

Brian Curran
10/26/03

Jurassic Park Unit Plan
10th Gr. Academic Biology, Liberty HS; BASD
Time: 9 x 80 min. blocks

Objectives:

- Students will explain the chemical basis of life.
- Students will describe how information is passed on from parent to offspring.
- Students will explain the relationship between genotype and phenotype.
- Students will describe the structure of DNA and RNA.
- Students will demonstrate how proteins are made from a DNA template.
- Students will explain evolutionary theories and how their impact on scientific debate.
- Students will describe the basics of genetic engineering, how a gene can be spliced, how transgenic organisms are made.
- Students will describe the basics of cloning techniques.
- Students will discuss the ethical question of genetic engineering and human cloning.

Standards:

PDE Ch.4

Reading/Writing/Speaking/Listening

- 1.1.11.E: Establish a reading vocabulary by identifying and correctly using new words acquired through the study of their relationships to other words. Use a dictionary or related reference.
- 1.1.11.F: Understand the meaning of and apply key vocabulary across the various subject areas.
- 1.4.11.A: Write complex informational pieces (e.g., research papers, analyses, evaluations, essays).
 - Include a variety of methods to develop the main idea.
 - Use precise language and specific detail.
 - Include cause and effect.
- 1.6.11.A: Listen to others.
 - Ask clarifying questions.
 - Synthesize information, ideas and opinions to determine relevancy.
 - Take notes.

Sci/Tech.

- 3.1.10.B: Describe concepts of models as a way to predict and understand science and technology.
- 3.1.10.E: Describe patterns of change in nature, physical and man made systems.

- Describe how fundamental science and technology concepts are used to solve practical problems (e.g., momentum, Newton’s laws of universal gravitation, tectonics, conservation of mass and energy, cell theory, theory of evolution, atomic theory, theory of relativity, Pasteur’s germ theory, relativity, heliocentric theory, gas laws, feedback systems).
 - Recognize that stable systems often involve underlying dynamic changes (e.g., a chemical reaction at equilibrium has molecules reforming continuously).
- 3.3.10.A: Explain the structural and functional similarities and differences found among living things.
- Explain the relationship between structure and function at the molecular and cellular levels.
- 3.3.10.B: Describe and explain the chemical and structural basis of living organisms.
- Describe the relationship between the structure of organic molecules and the function they serve in living organisms.
 - Identify the specialized structures and regions of the cell and the functions of each.
 - Explain how cells store and use information to guide their functions
- 3.3.10.C: Describe how genetic information is inherited and expressed.
- Explain the relationship among DNA, genes and chromosomes.
 - Describe the role of DNA in protein synthesis as it relates to gene expression.
- 3.7.10:??
- 3.8.10:??

Art/Humanities:

9.1.12.A: Know and use the elements and principles of each art form to create works in the arts and humanities: Elements: Visual Arts: • color • form/shape • line • space • texture • value ; Principles Visual Arts: • balance • contrast • emphasis/focal point • movement/rhythm • proportion/scale • repetition • unity/harmony

Materials:

- “Jurassic Park,” “The Lost World,” “Jurassic Park 3” movies
- see specific activity, lesson plan for details

Key Knowledge/ Skills:

- DNA as the basis of life
- protein synthesis from the DNA template
- phenotypic expression from DNA
- genetic engineering techniques
- ecological interactions between plants and animals
- evolutionary concepts/ science and religion

Lesson Outline:

Attention:

“In this unit we will use the books Jurassic Park and The Lost World to highlight a study of genetics, genetic expression and engineering, ecology, and evolution. We will

watch the movies and examine the accuracy of the processes at work in the movies and in real life.”

Objectives:

“After completing this unit you should be able to apply your knowledge of the concepts of DNA, RNA functions in protein synthesis, phenotypic expression of the DNA code and genetic engineering to solve a complex problem.”

Recall:

-Students should recall their knowledge of the parts of the cell and their role in DNA replication and protein synthesis.

Present New Information:

-New information will be presented in through textbook readings, direct instruction (notes), and questioning.

Provide Guidance:

-Guidance will be provided in the appropriate method as pertains to each specific activity. See specific lessons for details. In general, guidance will be provided through questioning, redirection and other instructional techniques as appropriate.

Elicit Performance:

The instructional unit will commence with students watching the movie “Jurassic Park. This will take approx. one and a half lessons, beginning with the time remaining after the previous unit test.

Day 0: “Jurassic Park”

Day 1: Review of cell parts

Day 2: DNA structure/function

Day 3: RNA structure/function

Day 4: Transcription/translation

Day 5: DinoID; codon reading; QUIZ

Day 6: Recomb. DNA/genetic engineering

Day 0: “Jurassic Park 2”

Day 7: Evolution Evidence

Day 8: Evolution2

Day 9: Review

Day 10: Test

Provide Feedback:

-Feedback on the various tasks and activities will be provided based on the specific activity.

Assess Performance:

-Student performance will be assessed formatively through observations and daily work. –see specific daily plan for specific work assigned. See the level sheet for homework questions assigned. Periodic summative assessments will be given, including a mid-point quiz and a unit test.

Adaptations:

Students with IEPs will be accommodated according to their specific IEP terms.

Adaptations include extra time for tests, seating in front, a copy of the teacher's notes for the class, etc.