



## Secondary Science

# Assessment Handbook

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January 2013

edTPA stems from a twenty-five-year history of developing performance-based assessments of teaching quality and effectiveness. The Teacher Performance Assessment Consortium (Stanford and AACTE) acknowledges the National Board for Professional Teaching Standards, the Interstate Teacher Assessment and Support Consortium, and the Performance Assessment for California Teachers for their pioneering work using discipline-specific portfolio assessments to evaluate teaching quality. This version of the handbook has been developed with thoughtful input from over six hundred teachers and teacher educators representing various national design teams, national subject matter organizations (AAHPERD, ACEI, ACTFL, AMLE, CEC, IRA, NAEYC, NAGC, NCSS, NCTE, NCTM, NSTA), and content validation reviewers. All contributions are recognized and appreciated.

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# Introduction to edTPA Secondary Science

## Purpose

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edTPA is a nationally available performance assessment of readiness to teach for novices. The assessment is designed with a focus on student learning and principles from research and theory. Successful teachers

- develop knowledge of subject matter, content standards, and subject-specific pedagogy
- develop and apply knowledge of varied students' needs
- consider research and theory about how students learn
- reflect on and analyze evidence of the effects of instruction on student learning

As a performance-based assessment, edTPA is designed to engage candidates in demonstrating their understanding of teaching and student learning in authentic ways.

## Summary of Tasks

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In this assessment, you will develop and teach **3–5 consecutive science lessons** (or, if teaching within a large time block, **3–5 hours of connected instruction**) referred to as a learning segment. Consistent with *A Framework for K–12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* (NRC 2011)<sup>1</sup> and aligned with the draft *Next Generation of Science Standards*<sup>2</sup>, prepare a learning segment for this assessment that reflects a balanced approach to science, including opportunities for students to develop their abilities to use scientific concepts and apply scientific practices through inquiry to explain a real-world phenomenon.

Scientific practices through inquiry, as defined by the *Next Generation of Science Standards*, focus on eight key components:

- Asking questions
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations

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<sup>1</sup> *A Framework for K–12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* can be found at [http://www.nap.edu/openbook.php?record\\_id=13165](http://www.nap.edu/openbook.php?record_id=13165).

<sup>2</sup> The next draft of the *Next Generation of Science Standards* will be available Fall 2012 on the NGSS website, <http://www.nextgenscience.org/>.

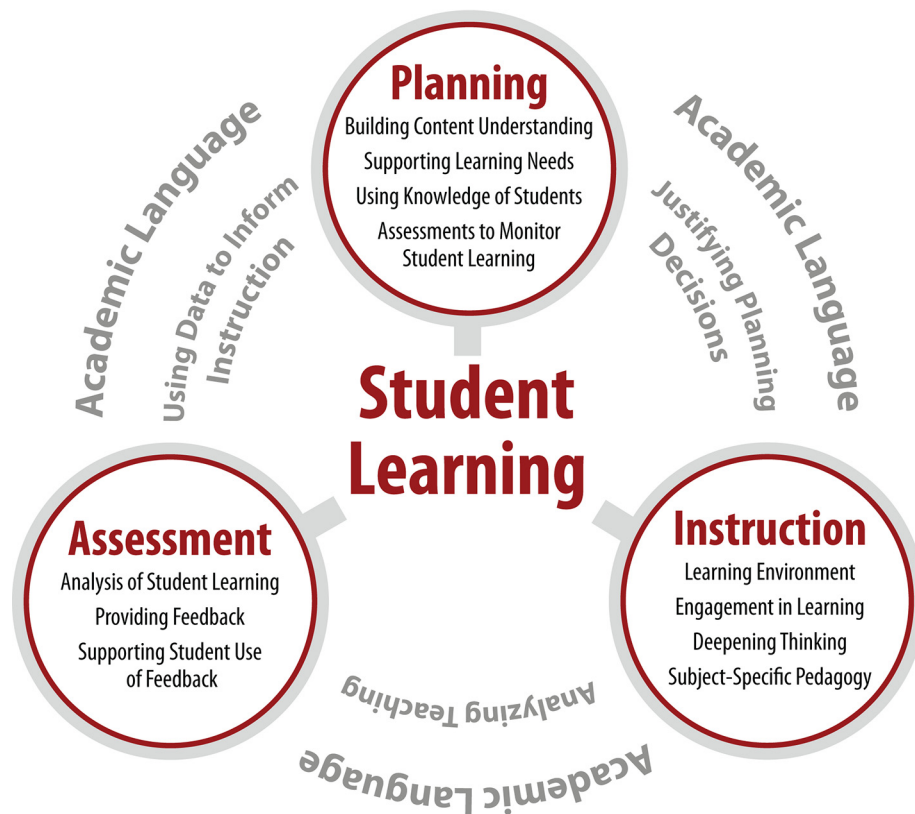
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information

You will complete three tasks for edTPA:

1. Planning for Instruction and Assessment
2. Instructing and Engaging Students in Learning
3. Assessing Student Learning

## The Cycle of Effective Teaching and edTPA Tasks

The three edTPA tasks represent a cycle of effective teaching. The planning task documents your **intended** teaching, the instruction task documents your **enacted** teaching, and the assessment task documents the **impact** of your teaching on student learning.



