

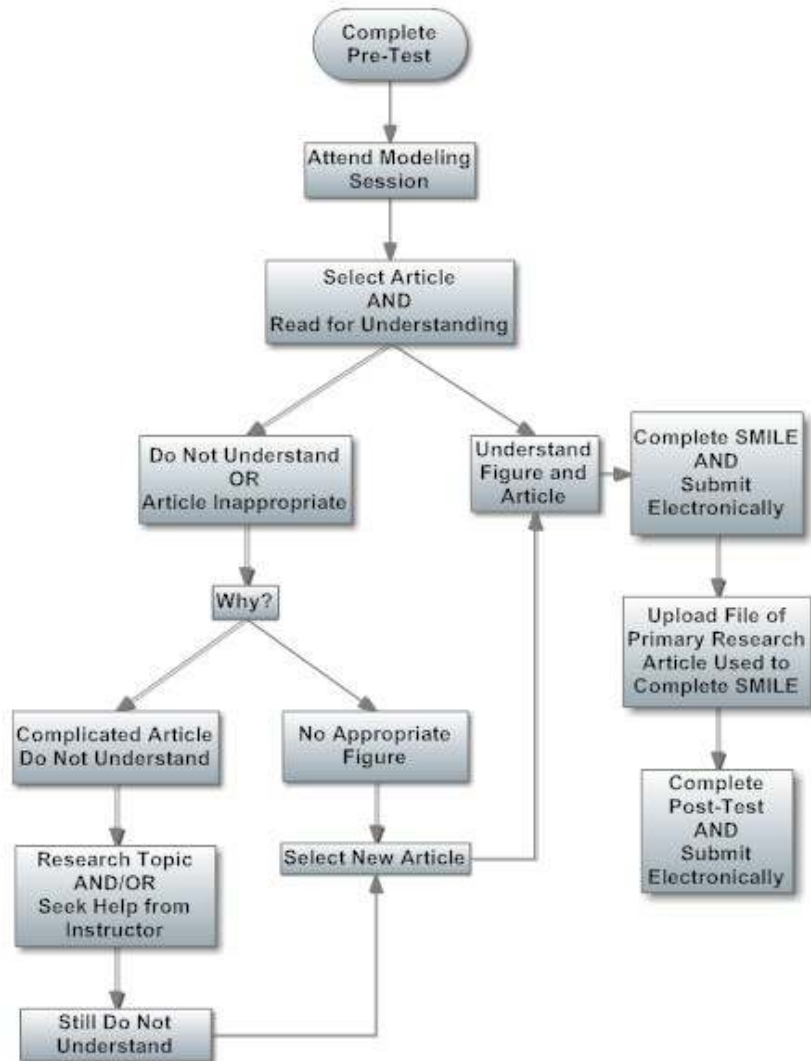


Scientific Method and Information Literacy Exercise (SMILE)

Instructions. Before you begin SMILE, make sure you have completed the following tasks:

1. Attend the training sessions where the appropriate information literacy skills needed to complete SMILE are discussed and the completion of SMILE itself was modeled by your instructor.
2. Access your chosen article (from the assigned journal) and read this article for understanding. In particular, make sure you have chosen a primary article with at least one data figure and you understand both the figure and how this figure relates to the general purpose of the article.
3. Choosing an article that meets the criteria for SMILE and is understandable to you is probably the most important factor in the successful completion of SMILE. If you do not understand your article (after you have researched the topic and/or discussed it with your instructor) or it does not meet the criteria for SMILE, then you should pick a different article from the assigned journal.

The following diagram outlines all of the tasks you must fulfill to successfully complete SMILE.



1. Provide the full citation of the Animal Behaviour article that you selected using the following format:

Roulin, A., & Bersier, L-F. 2007. Nestling barn owls beg more intensely in the presence of their mother than in the presence of their father. *Animal Behaviour*, 74:1099-1106.

