

## EDU 154/254

### Opportunity Task #1. Standards-Based Science Lesson Plan

**This assignment provides feedback on the following TPEs**

**TPE 1.3** Connect subject matter to real-life contexts and provide active learning experiences to engage student interest, support student motivation, and allow students to extend their learning.

**TPE 1.5** Promote students' critical and creative thinking and analysis through activities that provide opportunities for inquiry, problem solving, responding to and framing meaningful questions, and reflection

**TPE 1.6** Provide a supportive learning environment for students' first and/or second language acquisition by using research-based instructional approaches, including focused English Language Development, Specially Designed Academic Instruction in English (SDAIE), scaffolding across content areas, and structured English immersion, and demonstrate an understanding of the difference among students whose only instructional need is to acquire Standard English proficiency, students who may have an identified disability affecting their ability to acquire Standard English proficiency, and students who may have both a need to acquire Standard English proficiency and an identified disability.

**TPE 3.1** Demonstrate knowledge of subject matter, including the adopted California State Standards and curriculum frameworks

**TPE 3.2** Use knowledge about students and learning goals to organize the curriculum to facilitate student understanding of subject matter, and make accommodations and/or modifications as needed to promote student access to the curriculum.

**TPE 3.3** Plan, design, implement, and monitor instruction consistent with current subject-specific pedagogy in the content area(s) of instruction, and design and implement disciplinary and cross-disciplinary learning sequences, including integrating the visual and performing arts as applicable to the discipline. (See Subject- Specific Pedagogical Skills in Section 2 for reference)

**TPE 3.5** Adapt subject matter curriculum, organization, and planning to support the acquisition and use of academic language within learning activities to promote the subject matter knowledge of all students, including the full range of English learners, Standard English learners, students with disabilities, and students with other learning needs in the least restrictive environment.

**TPE 4.3** Design and implement instruction and assessment that reflects the interconnectedness of academic content areas and related student skills development in literacy, mathematics, science, and other disciplines across the curriculum, as applicable to the subject area of instruction.

**TPE 5.1** Apply knowledge of the purposes, characteristics, and appropriate uses of different types of assessments (e.g., diagnostic, informal, formal, progress-monitoring, formative, summative, and performance) to design and administer classroom assessments, including use of scoring rubrics

**TPE 5.8** Use assessment data, including information from students' IEP, IFSP, ITP, and 504 plans, to establish learning goals and to plan, differentiate, make accommodations and/or modify instruction.

**DUE DATE: April 21, 2021 (Full Draft); May 5, 2021 (Final)**

#### **Purpose**

The goal of this assignment is for you to create a 5E lesson plan using the Next Generation Science Standards and K-12 Science Framework. **In your lesson plan, you will need to connect science content knowledge to real world phenomena and to provide Constructivist learning opportunities for students to engage their learning interest while promoting their critical thinking skills.** You will be provided with an opportunity to teach a science lesson to your peers and receive feedback from them.

#### **Preparation**

1. Participation in and discussion of science lessons taught by the instructor that model a balanced focus of instruction between science information, concepts and investigation.

These lessons address different grade levels, different science strands, (life, earth and physical) and are aligned to state content standards. The role of estimation vs. precision in scientific investigations will be modeled and discussed. The instructor will incorporate and make explicit various strategies that are known to produce greater success in student learning, including those designed for English language learners. The instructor will model strategies to encourage all students to pursue their interests in science, especially those from traditionally underrepresented groups. Science lessons will be sensitive to the different cultural and ethnic backgrounds of the students.

2. Reading and discussing texts and articles about the manner in which learning occurs, with special emphasis on constructivist learning theory as it relates to the acquisition of scientific concepts.
3. Reading, discussing articles, and viewing videos on effective teaching strategies.

### **Performance Demonstration**

1. Using various instructional materials, candidates will develop a science lesson plan. The lesson plan will include a performance task aligned to state standards and the knowledge and skills required to complete the task. This lesson plan will be an independently completed project that includes at least one hands-on activity. The use of the FOSS kits is highly recommended.
2. During science lesson presentation, each candidate will involve their classmates - who are serving as proxy students – and engage in a balanced focus of instruction between science information, concepts and investigation. Candidates will use developmentally appropriate scientific process language and skills, such as observing, communicating, comparing, organizing, relating, inferring and/or applying to engage students in inquiry around content specific to the lesson.
3. The lesson plan should address the full range of English learners, Standard English learners, students with disabilities, and students with other learning needs in the least restrictive environment.