These tasks and the evidence you provide for each are framed by your understandings of your students and their learning. As you develop, document, and teach your lessons, you will reflect upon the cyclical relationship among planning, instruction, and assessment with a focus on your students' learning needs.

## Evidence of Teaching Practice: Artifacts and Commentaries

To complete the assessment, you will submit artifacts and commentaries as evidence of how you planned and implemented instruction to deepen student learning in science.

- **Artifacts** represent authentic work completed by you and your students. These include lesson plans, copies of instructional and assessment materials, video clip(s) of your teaching, and student work samples.
- **Commentaries** are your opportunity to describe your artifacts, explain the rationale behind their choice and use, and analyze and reflect on what you have learned about your teaching practice and your students' learning. Note that although your writing ability will not be scored directly, commentaries must be clearly written and well focused.

When preparing your artifacts and commentaries, refer to the rubrics frequently to guide your thinking, planning, and writing. Refer to the [Secondary Science Evidence Chart](#) for information about how your evidence should be formatted for electronic submission.

## Evaluation Criteria

The evidence you submit will be judged on five components of teaching practice:

1. Planning
2. Instruction
3. Assessment
4. Analyzing Teaching
5. Academic Language

You will provide evidence for the planning, instruction, and assessment components within the corresponding tasks. You will provide evidence for the analyzing teaching component across all three tasks. You will provide evidence for the academic language component in planning as well as in the instruction **AND/OR** assessment task.

The rubrics used to score your performance are included in this handbook and follow the directions for each task. The descriptors in the five-level rubrics address a wide range of performance representing the knowledge and skills of a novice not ready to teach (Level 1) to the advanced practices of a highly accomplished beginner (Level 5).

## Structure of the Handbook

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The instructions on the following pages will guide you in putting together the artifacts and commentaries required within the three tasks of edTPA. Within each task, instructions are organized into four sections:

1. **What to Think About**
2. **What Do I Need to Do?**
3. **What Do I Need to Write?**
4. **How Will the Evidence of My Teaching Practice Be Assessed?**

Additional requirements and resources are available to you in this handbook:<sup>3</sup>

- **[Professional Responsibilities](#)**: guidelines for the development of your evidence
- **[Context for Learning Information](#)**: prompts used to collect information about your school/classroom context
- **[Evidence Chart](#)**: requirements for electronic evidence submission, including supported file types, number of files, response length, and other important evidence specifications
- **Glossary**: definitions of key terms; roll your cursor over each glossary term marked with a dotted underline or refer to the [Secondary Science Glossary](#).

Review all instructions carefully before beginning to teach the learning segment to ensure that you are well prepared for all tasks. If you are submitting artifacts and commentaries to Pearson for official scoring, refer to the Pearson website, [www.edTPA.com](http://www.edTPA.com), for complete and current information before beginning your work.

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<sup>3</sup> Your preparation program will have additional resources, including the *Making Good Choices* document, that provide guidance as you develop your evidence.

