Lesson Plan User Guide

1. Lesson Plan - Essential Element

Record the relevant DLM Essential Element(s) that aligns with your targeted learning objectives and students' grade level.

2. Science and Engineering Practice

Record the Essential Element's SEP to incorporate in the lesson. You will design activities that encourage students to use the SEP - for example, by asking questions, conducting experiments, and gathering data to promote active exploration and problem-solving. You could also integrate practices such as analyzing data, constructing explanations, and developing models into lessons, encouraging students to apply their learning in practical ways. Consider framing lessons around real-world problems and engineering challenges to allow students to practice designing solutions and evaluating outcomes.

3. Disciplinary Core Idea

Record the Essential Element's DCI to ensure the content is age-appropriate and covers essential concepts. Incorporate the DCI into lesson activities, discussions, and assessments to help students connect their learning to targeted scientific concepts.

4. Crosscutting Concept

Identify the Essential Element's CCC to link ideas from different science domains, helping students see relationships and build a more integrated understanding of scientific concepts. Use the CCC to help students understand how the world works and solve problems by finding patterns and seeing how things are connected.

5. Linkage Level Descriptors

Determine the appropriate linkage level based on the student's current skill and understanding related to the Essential Element and DCI. Refer to linkage level descriptors to ensure you focus on specific skills and knowledge that align with the student's learning goal.

6. Student's Typical Accessibility Supports

List specific accessibility supports the student typically uses, such as assistive technology, modified materials, or additional time. Integrate these supports into lesson activities to ensure the student can fully participate and engage with the content. Work with other staff as needed to align instructional strategies with the student's accessibility needs.

7. Student Prior Experiences, Prior Knowledge

Identify what the student already knows about the science content, including any relevant experiences or concepts they have encountered previously. Link the science content to related concepts in English language arts and math to build on students' existing knowledge and make the content more accessible. Use the student's prior experiences and knowledge as a foundation to introduce new concepts, making learning more relevant and meaningful.

8. Phenomenon to Explore

Clearly articulate the phenomenon or observable event that students will investigate, ensuring it is specific and provides a clear focus for their inquiry or problem-solving. The phenomenon will shape the question to investigate and align to the linkage level. Use the phenomenon or problem to drive the lesson, maintaining student engagement through relevant and thought-provoking activities.

9. Possible Alternative Conceptions

Anticipate common misconceptions or alternative ideas students might have about the phenomenon based on formative assessments or prior experience. Create instructional activities that explicitly target and address these misconceptions, helping students correct their understanding. Use formative assessment to detect alternative conceptions during the lesson, and adjust instruction as needed to clarify misunderstandings. Offer clear explanations and examples to correct misconceptions, reinforcing accurate scientific concepts and helping students build a correct understanding.

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10. UDL Barriers and Possible Solutions

Identify strategies to proactively address potential barriers to learning. Provide Multiple Means of Engagement by offering diverse ways to motivate and engage students, such as varying activities and incorporating students' interests to maintain their involvement. Provide Multiple Means of Representation using various methods to present information, such as visual aids, audio resources, and hands-on materials, to ensure all students can access and understand the content. Provide Multiple Means of Action and Expression by having students demonstrate their understanding through different formats, such as written reports, oral presentations, or creative projects, supporting various strengths and preferences. Incorporate UDL principles in every phase of the lesson to ensure all students can participate.

11. Engage

Introduce the lesson's topic with real-world examples, provocative questions, or intriguing demonstrations to capture students' interest and connect with their prior knowledge. Use pre-assessments, discussions, or review activities to understand students' existing knowledge and identify misconceptions. Use the CCC and a scaffolded approach to support students in engaging with and connecting prior knowledge and vocabulary to the phenomenon and scientific practices, eliciting their initial ideas about the phenomenon, and helping them formulate investigation questions or design challenges. Help students generate ideas about the phenomenon and pose questions to investigate or challenges to solve. Ensure examples and demonstrations are accessible, supporting student participation and providing multiple ways for students to share their ideas and questions.

12. Explore

Use hands-on activities, experiments, or simulations to make abstract concepts more tangible and accessible, helping students investigate aspects of the phenomenon that are otherwise invisible or inaccessible. Provide tools and structured activities for data collection that help students observe patterns and relationships in the data. Encourage careful observation and questioning. Assist students in using data as evidence to answer investigation questions and make claims or scientific arguments. Promote an environment where students are encouraged to explore freely, make observations, and ask questions that deepen their understanding. Ensure that activities and tools address diverse learning needs, enabling all students to engage in the investigation and make meaningful contributions.

13. Explain

Help students link scientific topics, phenomena, data, and everyday experiences, using everyday language and scientific terms to make abstract ideas more tangible.Guide them to notice key pieces of data and make claims based on at least two pieces of evidence. Guide students in articulating their understanding using the Claim-Evidence-Reasoning (CER) framework. Encourage students to discuss their findings and share evidence during discussions to support their explanations. Ask questions during sense-making discussions to deepen understanding and clarify concepts. Make scientific representations and vocabulary accessible to all students, using various formats and supports.

14. Elaborate

Provide students with opportunities to apply what they've learned through follow-up inquiry activities, allowing them to practice and reinforce the concepts introduced earlier. Facilitate activities that challenge students' conceptual understanding and encourage them to connect new knowledge with previous experiences, helping them to develop a more comprehensive understanding of the science concepts. Encourage students to apply their knowledge to different scenarios, engage in further research, or undertake projects that challenge them to think more deeply about the topic. Ensure that new activities and tools support diverse learning needs so that all students engage in additional investigations and make meaningful contributions.

15. Evaluate

Teacher-Led Evaluation: Use a variety of evaluation techniques, such as questioning, observations, presentations, or products, to gather evidence of students' comprehension throughout all phases of the lesson. Support students to clearly demonstrate their learning and growth, showcasing their understanding of the scientific principles and concepts. Use each student's preferred method for expressing their knowledge.

Student Self-Evaluation: Encourage students to reflect on their own understanding and progress, helping them identify areas where they need further improvement or clarification. Facilitate opportunities for students to engage with their peers through discussions, group work, or peer reviews.