### **Assessment (See Rubric below)**

Candidates' lessons will be assessed for science content, science process and instructional strategies for each of the following task elements:

- Formal written lesson plan using MSMU lesson plan template. You will incorporate the 5E's (Engage, Explore, Explain, Elaborate, Evaluate)
- 10-15 minute lesson (presented to the class)

**Total Points Possible = 25**

**Deductions for Incomplete Work: 0-5 points lost if not Professional Work Quality**

TPE	Criteria	<u>5 points</u> Outstanding	<u>4 points</u> Proficient	<u>3 points</u> Partially Proficient	<u>2 points</u> Developing	<u>1 point</u> Inadequate
<p><b>TPE 3.1</b> Demonstrate knowledge of subject matter, including the adopted California State Standards and curriculum frameworks.</p> <p><b>TPE 3.3</b> Plan, design, implement, and monitor instruction consistent with current subject-specific pedagogy in the content area(s) of instruction, and design and implement disciplinary and cross-disciplinary learning sequences, including integrating the visual and performing arts as applicable to the discipline. <i>(See Subject-Specific Pedagogical Skills in Section 2 for reference)</i></p>	<p>Science instruction incorporates NGSS lesson structure by including all 3 dimensions</p> <ul style="list-style-type: none"> <li>• Science and Engineering Practices</li> <li>• Disciplinary Core Ideas</li> <li>• Cross Cutting Concepts</li> </ul>	<p>All 3 NGSS dimensions are explicitly addressed in the 5-E lesson plan and are aligned with the NGSS standards and learning objectives. <b>Many</b> well developed questions at various levels of DOK are included throughout the lesson. Includes appropriate planning, designing, implementing, and monitoring plans. Opportunities to integrate with 2 other content areas are indicated.</p>	<p>All 3 NGSS dimensions are addressed in the 5-E lesson plan and are aligned with the NGSS standards but does not explicitly connect to learning objectives. <b>Many</b> well developed questions at various levels of DOK are included throughout the lesson. Includes appropriate planning, designing, implementing, and monitoring plans. Opportunities to integrate with 1 other content area is indicated.</p>	<p>All 3 NGSS dimensions are covered in the 5-E lesson plan but are not explicitly indicated or aligned with NGSS standards or learning objectives. Includes some appropriate planning, designing, implementing, and monitoring plans. <b>Several</b> questions are included.</p>	<p><b>Fewer than 3</b> NGSS dimensions are included in the 5-E lesson plan. Learning objectives are not clear. Includes a few appropriate planning, designing, implementing, and monitoring plans. <b>Few</b> questions are included.</p>	<p><b>Fewer than 2</b> NGSS dimensions are included in the 5-E lesson plan. Learning objectives are not clear. Does not include appropriate planning, designing, implementing, and monitoring plans. <b>No</b> questions are included.</p>
<p><b>TPE 3.2</b> Use knowledge about students and learning goals to organize the curriculum to facilitate student understanding of subject matter, and make accommodations and/or modifications as needed to promote student access to the curriculum.</p> <p><b>TPE 3.5</b> Adapt subject matter curriculum, organization, and</p>	<p>Science instruction includes specific strategies to support the full range of English learners and Standard English learners.</p>	<p>Lesson Plan and presentation demonstrate specific considerations and appropriate support and accommodations/modifications to support EL students' access to science content, practices and concepts. Scaffolds are included in <b>all parts</b> of the lesson plan</p>	<p>Lesson Plan and presentation demonstrate specific consideration and appropriate support and accommodations/modifications to support EL students' access to science content, practices and concepts. Scaffolds are included in <b>all parts</b> of the lesson plan</p>	<p>Lesson Plan and presentation demonstrate specific consideration and appropriate support and accommodations/modifications to support EL students' access to science content, practices and concept. Scaffolds are</p>	<p>Lesson Plan and presentation demonstrate limited consideration and appropriate support and accommodations/modifications to support EL students' access to science content, Scaffolds are included in <b>few parts</b> of the lesson</p>	<p>Lesson Plan and presentation demonstrate <b>NO</b> consideration and appropriate support and accommodations/modifications to support EL students' access to science content, students' access to science content, practices and concepts. Scaffolds</p>