## edTPA Tasks Overview

What to Do	What to Submit	Evaluation Rubrics
<b>Task 1 Planning: Planning for Instruction and Assessment</b>		
<ul style="list-style-type: none"> <li>▶ Select <b>one</b> class as a focus for this assessment.</li> <li>▶ Provide relevant context information.</li> <li>▶ Identify a learning segment to plan, teach, and analyze. Select a learning segment of <b>3–5 lessons</b> (or, if teaching science within a large time block, about <b>3–5 hours of connected instruction</b>).</li> <li>▶ Identify a <b>central focus</b>. The central focus should support students' use of scientific concepts and application of scientific practices through inquiry to develop evidence-based explanations for a real-world phenomenon.</li> <li>▶ Write and submit a lesson plan for each lesson in the learning segment.</li> <li>▶ Select and submit key instructional materials needed to understand what you and the students will be doing.</li> <li>▶ Respond to commentary prompts prior to teaching the learning segment.</li> <li>▶ Choose <b>one</b> language function. Identify a learning task where students use that language function. Identify both the language that students will be expected to use to engage in the learning task, and your instructional supports.</li> <li>▶ Submit copies or directions for all planned assessments from the learning segment.</li> </ul>	<ul style="list-style-type: none"> <li>▣ Part A: Context for Learning Information</li> <li>▣ Part B: Lesson Plans for Learning Segment</li> <li>▣ Part C: Instructional Materials</li> <li>▣ Part D: Assessments</li> <li>▣ Part E: Planning Commentary</li> </ul>	<p><b>Planning Rubrics</b></p> <ul style="list-style-type: none"> <li><a href="#">Rubric 1: Planning for Scientific Understandings</a></li> <li><a href="#">Rubric 2: Planning to Support Varied Student Learning Needs</a></li> <li><a href="#">Rubric 3: Using Knowledge of Students to Inform Teaching and Learning</a></li> <li><a href="#">Rubric 4: Identifying and Supporting Language Demands</a></li> <li><a href="#">Rubric 5: Planning Assessments to Monitor and Support Student Learning</a></li> </ul>



What to Do	What to Submit	Evaluation Rubrics
<ul style="list-style-type: none"> <li>▶ Obtain required permissions for videorecording from parents/guardians of your students and other adults appearing in the video.</li> <li>▶ Identify lessons to videorecord. The lessons you videorecord should highlight student-teacher interactions as students show active engagement in applying scientific practices during an inquiry. Video clips should focus on students analyzing and interpreting data and constructing evidence-based arguments as they discuss conclusions from the data.</li> <li>▶ Videorecord your teaching and <b>select 2 video clips (no more than 10 minutes each)</b>.</li> <li>▶ Analyze your teaching and your students' learning in the video clips by responding to commentary prompts.</li> </ul>	<ul style="list-style-type: none"> <li>▣ Part A: Video Clips</li> <li>▣ Part B: Instruction Commentary</li> </ul>	<p><b>Instruction Rubrics</b></p> <p><a href="#">Rubric 6: Learning Environment</a></p> <p><a href="#">Rubric 7: Engaging Students in Learning</a></p> <p><a href="#">Rubric 8: Deepening Student Learning</a></p> <p><a href="#">Rubric 9: Subject-Specific Pedagogy: Analyzing Data</a></p> <p><a href="#">Rubric 10: Analyzing Teaching Effectiveness</a></p>

What to Do	What to Submit	Evaluation Rubrics
<ul style="list-style-type: none"> <li>▶ Select <b>one</b> assessment from the learning segment that you will use to evaluate your students' developing knowledge and skills. Submit the assessment used to evaluate student performance.</li> <li>▶ Define and submit the <u>evaluation criteria</u> you will use to analyze student learning.</li> <li>▶ Collect and analyze student work to identify <b>quantitative and qualitative patterns of learning</b> within and across learners in the class.</li> <li>▶ Select <b>3 work samples</b> from the selected assessment that represent the patterns of learning. At least one of the students must be a student with specific learning needs.</li> <li>▶ Summarize the learning of the whole class, and refer to work samples from 3 focus students to illustrate patterns in student understanding across the class.</li> <li>▶ Submit feedback on the assessment for the three students in written, audio, or video form.</li> <li>▶ Analyze evidence of students' language use from (1) the video clip(s) from the instruction task, <b>AND/OR</b> (2) the student work samples from the assessment task.</li> <li>▶ Analyze your assessment of student learning and plan for next steps by responding to commentary prompts.</li> </ul>	<ul style="list-style-type: none"> <li>▣ Part A: Student Work Samples</li> <li>▣ Part B: Evidence of Feedback</li> <li>▣ Part C: Assessment Commentary</li> <li>▣ Part D: Evaluation Criteria</li> </ul>	<p><b>Assessment Rubrics</b></p> <p><a href="#">Rubric 11: Analysis of Student Learning</a></p> <p><a href="#">Rubric 12: Providing Feedback to Guide Learning</a></p> <p><a href="#">Rubric 13: Student Use of Feedback</a></p> <p><a href="#">Rubric 14: Analyzing Students' Language Use and Science Learning</a></p> <p><a href="#">Rubric 15: Using Assessment to Inform Instruction</a></p>

# Task 1: Planning for Instruction and Assessment

## What to Think About

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In Task 1: Planning for Instruction and Assessment, you will describe your plans for the learning segment and explain how your instruction is appropriate for the students and the content you are teaching:

- What do your students know, what can they do, and what are they learning to do?
- What do you want your students to learn? What are the important understandings and core concepts you want students to develop within the learning segment?
- What instructional strategies, learning tasks, and assessments will you design to support student learning and language use?
- How is the teaching you propose informed by your knowledge of students?

