

Early Evolutionary Thinkers

Summary

Students will read selections from primary sources of Lamarck, Wallace, and Darwin. (see below) Using the information they will identify observations and inferences. They will also investigate the development of the theory of evolution. Students will do this by answering questions and discussing in small groups. Their learning will be assessed by a brief quiz.

Time Frame

1 class periods of 70 minutes each

Group Size

Small Groups

Materials

- [student sheet](#)
(attached)
- [readings handout](#)
(attached)

Student Prior Knowledge

Students should understand the definition of observation and inference. They should understand genes, traits, and allele frequency.

Instructional Procedures

Make copies of the student handouts (12 copies of each for a class of 36), also make a copy of the student question sheet (1 per student). Make overhead of quizzes.

Pass out readings with all students at a table receiving the same author.

Have students read the papers aloud at their table. You may want to warn the students that they must read carefully for comprehension. The readings are difficult because the language is "old fashioned."

Students should answer the questions pertaining to their authors' paper.

Explain to the students they must become an expert on the ideas of their author, they will be joining a different group with 2 representatives from each of the authors and explaining the view point of their author and helping other group members answer the questions.

Divide students into groups of 6 with 2 students representing each author.

Allow students time to discuss and share answers in their groups.

Alert students that they will be taking a quiz on one of the authors that they were not the expert on. They will be graded on their score on the quiz as well as the scores of the other students in their group on their author.

Put quiz paper on the overhead. Allow students to answer the question to the quiz of their choice (as long as it was not the author they were an expert on).

Grade quizzes.

Answers to Analysis Questions:

1. *Birds stretch the skin between their digits when they strike the water (observation), because they do this so often it causes the skin to become webbed (inference). Snakes have long bodies and no legs (observation), because they are always stretching themselves their bodies became*

longer and because they do not use their legs they no longer have them (inference). (Girrafe example may also be used)

- 2. Answers will vary. Example: If I did not use my arms my whole life my children would not be born without arms.*
- 3. Because of a mutation an animal may be born with an adaptation that is advantageous. If the adaptation makes the organism better fit for its environment (a girrafe with an extra long neck has easier access to more food) and more likely to survive and reproduce. If it reproduces more its genes will be passed on to more offspring so the frequency of the allele for the trait will increase.*
- 4. Answers will vary. It is scientific in that he uses observations to validate his claims.*
- 5. The animal with the advantage is more likely to survive and reproduce. The more it reproduces the more it passes on its genes. Two example include the antelope with longer legs escapes predators more efficiently and a pigeon with powerful wings gets more food and will survive and reproduce.*
- 6. The more an animal reproduces the frequency of the alleles that it carries will increase in the population.*
- 7. Wallaces explanation deals with reproducing and passing on traits. It deals with evolution of a population. Evolution occurs from pressures in the environment making some organisms better fit to survive than others. Lamarcks explanation deals with just not using something so it simply disappears. Animals can change themselves to fit their environment.*
- 8. Answers will vary, most will agree that animals cannot change themselves simply by desiring to do so.*
- 9. His time on board the HMS Beagle and the observations he made.*
- 10. Wallace reached the same conclusions as Darwin on his own. He sent his work to Darwin who realized this. This cause Darwin to finally publish. They ended up publishing together.*
- 11. Darwin thought things were much to complicated to be only driven by external conditions. He cites the examples of the woodpecker and the parasite missletoe, both coadaptations.*
- 12. He looked at selective breeding process in agriculture and domesticated animals.*
- 13. Mendel used cultivated plants, specifically the pea plant to understand how traits were passed on from one generation to the next.*
- 14. There are so many species that we still do not know of or understand the relationships between them.*
- 15. Natural Selection*

Answers to Quiz Questions:

See questions above

Assessment Plan

Scoring Guide:

Questions.....30 points

Personal Quiz Score.....9 points

Group Scores*.....9 points

**Average scores of students in group that took quizzes on their author*

Bibliography

Lesson Design by Jordan School District Teachers and Staff.

Authors

[Utah LessonPlans](#)