**Activity 7: Reading and Analyzing the primary literature**

**Purpose of this assignment:** Learning the structure of [scientific] papers and an effective approach to reading the primary literature

**How does it fit within the entire project?** This activity will help you prepare for your literature review and help set the stage for the structure of the entire project by highlighting the different sections of an article from the primary literature.

**Tasks required:** Complete the handout below.

**Deliverable:** Completed version of this handout.

**Estimated time:** About one hour

**Group work or individual work?** Individual work and group discussion during class.

**Notes to instructor:**

* The key to this activity is to choose a well-written model paper from the published literature on a topic related to the one discussed in the CURE.
* The template below should be completed with the relevant sections from the chosen publication.
* Depending on the structure of the publication read, some adjustments to the prompt will be necessary, but the activity should make sure to match the critical elements of a publication identified in the introduction to the activity with the elements showed to students.
* The handout should be designed such that students do not look ahead while completing the activity (use explicit guidelines such as “Do not look below the line” or “Do not turn the page yet”).

**Introduction:** When reading an article from the primary literature, you should (almost) never read it in its entirety. Unless you are reviewing a paper, plan to replicate the study, or do a follow-up experiment, you only need to focus on the following sections of a [scientific] article to get the main points of it:

(1) the title gives you the main topic or point of the paper, sometimes even the punchline.

(2) the abstract is essentially a summary of the paper and should introduce the questions or hypotheses investigated, the main results and conclusions of the study.

(3) the figures and tables are critical because they present the data, results and sometimes interpretations

(4) the introduction and conclusion (or end of the discussion) may sometimes be useful

If you cannot get the key points of the study from these sections of the paper, it is not your fault. The paper was not well written. Let’s practice on the paper below published recently in XXXXXXXXX, a journal where some of the projects of this class could be published.

[Full reference for the article formatted according to the guidelines the students will have to follow in their main written deliverable, if applicable, or a standard/classic publication outlet in the field]

**Exercise:** Answer the questions below based on the information presented to you up to that question in the handout. Do not jump ahead, you will spoil the fun!

[Insert here the title, author information, abstract of the publication, and introduction omitting the approach adopted by the authors]

1. Based on the title and abstract above as well as the introduction , what was the **question** the authors sought to answer in this study? Use your own words. Do not quote the paper.
2. What was/were the **hypothesis(es)** the authors were testing? It may not be stated explicitly.
3. What is the [scientific] significance (i.e. importance/meaning) of this study that is articulated by the authors? Highlight the relevant sections in the text.
4. I have purposefully truncated the last paragraph of the introduction in which the authors describe their methodology. **Do not peak at the following pages of this handout.** Can you devise an analysis of your own to investigate the same questions as the authors? You do not have to know the technical terms, use your own words to describe your approach.

[Insert here the last paragraph of the introduction in which the authors describe their approach]

1. Use a schematic to draw expected results if the hypothesis tested by the authors is verified. Also include an alternative schematic in case the hypothesis is not supported. Use a different diagram to represent each of the hypotheses tested in the study.

[Insert here any figure or table associated with the material and methods section of the paper]

1. What data were collected by the authors based only on figures and tables? What other critical piece of information about the material and methods is not presented in the form of a table or figure in this article?

[Insert here any figure or table associated with the results section of the paper]

1. Based on the figures and tables, what tests did the authors of this paper actually perform?
2. Can you summarize the **results** (not interpretations) of the authors?
3. What conclusion can **YOU** draw from the results? (This is the time for interpretations).

[Insert here excerpts from the discussion section focusing on the conclusions drawn by the authors. Includes any associated summary figure(s)]

1. What are the conclusions of the paper according to the authors?
2. Do you think their conclusions are supported? What is a strength of this study? A weakness?
3. What would be the next step in this field of study in your mind? What follow-up study would you carry? Any lingering question?