Task 1 prepares you to demonstrate and analyze the effectiveness of your teaching of the planned learning segment.

## What Do I Need to Do?

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- ❑ **Select a class.** If you teach more than one class, select one focus class for this assessment.
- ❑ **Provide context information.** The [Context for Learning Information](#) is provided at the end of this handbook (**no more than 3 pages, including prompts**).
- ❑ **Identify a learning segment to plan, teach, and analyze.** Review the curriculum with your cooperating teacher and select a learning segment of **3–5 lessons** (or, if teaching science within a large time block, about **3–5 hours of connected instruction**).
- ❑ **Identify a central focus.** Identify the central focus along with the content standards and objectives you will address in the learning segment. The central focus should support students to use scientific concepts and apply scientific practices through inquiry to explain a real-world phenomenon.
- ❑ **Analyze language demands.** Select a key language function, a learning task, and additional language demands required for the task.
- ❑ **Write a lesson plan** for each lesson in the learning segment. Your lesson plans should be detailed enough that a substitute or other teacher could understand them well enough to use them. If your teacher preparation program requires you to use a specific lesson plan format for this assessment, be sure to include the information described below.

- Your lesson plans should include the following information:
  - State-adopted student academic content standards and/or Common Core State Standards that are the target of student learning (Please list the **number and text** of the standard. If only a portion of a standard is being addressed, then only list the relevant part[s].)
  - Learning objectives associated with the content standards
  - Informal and formal assessments used to monitor student learning, including type(s) of assessment and what is being assessed
  - Instructional strategies and learning tasks (including what you and the students will be doing) that support diverse student needs
  - Instructional resources and materials used to engage students in learning
- **Respond to prompts** listed in the Planning Commentary section below **prior to teaching the learning segment**.
- **Submit your original lesson plans.** If you make changes while teaching the learning segment, you will have opportunities to reflect on changes in the Instruction and Assessment Commentaries.
- **Select and submit key instructional materials.** These are needed to understand what you and the students will be doing (**no more than 5 additional pages per lesson plan**). The instructional materials might include such items as class handouts, assignments, slides, and interactive whiteboard images.
- **Submit copies of all written assessments.** (Do not submit student work samples, but the blank instruments as given to students.)

See [Task 1: Artifacts and Commentary Specifications](#) for instructions on electronic evidence submission. This evidence chart identifies supported file types, number of files, response length, and other important evidence specifications.

## What Do I Need to Write?

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In Task 1: Planning for Instruction and Assessment, you will write

- lesson plans
- a description of your context for learning
- commentary explaining your plans

### Planning Commentary

Respond to the prompts below (**no more than 9 single-spaced pages, including prompts**).

#### 1. Central Focus

- a. Describe the central focus and purpose for the content you will teach in this learning segment.

- b. Given the central focus, describe how the standards and learning objectives within your learning segment address the use of science concepts and the ability to apply scientific practices through inquiry to develop evidence-based explanations for a real-world phenomenon.
- c. Explain how your plans build on each other to help students **understand relationships** between scientific concepts, scientific practices, and the phenomenon in the learning segment.

## 2. Knowledge of Students to Inform Teaching

For each of the prompts below (2a–b), describe what you know about **your** students with respect to the central focus of the learning segment.

Consider the variety of learners in your class who may require different strategies/support (e.g., students with IEPs, English language learners, struggling readers, underperforming students or those with gaps in academic knowledge, and/or gifted students).

- a. Prior learning, prerequisite skills, and understanding of the nature of science related to the central focus—What do students know, what can they do, and what are they learning to do?
- b. Personal/cultural/community assets related to the central focus—What do you know about your students' everyday experiences, cultural backgrounds and practices, and interests?

## 3. Supporting Students' Science Learning

Respond to the prompts below (3a–c). As needed, refer to the instructional materials and lesson plans you have included to support your explanations. **Use principles from research and/or theory to support your explanations, where appropriate.**

- a. Explain how your understanding of your students' prior learning and personal/cultural/community assets (from prompts 2a–b above) guided your choice or adaptation of learning tasks and materials.
- b. Describe and justify why your instructional strategies and planned supports are appropriate for **the whole class and students with similar or specific learning needs.**

Consider students with IEPs, English language learners, struggling readers, underperforming students or those with gaps in academic knowledge, and/or gifted students needing greater support or challenge.

- c. Describe common preconceptions (based on prior learning and experiences) within your content focus and how you will identify and address them.

