

Lesson Plan: Reading Techniques: A study of “Geology of Mankind”

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As a **high school English** teacher, you can use this lesson plan to help you in teaching **reading and analysis skills** as part of **English Language Teaching (ELT)**. The lesson plan involves training students in skills such as **skimming and close reading**, and **comprehension** based on the reading. The article used for this study is Nobel laureate Paul Crutzen’s, ‘**Geology of Mankind**’, that describes the concept of the ‘**Anthropocene**’.

Thus, the use of this lesson plan allows you to integrate the teaching of a climate science topic with a core topic in **Functional English** or **English Language Teaching (ELT)**.

Use this lesson plan to help your students to:

- learn to skim and close read a non-fiction text
- learn to answer questions that range in difficulty; to test basic comprehension, vocabulary in context, and inference
- understand the meaning and significance of the term ‘Anthropocene’

About the Lesson Plan

Grade Level: High School

Discipline: Humanities, English Language

Topic(s) in Discipline: Reading Comprehension, Scanning, Skimming, Close Reading, SQ3R Method, Vocabulary, Inference, Summarizing, Non-fiction, Anthropocene

Climate Topic: Climate and the Anthroposphere

Location: Global

Access: Online, Offline

Language(s): English

Approximate Time Required: 50-60 minutes

1 Contents

1. Reading (10 min)

A text to introduce and explain the reading techniques of skimming and close reading.

This can be accessed at:

<http://www.concordia.ca/cunews/offices/vprgs/gradproskills/blogs/2017/09/21/reading-strategies-skimming-vs-close-reading.html>

2. Reading (30-40 min)

A text to examine using the reading techniques of skimming and close reading. The text used is Nobel laureate Paul Crutzen's article, 'Geology of Mankind', that describes the concept of the 'Anthropocene'.

This can be accessed at:

<http://www.unife.it/scienze/lm.ecologia/Insegnamenti/management-degli-ecosistemi/materiale-didattico/Crutzen%202002.pdf>

3. Classroom Activity (10 min)

A multiple-choice questionnaire to test the students' understanding of the above text followed by an analysis of answers through peer review.

Note: The student questionnaire can be found at the end of the lesson plan.

4. Suggested questions/assignments for learning evaluation

Questions for evaluation:

- What does Paul Crutzen mean by “Anthropocene” and what is its significance?
- What evidence does the writer use to show mankind’s huge impact on nature?
- Do you agree with him that an environmental catastrophe may be imminent in the future?

Homework assignment:

The following two questions can be given as a homework assignment.

1. Summarize in about 200 words the main points that Paul Crutzen raises in “Geology of Mankind”. Also comment on the significance of the title. Write in your own words; do not copy from the text.
2. The Anthropocene has caused large scale changes in the animal world. Use the internet to find out what these changes have been. Write your report in about 150-200 words.

2 Step-by-step User Guide

Here is a step-by-step guide to using this lesson plan in the classroom. We have suggested these steps as a possible plan of action. You may customize the lesson plan according to your preferences and requirements.

1. Introduction to reading techniques

Use the text, '[Reading Strategies: Skimming vs Close Reading](#)', by GradProSkills, Concordia University, Montreal, to introduce to your students the techniques of skimming and close-reading. Explain to your students the difference between 'scanning' and 'skimming'. Discuss the points to consider for skimming articles of diverse types such as scientific and engineering journal papers, and essays in humanities. Explain how and when the technique of close-reading is employed. Discuss the SQ3R (survey, question, read, recite, review) method of close reading for improving reading comprehension.

This can be accessed at:

<http://www.concordia.ca/cunews/offices/vprgs/gradproskills/blogs/2017/09/21/reading-strategies-skimming-vs-close-reading.html>

2. Apply the understanding of reading techniques to study the chosen text

Use the text, '[Geology of Mankind](#)' by Paul Crutzen, to employ the two main reading strategies discussed before.

