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Lesson Plan

Learning Segment Focus: 8th Grade Science

Lesson 3 of 3 Topic: Mutations **Date:** 4/13/21 **Grade:** 8th grade

Student Outcomes

Specific learning **objectives** for this lesson.	The students will be able to identify the class of mutations and the type of mutations involved in our genes. They will also be able to transcribe DNA strand to a mRNA strand.
Justify how learning tasks are appropriate using examples of **students' prior academic learning**.	Students will already have background knowledge about transcribing DNA to RNA. They already understand the different types of mutations and different examples of each. We have already completed a activity where the students were given different sequences and they had to figure out which mutation affected the sequence or they had to make the new sequence.
Justify how learning tasks are appropriate using examples of **students' personal, cultural, linguistic, or community assets**.	A lot of people in our world do not understand the behind the scenes when it comes to different diseases that others have to deal with. This will allow the students to have a better perspective on how people with these diseases were born like this because of mutations on their genes. This will educate them on how to deal with others who possible have diseases.

State Academic Content Standards

List the **state academic content standards** with which this lesson is aligned. Include abbreviation, number & text of the standard(s).	**8-LS3-1**: Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.

Key Vocabulary

What **vocabulary terms/content specific terminology** must be addressed for students to master the content?	**DNA, RNA, nucleotides, point mutation, chromosomal mutation, missense mutation, frameshift addition and subtraction mutation, nonsense mutation, silent mutation, amino acids, proteins, diseases, transcription, and codon.**

Academic Language Support

What are the **Academic Language Function(s)** (the content and language focus of the learning task represented by the active verbs within the learning objectives/outcomes) and explain how they are utilized in the lesson plan? What planned **Academic Language Supports** will you use to assist students in their understanding of key academic language to express and develop their content learning and to provide varying supports for students at different levels of Academic Language development? How do these supports address all three **Academic Language Demands (vocabulary, syntax, and discourse)?**	To begin this lesson, I will review with the students about DNA and RNA and how to transcribe using the worksheet that was posted on padlet called "DNA Transcription". This will allow us to review all the vocabulary needed for when they research their own disease. We will watch a short video about the different classes of mutations and what diseases go along with that. I want the students to research a class of mutation between the three that was taught in class. They are to research one disease under that class and write a 1 – 2 page paper about the disease. Such as, the type of mutation (explaining what that means), the different diseases that go along with the type, what the disease does to a person, etc. This will allow them to use their vocabulary from the past few lessons and implement them into their essay.

Materials

Materials needed by the teacher for this lesson. (such as books, writing materials, computers, models, colored paper, etc.)	- Worksheet (DNA Transcription) - Ipad - Computer - Paper - Pencil - Handout (instructions for research)

Materials needed by **students** for this lesson. (computers, journals, textbook, etc.)	- Ipad or computer - Paper - Pencil - Worksheet - Handout

Lesson Timeline with Instructional Strategies & Learning Tasks

Amount of Time	**Teaching & Learning Activities (This should be a BULLETED LIST)**	**Describe what YOU (teacher) will be doing and/or what STUDENTS will be doing during this part of the lesson. (This should be VERY DETAILED)**
10 minutes	**<u>Introduction</u>**: - DNA Worksheet - Explain Activity	To begin, I will be reviewing about how to transcribe DNA to mRNA to tRNA to Amino Acids. They will read the directions from the worksheet with me, so they remember how to do this. After reviewing the worksheet, I will explain to them what the activity for the day is. I will give them a handout that includes instructions for their research, what to look up, what to include in the paper, and I will give them an example of the one I did. They can use the ipad or a computer for their research as long as they have at least three good sources for their paper.
This will be a 5-day 50-minute activity	**<u>Instruction</u>:** - 30 minutes will be spent on the worksheet - 20 minutes of research - The rest of the week will be for research or typing their paper.	"Okay, you have 30 minutes to complete the worksheet to transcribe the DNA strands. Once you are done turn in the worksheet to the back of the room and start researching a disease." A student might ask, "Are we researching a disease or a class of mutation?" "You have to pick one of the three classes of mutations that we have learned already, then pick a disease that falls under that mutation. In your paper you have to discuss the class of mutation you have picked which means discussing the types of mutation, then you'll go into your disease that you have picked out." For the last 20 minutes on Monday, they should only be researching on the iPad or computer (if we are able to go to the computer lab). Tuesday and Wednesday should also be research days. "Remember, you have to have at least three good sources for your project. I have put on padlet a website you can go to if you are still confused on class and type of mutation, and it has examples of diseases. Tuesday and Wednesday classes went smoothly regarding the research of these diseases. On Thursday, the students need to either start writing their paper or finish up their research. A student asks, "Can we use Wikipedia as one of our sources?"

		"No, Wikipedia is not considered a credible source since anyone can make an account and change the information." On Friday, everybody will be writing their research paper. It is to be double-spaced, Times New Roman font, and 12 pt. They will be allowed to turn this assignment in on the following Monday.
Last 5 minutes on Friday	**Closure:** - Discuss their citation page	"Remember you will need to have a citation page to cite your work. I gave you the website https://owl.purdue.com to help you cite your references. I am giving you the weekend to type the rest of your paper, but it is due by Monday at the beginning of the class."

