

Bachelor of Education (Elementary) & Bachelor of Education (Secondary) STEM Lesson Plan

Lesson Title: DNA Extraction Lab Lesson # 5 Date: Feb-19-20
 Name: TJ Pak Subject: Science Grade: 9

Rationale:

An organism's genetic material determines how it looks, functions, and behaves. The genetic material is contained in a molecule called DNA

Core Competencies:

Communication	Thinking	Personal & Social
<ul style="list-style-type: none"> Active listening and sharing of information using diagrams and verbal cues Students present findings through storytelling 	<ul style="list-style-type: none"> Analyze and critique own work and other's Students can develop and design alternative ways to express thoughts 	<ul style="list-style-type: none"> Students gain skills in camaraderie through sharing of ideas Develop new ideas and strengths to help manage new challenges

Big Ideas (Understand)

An organism's DNA is contained in each and every cell. DNA is protected and stored in the nucleus of the cell. DNA holds the blueprint for producing all the necessary resources for compete cell function

Learning Standards

(DO)	(KNOW)
<p>Learning Standards - Curricular Competencies</p> <ul style="list-style-type: none"> Productive, achieve satisfaction through knowledge gains, strive for well being Capable of independent decision making 	<p>Learning Standards - Content</p> <ul style="list-style-type: none"> DNA is a biochemical molecule that is made up of building blocks called nucleotides. Chromosome is the name of the condensed material that contain the genetic code

Instructional Objectives & Assessment

Instructional Objectives (students will be able to...)	Assessment
<ul style="list-style-type: none"> Students will be able to draw a DNA molecule Students will be able to describe the different parts of the DNA molecule, including nomenclature Students will understand the organization of the individual DNA parts 	<ul style="list-style-type: none"> Students will review learned materials and gauge success through small question and answer sessions using printed resources Students will be given time to reflect on learned concepts and given feedback

Prerequisite Concepts and Skills:

Reproduction process associated with parents and offsprings. Significance of reproduction. Understanding importance of transfer of genetic material.

Indigenous Connections/ First Peoples Principles of Learning:

Universal Design for Learning (UDL):

Provide written notes. Repeat instructions and follow up. Written and verbal itinerary prior to start of each class. KWL chart use. Use guides and prompts

Differentiate Instruction (DI):

Repeat instructions and simplify explanations as required. Tiered lessons. Provide handouts for common questions. Use simple jargon and avoid complex concepts

Materials and Resources

Computer for video display. Powerpoint slideshow. Fill in the blank class notes. Chrome books. Textbooks and workbooks - BC Science Connections

Lesson Activities:

Teacher Activities	Student Activities	Time
Introduction (anticipatory set – “HOOK”): Draw a banana and orange on board. Tell a banana and orange knock knock joke. Leading into DNA is similar in all organisms	Discuss student thoughts and ideas, triggered from joke. Discuss similarities and differences between banana and orange.	(10 minutes)
Body: Brief lecture on DNA structure, purpose, nomenclature. Quick review on lab procedures and lab safety.	Watch youtube video: Banana DNA Experiment. https://www.youtube.com/watch?v=pdDP9OcpcbA . Make observations during procedure. Discuss in groups their understanding of DNA, what they observe and quiz each other on terminology. Clean up.	(30 - 35 minutes)
Closure: Review learned concepts. Answer any queries and thoughtful questions. Finish with brief class discussion of learned material	Share findings, drawings, answers and notes	(20 minutes)

Organizational Strategies:

Prepare workbooks and textbooks. Prepare laptop and video for display. Lab equipment and materials as per textbook procedures

Proactive, Positive Classroom Learning Environment Strategies:

- Students struggling with ideas and understanding concepts can ask for help
- Be flexible with time. If studying is going well and productive, let it go a little longer. The same applies for group and class discussion
- Set clear and specific goals and objectives

Extensions:

Discuss the importance of DNA structure. Think of strategies for why DNA is compact and reasons for its unique shape

Reflections (if necessary, continue on separate sheet):