A. Skimming the article (6-8 min):

First, remind the students of the technique of skimming where the reader rapidly runs their eye throughout the passage without looking for any specific information. Explain that the aim of skimming is to gather the basic idea of what the text might be dealing with, and some key words that may pop out. Then, hand out copies of 'Geology of Mankind', to the class. Ask them not to look at it until the entire class has a copy each. Instruct your students to now skim the article. Use a stop watch and give the students 90-120 seconds to skim Crutzen's article. Keeping the time limited is important so that students are only able to skim and not close read. Once the time is up, ask the students to mention (without looking at the text) whatever they may have gathered from this initial reading. Ask them for key words that they may have noticed. Write these words

on the blackboard/whiteboard. They will likely include “Anthropocene”, “telluric”, “greenhouse gases”, “epoch”, “anthropogenic”, “chlorofluorocarbons”, “millennia”, “ozone”, and “catastrophe”. Explain the meanings of these words to them. At this point, the idea is not to indicate to them if they have understood the article and its argument correctly; it is simply to collate the bare minimum information they have gathered and impressions regarding the text’s content and the tone that they may have gathered. The cumulative of the students’ answers attained through skimming and the vocabulary discussed will form a backbone for the following step of close reading.

B. Close reading and discussion (15-20 min):

Now, ask the students to return to the article and begin to carefully read each line. Instruct them to note their ideas about the main argument of the article and the proof in text for the same. Give them about 10 minutes to read. Ask them to underline/highlight the main points in the text.

Once the reading is done, direct a discussion around the following broad points (10 min):

- a. What is the writer’s main argument?
- b. What examples of the argument are found in the text?
- c. What is the chronology of the Anthropocene according to the author?

The article can be accessed at:

<http://www.unife.it/scienze/lm.ecologia/Insegnamenti/management-degli-ecosistemi/materiale-didattico/Crutzen%202002.pdf>

3. Classroom Activity

Use copies of the following questionnaire to test the students’ understanding of the text. The questions are aimed at the details in the article and to test their close reading skills. They may refer to the text to locate the relevant parts to find the answers. Give about 5 minutes for this exercise.

Note: The student questionnaire can be found at the end of the lesson plan.

Ask them to read their answers aloud in class and through peer review, correct those that they got wrong.

The key to the student questionnaire, for your reference: 1 c, 2 a, 3 d, 4 b, 5 d, 6 b, 7 c, 8 d, 9 a, 10 a.

4. Questions/Assignments

Use the tools and the concepts learned so far to discuss and determine answers to the following questions:

- What does Paul Crutzen mean by “Anthropocene” and what is its significance?
- What evidence does the writer use to show mankind’s huge impact on nature?
- Do you agree with him that an environmental catastrophe may be imminent in the future?

Homework assignment:

The following two questions can be given as a homework assignment.

- Use the first question to follow-up on the skill of reading: summarizing. Since the students have already done a broken-down and collective summary of the text in class, this question simply requires them to be able to put in their own words what they have understood and retained from the reading exercise.
- Use the second question to direct them from the text to a wider pool of knowledge. Animal extinction in the Anthropocene is mentioned in the article. Ask them to use this research question to write a report to expand their understanding of the Anthropocene further.

Questions for homework assignment:

1. Summarize in about 200 words the main points that Paul Crutzen raises in “Geology of Mankind”. Also comment on the significance of the title. Write in your own words; do not copy from the text.
2. The Anthropocene has caused large scale changes in the animal world. Use the internet to find out what these changes have been. Write your report in about 150-200 words.

3 Learning Outcomes

The tools in this lesson plan will enable students to:

- practice reading skills like skimming and close reading
- discuss the difference in their own understanding on using each skill
- understand the concept of the Anthropocene

4 Additional Resources

If you or your students would like to explore the topic further, these additional resources will be useful.

1. Video

A short video, “What is the Anthropocene?” by the Smithsonian Magazine.

This can be accessed at:

<https://www.smithsonianmag.com/videos/category/science/what-is-the-anthropocene/>

2. Web Portal

A web portal, ‘Welcome to the Anthropocene’, founded by Commonwealth Scientific and Industrial Research Organization (CSIRO), Globaia, International Geosphere-Biosphere Programme (IGBP), International Human Dimensions Programme on Global Environmental Change (IHDB), Stockholm Resilience Centre and Stockholm Environment Institute.