## 4. Supporting Science Development through Language

- a. **Language Demand: Language Function.** From the list below, choose **one** language function essential for student learning within your central focus:

Analyze	Explain	Interpret	Justify with evidence
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- b. Identify a key learning task from your plans that provides students with opportunities to practice using the language function. In which lesson does the learning task occur? (Give the lesson day and number.)
- c. **Additional Language Demands.** Given the language function and task identified above, describe the following associated language demands (written or oral) students need to understand and/or use.
  - Vocabulary and/or symbols
  - **Plus** at least one of the following:
    - Syntax
    - Discourse

Consider the range of students' understandings of the language function and other demands—what do students already know, what are they struggling with, and/or what is new to them?

- d. **Language Supports.** Refer to your lesson plans and instructional materials as needed in your response to this prompt.
  - Describe the instructional supports (during and/or prior to the learning task) that help students understand and successfully use the language function and additional language identified in prompts 4a–c.

## 5. Monitoring Student Learning

Refer to the assessments you will submit as part of the materials for Task 1.

- a. Describe how your planned formal and informal assessments will provide direct evidence of students' understanding of science concepts and the phenomenon, nature of science, and use of scientific practices throughout the learning segment.
- b. Explain how the design or adaptation of your planned assessments allow students with specific needs to demonstrate their learning.

Consider all students, including students with IEPs, English language learners, struggling readers, underperforming students or those with gaps in academic knowledge, and/or gifted students.

## How Will the Evidence of My Teaching Practice Be Assessed?

When preparing your artifacts and commentaries, refer to the rubrics frequently to guide your thinking, planning, and writing. For Task 1: Planning for Instruction and Assessment, your evidence will be assessed with rubrics 1–5, which appear in the following pages.

## Planning Rubrics

### Rubric 1: Planning for Scientific Understandings

How do the candidate's plans build students' abilities to use science concepts and scientific practices during inquiry to explain a real-world phenomenon?

Level 1 <sup>4</sup>	Level 2	Level 3	Level 4	Level 5
Plans for instruction <b>focus solely on memorization and following prescribed procedures for an "inquiry" with no opportunities</b> for students to engage in scientific practices through inquiry.	Plans for instruction <b>include opportunities</b> for students to engage in scientific practices through inquiry.	Plans for instruction <b>build on each other</b> to support students <b>learning of science concepts, to investigate a phenomenon and to generate explanations through engagement in scientific practices through inquiry.</b>	Plans for instruction build on each other to support students learning of science concepts, to investigate a phenomenon, and to <b>generate evidence-based arguments.</b>	Plans for instruction build on each other to support students learning of science concepts, to investigate a phenomenon, and to generate and <b>evaluate</b> evidence-based arguments.
There are <b>significant content inaccuracies</b> that will lead to student misunderstandings.  <b>OR</b>  Standards, objectives, and learning tasks and materials are <b>not aligned</b> with each other.				

<sup>4</sup> Text representing key differences between adjacent score levels is shown in bold. Evidence that does not meet Level 1 criteria is scored at Level 1.

## Planning Rubrics continued

### Rubric 2: Planning to Support Varied Student Learning Needs

How does the candidate use knowledge of his/her students to target support for students to use science concepts and scientific practices during inquiry to explain a real-world phenomenon?

Level 1	Level 2	Level 3	Level 4	Level 5
There is little or no evidence of planned supports.	<p>Planned supports are loosely tied to learning objectives or the central focus of the learning segment.</p> <p><b>AND</b></p> <p>Candidate attends to requirements in IEPs and 504 plans.</p>	<p>Planned supports are tied to learning objectives and the central focus with attention to the characteristics of the class as a whole.</p> <p><b>AND</b></p> <p>Candidate attends to requirements in IEPs and 504 plans.</p>	<p>Planned supports are tied to learning objectives and the central focus. Supports address the needs of specific individuals or groups with similar needs.</p> <p><b>AND</b></p> <p>Candidate attends to requirements in IEPs and 504 plans.</p>	<p><b>Level 4 plus:</b></p> <p>Supports include specific strategies to identify and respond to preconceptions, common errors and misunderstandings for the majority of students.</p>



## Planning Rubrics continued

### Rubric 3: Using Knowledge of Students to Inform Teaching and Learning

How does the candidate use knowledge of his/her students to justify instructional plans?