Likert grading scale:

- 0 points: if incorrect format or incorrect information;
- 1 point: correctly cited matching the provided format

Objective 1a: Analyze the abstract and body of the text for components of the scientific method

(Total Points: 8)

Instructions: Find the abstract of the article (it is the first paragraph immediately following the list of authors). Answer questions 2-9 about the abstract and the how it relates to the body of the text of the article you chose.

2. Within the abstract of your article is there a statement of the overall purpose of the research and/or a hypothesis?

Likert grading scale:

0 points: incorrect;

1 point: correct

A. Yes

B. No

3. Use Adobe Acrobat Reader to view a .pdf of your article. Select and paste the 1-2 sentences from the Introduction (in the body of the article) that best reflect the overall purpose (or hypothesis). Now cut and paste these sentences into the textbox provided for this question. Surround this/these sentence(s) with "...".

Note: do not provide lengthy background information with citations (in parentheses) to previous studies.

Likert grading scale:

0 points: incorrect;

1 point: correct

4. Within the abstract of your article is there a statement of the basic methods?

Note: this does not need to be detailed.

Likert grading scale:

0 points: incorrect;

1 point: correct

A. Yes

B. No

5. Use Adobe Acrobat Reader to view a .pdf of your article, select and paste the 2-4 sentences from the Methods (in the body of the article) that best reflect the overall methods. Now cut and paste these sentences into the textbox provided for this question. Surround these sentence(s) with “ ”.

Likert grading scale:

0 points: incorrect;

1 point: correct

6. Within the abstract of your article is there a statement of the main results of the research?

Likert grading scale:

0 points: incorrect;

1 point: correct

A. Yes

B. No

7. Use Adobe Acrobat Reader to view a .pdf of your article, select and paste the 1-2 sentences from the Results (in the body of the article) that best reflect the main result. Now use the textbox for the sentences you cut and paste from the Results (in the body of the article). Surround this/these sentence(s) with “ ”.

Likert grading scale:

0 points: incorrect;

1 point: correct

8. Within the abstract of your article is there a statement of the overall conclusion(s)?

Likert grading scale:

0 points: incorrect;

1 point: correct

A. Yes

B. No

9. Use Adobe Acrobat Reader to view a pdf of your article, select and paste the 1-2 sentences from the Discussion / Conclusions (in the body of the article) that best reflect the overall conclusion. Now cut and paste these sentences into the textbox provided for this question. Surround this/these sentence(s) with “ “.

Likert grading scale:

0 points: incorrect;

1 point: correct

Objective #1b: Analyze and interpret data contained within the data figure you selected.
(Total Points: 10)

Instructions: Find a data figure (a graph) in the body of the text that you understand and that provides data that is central to the main point of the article. You should re-read the abstract to determine the main point of the article.

Note: This figure must be either a line graph or a bar graph; do not select a “sound spectrogram / sonagram” or “flow diagram”. Do not select a table.

10. What is the Figure # and page # on which this figure appears? If you choose a figure with more than one sub-figure (e.g. Figure 1a, 1b, 1c, etc.) you should only analyze one of the subfigures (panels). Provide the sub-figure letter designation that corresponds with the one you chose to analyze.

Note: You must choose a data figure. If you choose a table or a diagram you will receive zero points for questions relating to the analysis of a figure.

Please provide your answer in the following format: Page __, Figure __

Likert grading scale:

0 points: if both are incorrect or both are not provided;

1 point: only one correct;

2 points: both correct

11. What research question does this data figure address?

Hint: you may wish to phrase this as “What is the effect of ___ on ___”?

Likert grading scale:

0 points: not clearly stated, or not relevant to chosen figure, or variables are reversed;

1 point: clearly stated and relevant

12. What are the independent and dependent variables for this figure?

Please label your answer as: Independent = ____; Dependent = ____;

Likert grading scale:

0 points: both incorrect or reversed;

1 point: only 1 correct;

2 points: both correct

13. What two quantitative results are provided by the data within the figure?

Note: both of these results must be stated in numerical terms (e.g. mother barn owls were about 1.5 times faster at giving prey items to their offspring; from figure 2 of model paper).