<p>planning to support the acquisition and use of academic language within learning activities to promote the subject matter knowledge of all students, including the full range of English learners, Standard English learners, students with disabilities, and students with other learning needs in the least restrictive environment.</p>		<p>with excellent rationales. Modes of communication and strategies for differing proficiencies are included.</p>	<p>with excellent rationales.</p>	<p>included in <b>most parts</b> of the lesson plan with adequate rationales.</p>	<p>plan and rationales are limited or absent</p>	<p>and rationales are included in <b>no parts</b> of the lesson plan</p>
<p><b>TPE 4.3</b> Design and implement instruction and assessment that reflects the interconnectedness of academic content areas and related student skills development in literacy, mathematics, science, and other disciplines across the curriculum, as applicable to the subject area of instruction</p>	<p>Science instruction includes opportunities for students to apply related skills in Common Core literacy, speaking and listening, writing and mathematics.</p>	<p>Lesson plan includes <b>several</b> opportunities for students to apply Common Core Language Arts and Math skills through the use of scientific discourse, science notebooks and reading informational text. The Common Core ELA and Math standards are specifically identified.</p>	<p>Lesson plan includes <b>several</b> opportunities for students to apply Common Core Language Arts and Math skills through the use of scientific discourse, science notebooks and reading informational text.</p>	<p>Lesson plan includes <b>some</b> opportunities for students to apply Common Core Language Arts and Math skills through the use of scientific discourse, science notebooks and reading informational text.</p>	<p>Lesson plan includes <b>few</b> opportunities for students to apply Common Core Language Arts and Math skills through the use of scientific discourse, science notebooks and reading informational text.</p>	<p>Lesson plan includes <b>no</b> opportunities for students to apply Common Core Language Arts and Math skills through the use of scientific discourse, science notebooks and reading informational text.</p>
<p><b>TPE 1-3</b> Connect subject matter to real-life contexts and provide active learning experiences to engage student interest, support student motivation, and allow students to extend their learning</p> <p><b>TPE 1.5</b> Promote students' critical and creative thinking and analysis through activities that provide opportunities for inquiry, problem solving, responding to and framing</p>	<p>Science instruction provides connections to students' real-life experiences and engages students in active developmentally appropriate learning experiences.</p>	<p>Lesson plan includes anchoring, relevant natural phenomenon(a) that is developmentally appropriate and stimulate(s) students' curiosity and drives inquiry. Lesson sequence <b>seamlessly</b> aligns critical thinking questioning, data collection and</p>	<p>Lesson plan includes anchoring, relevant natural phenomenon(a) that is developmentally appropriate and stimulate(s) students' curiosity and drives inquiry. Lesson sequence <b>seamlessly</b> aligns critical thinking questioning, data collection and</p>	<p>Lesson plan includes anchoring, relevant natural phenomenon(a) that is developmentally appropriate and stimulate(s) students' curiosity and drives inquiry. Lesson sequence <b>adequately</b> aligns</p>	<p>Lesson plan includes anchoring, relevant natural phenomenon(a) that is developmentally appropriate and stimulate(s) students' curiosity and drives inquiry. Lesson sequence <b>inconsistently</b> aligns critical thinking</p>	<p>Lesson plan does not include anchoring, relevant natural phenomenon(a) that stimulate(s) students' curiosity and drives inquiry and/or lesson sequence has <b>little to no</b> alignment of critical thinking questioning, data collection and</p>

<p>meaningful questions, and reflection</p>		<p>analysis, and evidence based explanations. Anticipation of student experiences to drive instruction is included.</p>	<p>analysis, and evidence based explanations.</p>	<p>critical thinking questioning, data collection and analysis, and evidence based explanations.</p>	<p>questioning, data collection and analysis, and evidence/ based explanations.</p>	<p>analysis, and evidence based explanations.</p>
<p><b>TPE 5.1</b> Apply knowledge of the purposes, characteristics, and appropriate uses of different types of assessments (e.g., diagnostic, informal, formal, progress-monitoring, formative, summative, and performance) to design and administer classroom assessments, including use of scoring rubrics</p> <p><b>TPE 5.8</b> Use assessment data, including information from students' IEP, IFSP, ITP, and 504 plans, to establish learning goals and to plan, differentiate, make accommodations and/or modify instruction.</p>	<p>Science instruction includes various forms of assessment that supports both assessment <u>for</u> learning and assessment <u>of</u> learning.</p>	<p>Lesson plan indicates <b>several</b> opportunities for various assessments including but not limited to the following <b>4</b>: diagnostic, formative, self-reflective, and summative.</p> <p>Appropriately collect and analyze assessment data from multiple measures and include sources to plan and modify instruction accordingly, including differentiation, accommodations, and/or modifications as necessary.</p>	<p>Lesson plan indicates <b>several</b> opportunities for various assessments including but not limited to the following <b>4</b>: diagnostic, formative, self-reflective, and summative.</p> <p>Appropriately collect assessment data from multiple measures and include sources to plan and modify instruction accordingly, including differentiation, accommodations, and/or modifications as necessary. Does not include analyzing assessment data.</p>	<p>Lesson plan indicates <b>some</b> opportunities for various assessments including <b>3</b> of the following: diagnostic, formative, self-reflective, and summative.</p> <p>Assessment data includes a few measures and include sources to plan and modify instruction accordingly, including differentiation, accommodations, and/or modifications as necessary.</p>	<p>Lesson plan indicates <b>few</b> opportunities for various assessments including <b>2</b> of the following: diagnostic, formative, self-reflective, and summative.</p> <p>Assessment data includes a few measures and but does not include sources to plan and modify instruction accordingly, including differentiation, accommodations, and/or modifications as necessary.</p>	<p>Lesson plan indicates <b>no or only 1</b> opportunity for assessment and/or no purpose for assessments is provided.</p> <p>Does not include any plans or modifications. Does not include differentiation, accommodation, and/or modifications.</p>