Level 1	Level 2	Level 3	Level 4	Level 5
<p>Candidate's justification of learning tasks is either <b>missing</b> <b>OR represents a deficit view</b> of students and their backgrounds.</p>	<p>Candidate justifies learning tasks with <b>limited attention</b> to students' prior learning <b>OR</b> personal/cultural/community assets.</p>	<p>Candidate <b>justifies</b> why learning tasks (or their adaptations) <b>are appropriate using</b>:</p> <ul style="list-style-type: none"> <li>examples of students' prior learning</li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>examples of personal/cultural/ community assets</li> </ul> <p>Candidate makes <b>superficial connections to research and/or theory.</b></p>	<p>Candidate justifies why learning tasks (or their adaptations) are appropriate using:</p> <ul style="list-style-type: none"> <li>examples of students' prior learning</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>examples of personal/cultural/ community assets</li> </ul> <p><b>Candidate makes connections to research and/or theory.</b></p>	<p><b>Level 4 plus:</b> Candidate's justification is supported by <b>principles from research and/or theory.</b></p>

## Planning Rubrics continued

### Rubric 4: Identifying and Supporting Language Demands

How does the candidate identify and support language demands associated with a key science learning task?

Level 1	Level 2	Level 3	Level 4	Level 5
<p><b>Language demands<sup>5</sup></b> identified by the candidate are <b>not consistent with the selected language function<sup>6</sup></b> or task.</p> <p><b>OR</b></p> <p><b>Language supports are missing or are not aligned</b> with the language demand(s) for the learning task.</p>	<p>Candidate identifies <b>vocabulary and/or symbols as the major language</b> demand associated with the language function. <b>Attention to additional language demands is superficial.</b></p> <p><b>Language supports primarily address definitions of vocabulary and/or symbols.</b></p>	<p>Candidate identifies vocabulary and/or symbols <b>and</b> additional language demand(s) associated with the language function.</p> <p>Plans include <b>general support for use of vocabulary and/or symbols as well as additional language demand(s).</b></p>	<p>Candidate identifies vocabulary and/or symbols and additional language demand(s) associated with the language function.</p> <p>Plans include <b>targeted</b> support for use of vocabulary and/or symbols as well as additional language demand(s).</p>	<p><b>Level 4 plus:</b> <b>Instructional supports are designed to meet the needs of students with different levels of language learning.</b></p>

<sup>5</sup> Language demands include language function, vocabulary, syntax and grammar, and discourse (organizational structures, text structure, etc.)

<sup>6</sup> Language function refers to the learning outcome (verb) selected in prompt 4a (e.g., analyze, interpret...).

## Planning Rubrics continued

### Rubric 5: Planning Assessments to Monitor and Support Student Learning

How are the informal and formal assessments selected or designed to monitor students' progress toward the standards/objectives?

Level 1	Level 2	Level 3	Level 4	Level 5
<p>The assessments <b>ONLY provide evidence</b> of students' ability to memorize and follow prescribed procedures.</p> <p><b>Assessment adaptations required by IEP or 504 plans are NOT made.</b></p>	<p>The assessments <b>provide limited evidence to monitor students' understandings</b> of science concepts, phenomena, and the application of scientific practices during scientific inquiry <b>during the learning segment.</b></p> <p><b>Assessment adaptations required by IEP or 504 plans are made.</b></p>	<p>The assessments <b>provide evidence</b> to monitor students' understandings of science concepts, phenomena, and the application of scientific practices during scientific inquiry during the learning segment.</p> <p>Assessment adaptations required by IEP or 504 plans are made.</p>	<p>The assessments provide <b>multiple forms of evidence</b> to monitor students' progress toward developing understandings of science concepts, phenomena, and the application of scientific practices during scientific inquiry <b>throughout</b> the learning segment.</p> <p>Assessment adaptations required by IEP or 504 plans are made.</p>	<p><b>Level 4 plus:</b> The assessments are <b>strategically designed to allow individuals or groups with specific needs to demonstrate their learning.</b></p>
<p>Assessments are <b>NOT aligned with the central focus and standards/objectives</b> for the learning segment.</p>				

# Task 2: Instructing and Engaging Students in Learning

## What to Think About

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In Task 2: Instructing and Engaging Students in Learning, you will demonstrate how you support and engage students in learning:

- What kind of learning environment do you want to develop in order to establish respect and rapport, and to support students' engagement in learning?
- What kinds of learning tasks actively engage students in the central focus of the learning segment?
- How will you thoughtfully elicit and build on student responses in ways to develop and deepen content understanding?
- In what ways will you connect new content to your students' prior academic learning and personal, cultural, or community assets during your instruction?
- How will you use evidence from your instruction to examine and change your teaching practices to more effectively meet a variety of student learning needs?