Likert grading scale:

0 points: neither clearly stated / correct / quantitative / relates to figure;

2 points: only 1 result clearly stated / correct / quantitative / relates to figure;

4 points: both clearly stated, correct, quantitative, and relate to figure

14. Does your interpretation of the data within the figure (answer to question #13) match that of the authors' (as reflected in the Results section of the article)? Why or Why not?

Use Adobe Acrobat Reader to view a .pdf file of your article, select and paste the 1-2 sentences from the Results (in the body of the article) that shows the authors' statement of the main result from this figure.

Likert grading scale:

0 points: not clearly stated / "why" or authors' statement not included;

1 point: "why" clearly stated and correct

Objective #2: Expand upon the research protocol

(Total: 12 points)

Instructions: Suggest a potential future research project based on the results of the article (that is not part of the article and therefore represents your original thinking).

You will want to consider the following: •

1. What research question will you address with this future research project? •
2. What is your hypothesis that relates to the research question? •
3. What is your independent variable? •
4. What is your dependent variable? •
5. What species will you study? •
6. What will be your “sample size” (either number of individuals or number of groups) •
7. What will be your observational strategy / experimental design?
8. Will you observe the animals (without setting up an experiment) or will you set up an experiment and then observe the different groups of animals?

Hint: take the time to consider each of the components stated above before composing your final answers to questions 15-20.

Note: we do not provide 0.5 points for partially correct answers, so consider your answers to these questions carefully.

15. What research question will you address with this future research project?

Hint: your answer must be stated in the form of a question.

Likert grading scale:

0 points: not clearly stated as a question and not relevant to article you chose or already part of the article you chose;

1 point: clearly stated as a question and relevant

16. What is your hypothesis that relates to the research question?

Likert grading scale:

0 points: not clearly stated and not relevant to article you chose or already part of the article you chose;

1 point: clearly stated and relevant

17. What are the independent and dependent variables of this future research project? These must be related to your research question and hypothesis. Please label your answer as: Independent Variable _____; Dependent Variable _____.

Likert grading scale:

0 points: either 1 or both incorrect / not relevant, or reversed;

1 point: both correct and relevant

18. What species will you study and what will be your sample size (state whether this “N” refers to individuals or groups)? State why you choose this “N”?

Likert grading scale:

0 points: either one or both not clearly stated / not relevant;

1 point: both clearly stated and relevant

19. Describe your “observational strategy / experimental design” for this experiment (this includes the methods you will use to carry out this strategy or design).

Hint: you should accomplish this within 5-10 sentences.

Likert grading scale:

0 points: not clearly stated / not relevant;

2 points: lacking important information relating to your independent and dependent variables;

4 points: lacking sufficient information regarding methodology;

6 points: clearly stated / relevant and complete

20. How will your future research project add to the body of scientific evidence in this field of study (related to the research article you chose)?

Note: State specifically what outcome you would suspect if your hypothesis was accepted or rejected and how this might impact the authors’ conclusions in the original study.

Hint: 2-5 sentences should suffice.

Likert grading scale:

0 points: not clearly stated and not relevant;

1 point: either not clearly stated / relevant;

2 points: clearly stated and relevant

Objective 3: Discover where citations are found within the text of your chosen paper.

(5 points total)

Look at the Abstract, Introduction, Methods, Results and Discussion sections of your article and determine if these sections contain citations to previously published, scientific articles and answer questions 21-25.

21. Does the Abstract of your Animal Behaviour Article cite other people's published research (i.e. has at least one citation)?

Likert grading scale:

0 points: incorrect or not done;

1 point: correct

A. Yes

B. No

22. Does the Introduction of your Animal Behaviour Article cite other people's published research (i.e. has at least one citation)?