This can be accessed at:

<http://www.anthropocene.info/>

5 Credits/Copyrights

All the teaching tools in our collated list are owned by the corresponding creators/authors/organizations as listed on their websites. Please view the individual copyright and ownership details for each tool by following the individual links provided.

We have selected and analyzed the tools that align with the overall objective of our project and have provided the corresponding links. We do not claim ownership of or responsibility/liability for any of the listed tools.

1. Reading; “Skimming vs Close Reading”

By GradProSkills, hosted by [Concordia University](#), Montreal.

2. Reading; “Geology of Mankind”

Written by Paul Crutzen, published by *Nature* in 2000, made available by [University of Ferrara](#), Italy.

3. Additional Resources

Video, ‘What is the Anthropocene’ by the [Smithsonian Magazine](#).

Web portal, ‘Welcome to the Anthropocene’ was [developed](#) first by Commonwealth Scientific and Industrial Research Organization (CSIRO), Globaia, International Geosphere-Biosphere Programme (IGBP), International Human Dimensions Programme on Global Environmental Change (IHDB), Stockholm Resilience Centre and Stockholm Environment Institute, and the second phase was a collaboration between Albaeco, Globaia and Stockholm Resilience Centre, sponsored by the Swedish Postcode Foundation.

Student Questionnaire

Choose the most appropriate answer from the choices given below for Paul Crutzen's "Geology of Mankind":

1. The writer opens the article with "For the past three centuries..." to indicate
 - a. how long human beings have been on the Earth
 - b. how long human beings have affected the Earth
 - c. how long human activities have made a huge impact on the environment
 - d. how long the period of this study is

2. The second half of the 18th century is significant in the article because...
 - a. the Anthropocene could be said to have started then
 - b. the writer was born then
 - c. human beings discovered carbon dioxide and methane then
 - d. polar ice began melting then

3. What can we infer from the mention of James Watt's steam engine?
 - a. He was a very important inventor
 - b. His steam engine was used to study polar ice
 - c. The steam engine changed the way human beings worked
 - d. His steam engine is significant for the writer's definition of the Anthropocene

4. What is the meaning of the term "noö"?
 - a. world
 - b. thought
 - c. environment
 - d. growing role

5. Why does the author mention human population as the first point in Paragraph 3?
 - a. Because it is the closest in meaning to the "Anthropozoic era"
 - b. Because water and land are renewable sources for food production
 - c. Because human population is expected to reach 10 billion in the 21st century
 - d. Because it has led to greater exploitation of all other environmental parameters

6. What is the implication of the sentence, "So far, these effects have largely been caused by only 25% of the world population"?

- a. 75% of the human population has had no impact on the increased stress on the environment
- b. 75% of the human population has had some impact on the increased stress on the environment
- c. 75% of the human population uses only renewable sources of energy
- d. 25% of the human population uses all the fossil-fuel available in the world

7. Contextually, why does the author use the phrase "more by luck than by wisdom"?

- a. The spread of the ozone hole was prevented because human beings were aware of the harm they were causing
- b. The spread of the ozone hole was prevented because human beings studied the properties of bromine
- c. The spread of the ozone hole was prevented simply because one chemical coincidentally was not like another
- d. The spread of the ozone hole was prevented because Antarctica is far from other continents

8. What is the significance of the last sentence of the article?

- a. We are waiting for a meteor to hit the Earth
- b. We need to optimize climate
- c. We have a definite plan of what we need to do
- d. We are not sure what to we need to do or what the future will be like

9. Who is the expected audience for this article?

- a. Common people
- b. Scientists
- c. Engineers
- d. James Watt

10. Which of these is the writer of this article most likely to agree with?

- a. Humans will continue to negatively influence nature in the future
- b. Preventing climate change is the responsibility of scientists and engineers
- c. Large scale ego-engineering will reduce global warming
- d. The ozone hole will grow larger within the next decade