Technology Integration

Provide your **rationale** for your technology choices that accurately reflects those choices within your teaching context. **Identify** what technology(s) you are using as part of your lesson plan. **Describe** how the use of technology aligns to your learning objectives, content standards, and central focus. **Explain** how technology-based instructional strategies are essential to students accomplishing the learning objectives (beyond what could be accomplished without using the technology). **Specify** how the technology selections meet or exceed the needs/strengths of all students**. Justify the "fit"** of chosen technologies, showing how the content, instructional strategies, and technology "fit" together.	I am using padlet for my technology use because it is easy for the students to access the material for this subject. I was able to put past assignments on padlet for anyone who needed to find it. I was able to put in youtube videos, so if the students needed more instruction of the material. I posted a worksheet with answers just in case a student missed the class and wasn't able to get the answers that day. I believe technology is essential because it allows the enhancement of any topic being learned. Students become more focused and interested in the topic when they can involve technology. I am not just using padlet, but also the internet for their research paper. This allows them to find more websites and information rather than getting their information from a textbook or only a selection of books.

Accommodations/Modifications

How might I **modify** instruction for: *Remediation?* *Intervention?* *IEP/504?* *LEP/ESL?* (All students who have plans mandated by federal and state law.)	For the students who need remediation, the worksheet that was given to them on Monday is for the people who need a little bit more practice on that topic. Being able to research these mutations and learn more about them, I believe, gives them their intervention if they are struggling. I have many students with IEPs/504s, so giving them this time to research does allow them more time to understand these mutations.

Differentiation

How might you provide a variety of techniques (enhanced scaffolding, explicit instruction, contextualized materials, highlighters/color coding, etc.) **to ensure all student needs are met?**	Going into prior knowledge is a way to ensure that the students need are met. Reviewing allows them to understand new information when it all becomes connected. I will be showing the students what I want in a research paper by making a mini one for them to see. I will show them how to do cite in the paper and on a citation page along with how to even write a research paper.

(All students who are not on specific plans mandated by federal and state law.)	

Assessments: Formative and/or Summative

Describe the **tools/procedures** that will be used in this lesson to monitor students' learning of the lesson objective(s) (include type of assessment & what is assessed).	☐ **Formative** /☐ ~~Summative~~	As a formative assessment, I will be using what is called interview assessment at the beginning of this less. This will allow me to engage with the students and see where they are at in understanding the material before continuing with the project. This is a casual talk, so it is more of an observation than a formal assessment.
	☐ **Formative** /☐ ~~Summative~~	Another formative assessment is having the students fill out the worksheet before moving on to the research paper. This will allow me to see if they will even understand what they are writing about in their research paper.
	☐ ~~Formative~~ /☐ **Summative**	For a summative assessment, I will have the students write a research paper over a disease that was picked from one of the classes of mutations. This gives them an overall view of one class of mutation and how a mutation affects a persons genes.

Research/Theory

Explain **connections to theories and/or researc**h (as well as experts in the field or national organization positions) that support the approach you chose and justify your choices using **principles of the connected theories and/or research.**	**Piaget:** This theorist uses the developmental approach. Humans are to develop in various stages, so it was easy to use this model. We introduced the concept of DNA to RNA strands and mutations in the classroom when taking notes. We have also done other handouts before this project (classwork) to solidify that they do know the material. Once they have mastered the material, they can use this knowledge and use it to create a research paper.

Lesson Reflection/Evaluation

What went **well**? What **changes** should be made? How will I **use assessment data** for next steps?	*TO BE FILLED IN AFTER TEACHING* (I am not sure if I need to write this out)

Include supporting material such as slides, pictures, copy of textbook, and handouts for any activities students will be using as part of your lesson.

*adapted from: http://webcache.googleusercontent.com/search?q=cache:EsQcNWuG1ZoJ:web.mnstate.edu/harms/StudentTeachers/edTPA-LessonPlan.doc+&cd=2&hl=en&ct=clnk&gl=us; http://www.moreheadstate.edu/getmedia/cd3fd026-939f-4a47-a938-29c06d74ca01/Lesson-Plan-and-Reflections.aspx; http://www.mcneese.edu/f/c/9cb690d2/Lesson%20Plan%20Rubric%20Aligned%20with%20InTASC.docx;https://www.uwsp.edu/education/Documents/edTPA/Resource12.pdf; https://www.uwsp.edu/education/Documents/edTPA/Resource11.pdf; https://www.uwsp.edu/education/Documents/edTPA/Resource11a.pdf; https://www.uwsp.edu/education/Documents/edTPA/LessonPlanTemplateSOE.docx; https://www.uwsp.edu/education/Documents/edTPA/SpecEdLessonPlanGuide.docx; https://www.uwsp.edu/education/Documents/edTPA/SpecEdLessonPlanTemplate.docx