## What Do I Need to Do?

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- **Obtain required permission for videorecording.** Before you record your video, ensure that you have the appropriate permission from the parents/guardians of your students and from adults who appear in the video. Adjust the camera angle to exclude individuals for whom you do not have permission to film.
- **Examine your plans for the learning segment** and identify challenging learning tasks in which you and students are actively engaged. Clips should provide a sample of how you interact with students to analyze and interpret data along with science concepts, to build an evidence-based explanation of a phenomenon through scientific inquiry.
- **Identify lessons to videorecord.**
  - Provide **2 video clips (each no more than 10 minutes in length)** that demonstrate how you interact with students in a positive learning environment to (1) analyze valid scientific data and (2) interpret the data and use evidence-based reasoning to construct an explanation of a phenomenon.
    - The first clip should illustrate how you facilitated your students' **using science concepts and analyzing the data during a scientific inquiry.** This segment will engage students in **examining the data looking for patterns, identifying outliers, and/or exploring contradictory findings.**
    - The second clip should illustrate how you actively engaged students in **using scientific data and concepts to construct and evaluate an evidence-based argument of a phenomenon during a scientific inquiry.**

- Determine whether you will feature the whole class or a targeted group of students within the class.
- **(Optional) Provide evidence of students' language use.** You may provide evidence of language use with your video clips from Task 2 **AND/OR** through the student work samples analyzed in Task 3.
- **Videorecord your classroom teaching.** Tips for videorecording your class are available from your teacher preparation program.
- **Select 2 video clips to submit** and verify that each meets the following requirements:
  - A video clip must be continuous and unedited, with no interruption in events.
  - Check the video and sound quality to ensure that you and your students can be **seen** and **heard** on the video clips you submit.
  - Do not include the name of the state, school, or district in your video. Use first names only for all individuals appearing in the video.
- **Respond to prompts** listed in the Instruction Commentary section below **after viewing the video clips**.
- **Determine if additional information is needed to understand what you and the students are doing in the video clips.** For example, if there are graphics, texts, or images that are not clearly visible in the video, or comments that are not clearly heard, insert digital copies or transcriptions at the end of the Instruction Commentary (**no more than 2 pages**).

See [Task 2: Artifacts and Commentary Specifications](#) for instructions on electronic evidence submission. This evidence chart identifies supported file types, number of files, response length, and other important evidence specifications

## What Do I Need to Write?

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### Instruction Commentary

Write the Instruction Commentary (**no more than 6 single-spaced pages, including prompts**) by providing your response to each of the prompts below.

1. Which lesson or lessons are shown in the clip(s)? Identify the lesson(s) by lesson plan number.
2. **Promoting a Positive Learning Environment**

Refer to scenes in the video clip(s) where you provided a positive learning environment.

- How did you demonstrate mutual respect for, rapport with, and responsiveness to students with varied needs and backgrounds, and challenge students to engage in learning?

### 3. Engaging Students in Learning

Refer to examples from the clip(s) in your explanations.

- a. Explain how your instruction engaged students in
  - using science concepts, data quality (missing data or inconsistent results), and scientific practices while they are analyzing data during a scientific inquiry
  - interpreting the scientific data collected to construct and evaluate an evidence-based argument of a phenomenon during a scientific inquiry
- b. Describe how your instruction linked students' prior learning and personal, cultural, and community assets with new learning.

### 4. Deepening Student Learning during Instruction

Refer to examples from the clip(s) in your explanations.

- a. Explain how you elicited student responses to promote thinking and develop understandings of how to collect, analyze, and interpret scientific data.
- b. Explain how you elicited student responses to promote thinking and support their ability to use evidence-based arguments to construct and defend an explanation of a scientific phenomenon.

### 5. Analyzing Teaching

Refer to examples from the clip(s) in your explanations.

- a. How did your instruction support learning for the whole class and students who need greater support or challenge?

Consider the variety of learners in your class who may require different strategies/support (e.g., students with IEPs, English language learners, struggling readers, underperforming students or those with gaps in academic knowledge, and/or gifted students).

- b. What changes would you make to your instruction to better support student learning of the central focus (e.g., missed opportunities)?
- c. Why do you think these changes would improve student learning? Support your explanation with evidence of student learning and principles from theory and/or research as appropriate.

## How Will the Evidence of My Teaching Practice Be Assessed?

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When preparing your artifacts and commentaries, refer to the rubrics frequently to guide your thinking, planning, and writing. For Task 2: Instructing and Engaging Students in Learning, your evidence will be assessed using rubrics 6–10, which appear in the following pages.

## Instruction Rubrics

### Rubric 6: Learning Environment

How does the candidate demonstrate a safe and respectful learning environment that supports students' engagement in learning?

