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| **Topic, Subject, Class, Date:**  **Cell Theory, Biology, 5th Grade Science** | |
| **Planning Step 1: Lesson Curriculum: What are the Learning Goals for this lesson?** | |
| **Lesson Standards**  Always include a writing standard. | **Standard(s): S.5.B.1.1 Describe how the cell is the basic unit of structure and function for all living things.**  **Anchors:**  S.5.B.1.1.1  Recognize that all organisms are composed of cells.  S.5.B.1.1.2  Explain the concept of the cell as the basic structural unit of all living things.  S.5.B.1.1.3  Compare the structure and function of basic cell parts in organisms (i.e., plants and animals). |
| **Students Will Be Able To… (Do)**   * Skills from standards including thinking (cognitive verbs). * This is not activities. * Sequence these goals in the order in which they should be learned. | * list the 3 components of the cell theory   + Cells are the building blocks of all living things   + All living things are made up of cells   + all cells come from pre-existing cells * list the major scientist and theie contributions to the development of the Cell theory * identify similar parts of plant and animal cells * identify differences in parts and appearance of animal and plant cell |
| **Students Will Know**  Knowledge from standards such as vocabulary, facts, formulas. |  |
| **Lesson Essential Question**  A question that communicates the Learning Goals. | What are the compents of the cell theory?  Who contributed to the development of the cell theory? |
| **Planning Step 3: Lesson Instruction: How will students learn?** | |
| **Activating Strategy**   * Plan this after you plan your Learning Activities. * How will you introduce the Lesson Essential Question? * How will you draw attention to important vocabulary in the Lesson Essential Question? * How will you build/link background knowledge? * What prerequisite content might students need to know before the lesson? * Which key vocabulary from the Learning Goals needs to be explicitly taught? * Are there other vocabulary words that you think need to be taught? * Which vocabulary strategy will you use? | Objective Introduction  1. Have the students do a Think-Pair-Share to discuss the objective. One student will read the objective and the other student will respond with their understanding of the objective (topic).  Class Activity  1. Tell students to observe the PP slide with 3 images of cork cells under a microscope. Don’t tell them anything about the images.  Student Activity  1. Have students observe the PowerPoint slide with the cork cells and ask them to write down three observations.  2. Tell them a scientist by the name of Robert Hooke was the first one to come up with a name for these observed “boxes.”  3. Ask them if anyone knows what they are called. (cells)  4. Ask them if they think these structures are found in plant or animals.  5. Tell them the material they are looking at is cork.  6. Show them the next slide with the picture of Robert Hooke.  7. Tell them they will learn the cell theory, which is the law which governs all cells. Also, tell them they will learn about other important scientists who contributed to the cell theory as well as most cell functions. |
| **Key Vocabulary (for explicit instruction):**  **Vocabulary Strategy:** |
| **Graphic Organizer**   * How will students store and organize information as they learn during this lesson? * Base the organizer on the thinking in the *Will Be Able To… (Do)* Learning Goals. |  |
| **Learning Activity 1**  The Learning Goal(s) for this Learning Activity and Assessment Prompt:  Consider:   * Content students need to learn * Chunk activity:   + Several opportunities for thinking, talking, writing to learn   + Distributed summarizing and/or practice   + Questions to ask * Active engagement:   + Collaborative Pairs, Numbered Heads, Think-Pair-Share, etc.   + Variety   + Movement | **Read it!**  Each member of the group will read the passage and answer the questions from the task cards on the lab sheet in the Read It!  section.  It is important to remember that the answers will come directly from the reading passage.  Questions with multiple choice answers   1. What happened that allowed cells to be studied? 2. How did Robert Hooke contribute to the cell theory? 3. What was Leeuwenhoek talking about when he used the term “*animalcule”*? 4. What is this passage mainly about?   **Watch it!**  Each member of the group will go to the website listed on task card #1  Complete the task cards in order.  Every student will answer the questions from the task cards on the lab sheet in the Watch It! section of the lab sheet.  YouTube <https://goo.gl/PnCixH>  Questions  How was bacteria first discovered?  How did Robert Hooke come up with the term “*cell”*?  How did Rudolf Virchow contribute to the cell theory?  **Research it!**  Each member of the group will go to the website listed on task card #1  Complete the task cards in order.  Every student will answer the questions from the task cards on the lab sheet in the Research It! section.  Go to <https://goo.gl/qZvbup>  Questions  1. What is Robert Hooke’smain contribution to science?  2. Summarize Leeuwenhoek’s work regarding the cell theory.  3. Describe Schwann and Schleiden’s cell theory summary.  4. Which part of Schwann and Schleiden’s theory was proven incorrect?  **Explore it!**  One member of the group will read the task cards in order. The group will be responsible for completing each of the tasks that are  being read.  Each member of the group will then write their conclusions down on the lab sheet in the Explore It! section.  Questions  1. On your lab sheet copy the cell theory into the Explore It section.  2. List 2 items that have cells and 2 items without cells (do not use  anything previous from the cards).  **Illustrate it!**  Each member of the group will draw a quick sketch on the lab sheet the shows they understand the concept that is being taught.  Use the colored pencils and markers that are provided.  The directions for the sketch are provided on the task card at the table.  Directions:  Draw an illustration that supports the cell theory.  1. Cells are the building blocks of all living things.  2. All living things are made up of cells.  3. All cells come from pre-existing cells.  **Organize it!**  Every student will write their “matches” on the lab sheet in  the Organize It! Section.  Please mix up the cards again before the next group  arrives at this station. |
| **Assessment Prompt for**  **Learning Activity 1**  Formative assessment of the Learning Goal(s). | **Write it!**  Answer each of the task card questions on the lab sheet in complete sentences.  Type 2 Questions:  List the 3 parts of the cell theory.  Why do you believe so many scientists were involved in the  development of the cell theory?  What impact has the cell theory had on the modern day world in which we live?  **Access it!**  Each member will answer the questions from  the task cards on the lab sheet in the Assess  It! section.  Questions  Which is not a part of the cell theory?  What was Robert Hooke’s contribution to cells?  What is a benefit of the development of the cell theory?  What does “cells come from other cells” mean? |
| **Learning Activity 2**  The Learning Goal(s) for this Learning Activity and Assessment Prompt:  Consider:   * Content students need to learn * Chunk activity:   + Several opportunities for thinking, talking, writing to learn   + Distributed summarizing and/or practice   + Questions to ask * Active engagement:   + Collaborative Pairs, Numbered Heads, Think-Pair-Share, etc.   + Variety   + Movement |  |
| **Assessment Prompt for**  **Learning Activity 2**  Formative assessment of the Learning Goal(s). |  |
| **Learning Activity 3**  The Learning Goal(s) for this Learning Activity and Assessment Prompt:  Consider:   * Content students need to learn * Chunk activity:   + Several opportunities for thinking, talking, writing to learn   + Distributed summarizing and/or practice   + Questions to ask * Active engagement:   + Collaborative Pairs, Numbered Heads, Think-Pair-Share, etc.   + Variety   + Movement |  |
| **Assessment Prompt for**  **Learning Activity 3**  Formative assessment of the Learning Goal(s). |  |
| +Add 1-2 additional Learning Activities if needed | |
| **Planning Step 2: Lesson Assessment: How will students demonstrate  understanding of the Learning Goals for this lesson?** | |
| **Assignment**   * Plan this before planning Lesson Instruction. * How will students demonstrate their knowledge of the *Will Know* Learning Goals and the skills in the *Will Be Able To… (Do)* Learning Goals? | Unit assessment 10 multiple choice questions and 1 Collins type 2 question. |