Likert grading scale:

0 points: incorrect or not done;

1 point: correct

A. Yes

B. No

23. Does the Methods section of your Animal Behaviour Article cite other people's published research (i.e. has at least one citation)?

Likert grading scale:

0 points: incorrect or not done;

1 point: correct

A. Yes

B. No

24. Do the Results of your Animal Behaviour Article cite other people's published research (i.e. has at least one citation)?

Likert grading scale:

0 points: incorrect or not done;

1 point: correct

A. Yes

B. No

25. Does the Discussion section of your Animal Behaviour Article cite other people's published research (i.e. has at least one citation)?

Likert grading scale:

0 points: incorrect or not done;

1 point: correct

A. Yes

B. No

OBJECTIVE #4: Learn how to use appropriate technology for finding additional literature.

A. Google Scholar (5 points)

26. Select & copy a complete reference from the Reference section of your Animal Behaviour article.

Hint: Choose an article that was published within the last 10 years. Paste the entire reference into the text box below and label it as Reference.

Click on the [Google Scholar link](#). Then paste the entire reference into the search bar within Google Scholar, and press send. Once your request has been processed electronically, open the appropriate link that takes you to the entry for your reference and select & copy the Abstract of that your reference into the Angel textbox below. Do not select and copy any text beyond the Abstract of the article you found through Google Scholar (label it as Abstract).

Likert grading scale:

0 points: not done;

1 point: only 1 of Author, Title or Abstract provided;

2 points: only 2 of Author, Title or Abstract provided;

3 points: all 3 of Author, Title or Abstract with no unnecessary text provided;

27. Using the reference you pasted into Google Scholar (above), find where this paper was cited within the body of your original Animal Behaviour article (do not simply find the reference within the Reference section). Select & paste the sentence and the complete list of citations at the end of that sentence into the Angel textbox below.

Note: The citation may be with other citations. Select & paste to the end parenthesis.

Likert grading scale:

0 points: not done or not related to reference above;

1 point: only 1 of sentence or citation;

2 points: both sentence and citation provided

OBJECTIVE #4: Learn how to use appropriate technology for finding additional literature.

B. ProQuest Database (4 points)

Instructions for questions # 28-29:

- Use ProQuest to find additional articles that might be related in topic to the original article you chose (Hint: use keywords from your original Animal Behaviour article).
- Select one primary article (if the Animal Behaviour article that you originally selected for this project shows up in this list, do not select it!).
- Select & paste the citation (starting with Title and ending with Page Number) and place these in the appropriate Angel textbox (question #25) that follows these instructions.
- Select one secondary article.
- “Select & Paste” the citation (starting with Title and ending with Page Number) and place these in the appropriate Angel textbox (question #26) that follows these instructions.

28. Complete citation of the primary article from Proquest:

Likert grading scale:

0 points: not done or incorrect citation and secondary article;

1 points: incorrect citation or secondary article;

2 points: correct citation, primary article

29. Complete citation of the secondary article from Proquest:

Likert grading scale:

0 points: not done or incorrect citation and primary

1 points: incorrect citation or primary article;

2 points: correct citation and secondary article

30. When you are finished with this project (and have checked your work for accuracy) press the submit button. You will then be directed to the digital drop box. Please follow the directions on the digital drop box that directs you how to upload the PDF of the primary research article you used to complete this assignment. If you do not upload a copy of the research article, your assignment cannot be graded and you will receive an incomplete for the course. Once you have uploaded your PDF, you will be directed to the SMILE post-Test. Please complete this SMILE post-Test. When you press the SUBMIT button for the SMILE Post-test, you will receive 3 points for completing the SMILE pre-test and post-test. You will also receive 2 points for successfully uploading the pdf of you Animal Behaviour article. Your responses for the Pre- and Post-tests will not be graded as part of these points. If you fail to complete either the pre- or post-test, you will receive 0/3 points for question #30. We appreciate your honest and thoughtful responses. If you would like to make any additional comments, please use the text box below.