, even during a re-study it helps you to remember better. The studies have seen in the later retention test, they have scored better comparing the one which have not been highlighted. By selectively marking certain text, learners change the way they read the text. When they re-read marked text, learners may read and encode that text in a new way, thereby making it more memorable.

Disadvantages of Highlighting

Many students do not know how to highlight effectively, which content to highlight, which is really important which does not lead deeper processing of the content.

Some students when they re-read highlight parts, they feel they know their content, but actually sometime it turns to belief that they know it. While re-reading, the students sometimes are only glancing over highlighted text, incorrectly assuming that because as the information is already highlighted, they feel it is deeply encoded in memory, and a misbelief is encouraged.

Color and memory

To learn something effectively one requires to pay more attention. When an Individual is paying attention, it is focusing on certain information to be processed. to increase attention it is said that Colours help to increase the attention levels on certain information, which helps in memorizing certain information (Dzulkifli & Mustafar, 2013). For example, warm colours such as red, orange, and yellow have been recognized to increase learner's attentions and stimulate their active participations in activities (Wilson, 1966).

Our working memory includes Visuospatial sketchpad, which depends on spatial and visual cues. As colour can help learners improve their learning efficiency (Vetter, Ward, & Shapiro, 1995), since learners can process colour automatically without requiring conscious process (Keller & Grimm, 2005).

Kumi, Conway, Limayem, and Goyal (2013) stated that colour "can enhance the organization and presentation of information, decrease search times, and enable the identification and organization of information"

Colour, Emotions and Cognition

Colour depend upon the culture, as it has different meaning in all different culture. There is different reaction towards a colour with culture. Americans may favour blue colour, while the citizen in other culture may favour some other colour

A study that was conducted by Plass et al. (2014) indicated that warm colors such as yellow and orange rather than cold colours such as grey used in materials can enhance students' learning.

Positive colours help in better retention from long term memory which produces emotional effects. Like for example, certain colours like green have mostly been associated with calmness, and black colour have been associated with sadness, Red and violet often represents danger. Wilson (1966) stated that "the red was variously described as more stimulating, exciting, awakening, attention-drawing, overpowering, and lively".

METHODOLOGY

This article examines the studies on the highlighting and the effect of colors of the highlighter on retention. This study is based on primary data taken from research papers with the help of google scholar using the keywords like "colors" "effect" "memory" "retention".

A total of six papers are reviewed published in various years and various places. The following are selected on the based on the studies related to highlighting effects and its color on retention.

RESULTS

The below reviews provide a brief description of the papers examined with supporting empirical data.

Effect of highlighting text on retention

Cheng (2018) did a research on effect of highlighting text on concentration, memory and attention. He did a randomised trail on medical college in Malaysia. The participants were divided into highlighted group, non-highlighted group and important highlighted group. They were given a text which they had to read and later give an MCQ test on it. with the help of Annova, and it was seen that there was no significant difference among 3 groups. Which concludes that highlighting is not beneficial for memory retention.

Jessica A. Brown (2020) did a study on Effect of digital highlighting on reading comprehension for people with aphasia. They were given text to speech technology. There were 25 students and had 3 conditions that is sentence highlighting, no highlighting and single word highlighting. They had to answer comprehension questions and later provided feedback on the highlighting stuff. The highlighted part didn't benefit the participants.

Yeari (2016) did a study on the effect of highlighting on processing and memory on the information. There were 36 moments from Netherlands. There were 3 types of highlighting that is highlighting of central information, highlighting of peripheral information and no highlighting. Then there was a true and false questionnaire. It was seen that highlighting influences the process of text but its only in the start initially for peripheral but readers could strongly remember the central information no matter what was highlighted.

Effects of colours of the highlighter on retention

Gaddey et al. (1996) did a study on highlighted material with the colour in memory for text. This was investigated on 120 college students who had to read a textual passage which were either highlighted in yellow, blue or pink, some were just underlined and some were left unmarked and later recall the passage through short answers. It was seen the colour of the highlighter had no significant effect on recall.

Gary et al. (2013) did a study to see the use of highlighter colour cues affect student performance on a memory recognition task. There were 2 hypothesis they were working on. However, Hypothesis 1 was talking about the colour effect which is more important to us. There were two groups, the first group was presented using a single colour hue, the second group were presented with Realistic colour hue. A passage about 2000 word was given on human heart and later there would a test on it. it was seen that the colours do play more important role in retention memory Dr. Oluwakemi Olurinola et al. (2015) did research on colour affecting in retention. This experiment was done on thirty graduate students from Olabisi Onabanjo University. They were presented with 20 single words printed on white paper. They were divided in to three groups (chromatic congruent, congruent incongruent and achromatic group). the first category 'achromatic colour' where black ink was used to print the words on the white sheets. And the second is 'chromatic colour' are further divided in two categories; (1) congruent colours, the same twenty words were printed in colours that are associated with the words e.g., the word 'yellow' printed in yellow or 'danger' printed in red. 2) Incongruent colours, the same twenty words were printed, this time in colours that are not associated with the words e.g. the word 'yellow' printed in purple or 'danger' printed in blue. The result showed there was effect of colour on the retention on the memory. The chromatic colour was remembered better, no significant difference in congruent or incongruent colour. Mother's optimism is significantly and negatively correlated with her symptom reporting. It was found in all the three groups. Mother's psychological symptom reporting appears more important than physical symptom reporting. In the chronically ill group, correlations between mother's optimism and her complaint reporting were found more significant and higher degree.

DISCUSSION

This study talks about highlighting and colors of highlighter affecting on retention. It is seen that highlighting test doesn't always help as a necessary information might not be highlighted. However, advantage is on the effectiveness of the text being highlighted. The research above doesn't show significant differences in highlighting. Some research shows that colors does play a role in memory, certain colors help in memory and concentration. Highlighting text helps to remember certain important points but has its own disadvantage of missing out on many other points. Using a lot of colors may also end up overwhelming the brain, and a lot of information for the brain to take in. Empirical data of the present study very strongly poses that optimism is related with physical and mental health. Optimistic individuals have fewer physical and psychological complaints with their life. If there is any problem like illness of her child then also, mothers with optimistic outlook help themselves to cope with the situation.

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Conflict of Interest

The author(s) declared no conflict of interest.

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