

Note: Built in React:

```
# How to run project

Install dependencies: `npm install`

Run local server: `npm start`

Demo: [link] (https://zachary-young.github.io/cse457-assignment-3/index.html)
```

### 1. What do you want to achieve with the visualization?

In my visualization, I want to depict the reading difficulty of each fairytale by each sentence. Since fairytales are often told to children, I think it is important to understand how each fairytale compares with one another with respect to their complexity. This visualization can be used by the reader to parse each fairytale by sentence, and quickly understand where in the story wording may become complex or easy.

The primary method in which I will measure reading complexity is through the Flesch-Kincaid scale, which provides both “reading ease” and “reading grade” metrics. The scale works by measuring the number of syllables in a text entry and comparing it to the number of words and sentences in that text entry.

### 2. What story are you trying to tell with your design?

The overall story I am trying to convey is that each story has a different level of reading complexity, and that reading complexity can often vary from sentence to sentence. People often say that one reading is harder than another, but people do not often look into the semantics of what sentences are harder to read than others (and how that varies across the reading).

### 3. How can you highlight a different perspective?

I can highlight this variation by encoding each fairytale with certain visual properties such as color and spatial positioning. The brush selection tool and tooltip will also allow the user to highlight certain parts of the data to understand why the complexity of a story varies from sentence to sentence.

### 4. What tasks do you want to support?

I want the user to be able to toggle between different metrics and to be able to drill-down on portions of the text through a brush tool.

For the toggle, the user will be able to switch between the Flesch-Kincaid reading ease and reading grade metric. The resulting toggle will cause the visualizations to animate and morph into the next state. This feature will allow the user to quickly switch between different datasets.

For the brush tool, I want the user to be able to select text from portions of the graph using the brush tool. This drill-down feature will allow the user to gain further insight into the text that the graph is portraying, which may be hard to see from the graph alone.

5. What designs will help you achieve these designs? Name at least two.

My visualization will consist of 3 primary elements: a line graph for each fairytale, a bar graph for the fairytale's average score, and a brush selection pane.

The line graphs are the primary focal points, and it will be used to give reading complexity for each fairytale as a function of the sentence number (proportional to the number of sentences in the whole fairytale).

The bar graph will give summary data, and it will be used to display the average metric for each fairytale as a whole.

Finally, the brush selection pane will allow the user to see what text they selected in the line graph. This brush selection pane will allow the user to see how much of the story they selected, what text they selected, the average metric of the text they selected, and what fairytale they selected.

### **Sketches:**

The first visualization uses line graphs to depict reading complexity as a function of sentence whereas the second visualization uses blocks and colors to depict reading complexity as a function of sentence. Both visualizations will probably make use of a brush selection pane and a summary chart of averages. I chose to visually encode my data using spatial relationships and color because they are some of the easiest for the reader to parse in terms of preattentive processing.

(SEE ATTACHED IMAGE AT END)

### **Justification for Final Design**

I ended up choosing the first sketch for my final design because it works better as a visualization for the reader.

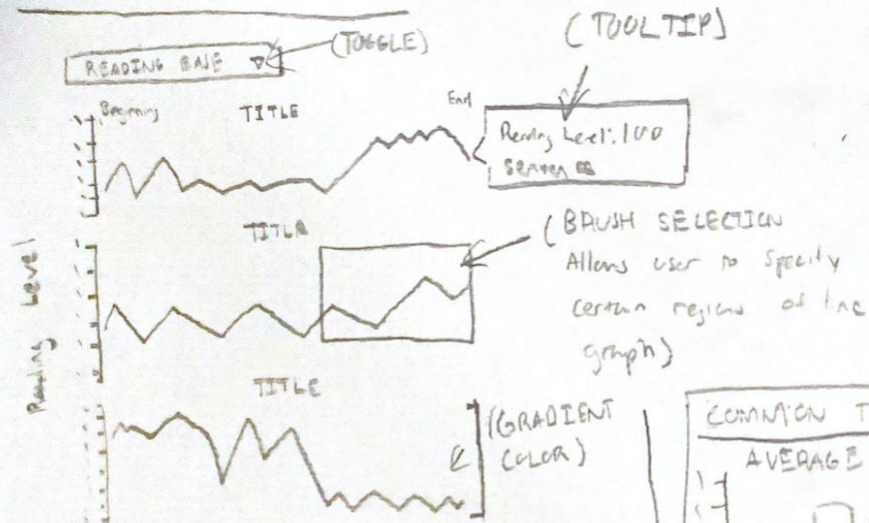
For one, one of the primary purposes of my visualization is to provide comparisons between different fairy tales. If I had used the second visualization, it would have been more difficult to compare fairy tales. It would require more coordination from the reader to find the corresponding blocks between fairytales within similar locations of the story. The first visualization, on the other hand, allows readers to quickly compare stories by moving their eyes vertically from one story to the next.

Moreover, the second visualization gives the user a false sense of 2-dimensionality. Since the blocks are stacked by rows, there are columns of blocks for the sentences. Although the data is one-dimensional for each sentence, the second visualization could incorrectly give the reader the impression that the 2-dimensionality has any meaning.

Finally, the second visualization could be slightly harder to read. It could be more difficult for a reader to match a color on the graph to the legend than it would be to match the spatial positioning of a point in the first visualization.

For these reasons, I chose the first visualization to give the reader the best possible user experience.

## FIRST VISUALIZATION



## SECOND VISUALIZATION

