# **Template for Reading and Taking Notes on Research Articles (Limit yourself to 1 page of notes!)**

**REFERENCE FOR THE ARTICLE KEY TAKEAWAY**

**Introduction:** *What is the topic of this paper? Why is this study important?*

**Literature Review:** *What is already known about this topic? What do we need to know about this topic?*

* 3d perspective charts are included due to demand (SYSTAT 1992)
* Volume and color hue or density are worse in terms of graphical elements hierarchy (Cleveland 1985)
* Image from retina to iconic memory to short-term memory (Miller 1956)
* 3D have increase in visual illusions entering the iconic memory (Corens & Girgus 1978; Gregory 1969; Jahnel 1952)
* 3D charts have significant role when made correctly (C. F. Schmidt 1983)

**Theoretical Framework:** *Is this study a test of a specific theory or hypothesis? Is the methodology of the study guided by a specific theory?*

* Are 2D or 3D graphs preferred when it is not required to extract information from the graph?
* Are 2D or 3D graphs used when the viewer must extract information from the graph?
* Do students answer content questions better when using one type of graphical display rather than the other type?
* Was there a difference between students who used simple graphs versus elaborate ones?
* Which graphical displays promote retention?

**Methods:**

*What type of data were collected and how were these data collected?*

* Bar/line, floating line, layered line, pie, and bar charts of voting data from 1976 and 1984
* Total of 5 features in each graph (e.g., 5 pieces of pie chart)

*Sample (unit of analysis, size and key characteristics):*

* 60 students in core US government course

*How were key variables measured?*

* 40 charts presented in order and asked which of the pair of charts they liked better
* With different order, question about chart content and which one they used to answer
* For retention, questions without graphical displays 4 days later

*How were the data analyzed?*

* Descriptive, Chi-square test

**Results:** *What were the most important findings? Was the theory/hypothesis supported or not? Were there any surprising/unexpected findings?*

* About even preference for visual appeal for 2D and 3D, slightly in favor of 2D (51.8%)
  + For bar graphs, 52.9% for 2D
  + 69.2 preferred 3D mixed bar/line chart
* Choose to use simple 3 times more than elaborate
* No significant differences in any of the 2D or 3D comparisons
  + While not significant, 2D had higher correct answer rates
* Low retention rates

**Conclusions:** *What are the implications of this study for policy and for research? What were the limitations of the study? What should future researchers do?*

* 2D preferred, but might not be better at information extraction
* Retention for all charts was bad
* Issue: students got to choose which graph to use, so measures of accuracy might be biased toward one chart or another