Level 1	Level 2	Level 3	Level 4	Level 5
<p>The clips reveal evidence of <b>disrespectful interactions</b> between teacher and students or between students.</p> <p><b>OR</b></p> <p>Candidate allows <b>disruptive behavior</b> to interfere with student learning.</p>	<p>The candidate <b>demonstrates respect for students</b>.</p> <p>Candidate provides a <b>learning environment that serves primarily to control student behavior</b>, and <b>minimally supports the learning goals</b>.</p>	<p>The candidate demonstrates <b>rapport with</b> and respect for students.</p> <p>Candidate provides a <b>positive, low-risk social environment that reveals mutual respect among students</b>.</p>	<p>The candidate demonstrates rapport with and respect for students.</p> <p>Candidate provides a <b>challenging</b> learning environment that <b>promotes</b> mutual respect among students.</p>	<p>The candidate demonstrates rapport with and respect for students.</p> <p>Candidate provides a challenging learning environment that <b>provides opportunities to express varied perspectives</b> and promotes mutual respect among students.</p>

## Instruction Rubrics continued

### Rubric 7: Engaging Students in Learning

How does the candidate actively engage students in analyzing and interpreting scientific data to construct evidence-based arguments of real-world phenomenon?

Level 1	Level 2	Level 3	Level 4	Level 5
Candidate <b>does not ask students to construct an evidence-based argument.</b>	Candidate asks students to construct a scientific argument but <b>students do not provide any evidence to support the argument.</b>	<b>Candidate supports students in constructing a scientific argument</b> and students <b>refer to data OR acceptable science concepts but do not explain how it supports the argument.</b>	Candidate supports students in constructing an <b>evidence-based argument</b> and students <b>explain how data and acceptable science concepts support the argument.</b>	Candidate supports students in constructing <b>and evaluating</b> an evidence-based argument and students explain how data and acceptable science concepts support the argument.



## Instruction Rubrics continued

### Rubric 8: Deepening Student Learning

How does the candidate elicit responses to promote thinking and understandings of science concepts and abilities to apply scientific practices during scientific inquiry?

Level 1	Level 2	Level 3	Level 4	Level 5
<p><b>Students provide few responses.</b></p> <p><b>OR</b></p> <p>Candidate responses include <b>significant content inaccuracies</b> that will lead to student misunderstandings.</p>	<p>Candidate <b>primarily asks surface-level questions and</b> evaluates student responses as <b>correct or incorrect.</b></p>	<p>Candidate <b>elicits student responses related to understanding</b> science concepts, scientific practices and inquiry, and the phenomenon being investigated.</p>	<p>Candidate <b>elicits and builds on students' own ideas about</b> science concepts, scientific practices and inquiry, and the phenomenon being investigated.</p>	<p>Candidate <b>facilitates interactions among students so they can evaluate their own</b> data collection, procedures, interpretations, or evidence-based explanations.</p>

## Instruction Rubrics continued

### Rubric 9: Subject-Specific Pedagogy: Analyzing Data

How does the candidate facilitate students' analysis of the data based on scientific inquiry?

Level 1	Level 2	Level 3	Level 4	Level 5
The candidate <b>does not ask students to present or summarize their data</b> and there is <b>no analysis of data</b> .	Candidate asks students to <b>display data</b> and the <b>candidate takes the primary role in analyzing the data</b> with an <b>inappropriate method and/or major omissions</b> .	Candidate asks students to display data and the <b>candidate takes the primary role in accurately analyzing data</b> using <b>appropriate methods with no major omissions</b> .	Candidate asks students to display data and <b>facilitates a data analysis discussion where students demonstrate the ability to find patterns OR inconsistencies within the data</b> .	Candidate asks students to display data and facilitates a data analysis discussion where <b>students demonstrate the ability to find patterns AND inconsistencies within the data</b> .

## Instruction Rubrics continued

### Rubric 10: Analyzing Teaching Effectiveness

How does the candidate use evidence to evaluate and change teaching practice to meet students' varied learning needs?

Level 1	Level 2	Level 3	Level 4	Level 5
Candidate suggests <b>changes unrelated to evidence of student learning.</b>	Candidate proposes changes that are focused primarily on <b>improving directions for learning tasks or task/behavior management.</b>	<p>Candidate proposes changes that address <b>students' collective learning needs related to the central focus.</b></p> <p>Candidate makes <b>superficial connections to research and/or theory.</b></p>	<p>Candidate proposes changes that address <b>individual and collective learning needs</b> related to the central focus.</p> <p>Candidate makes <b>connections to research and/or theory.</b></p>	<b>Level 4 plus:</b> Candidate justifies changes using principles of research and/or theory.

# Task 3: Assessing Student Learning

## What to Think About

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In Task 3: Assessing Student Learning, you will analyze student learning and their language use:

- How will you gather evidence and make sense of what students have learned?
- How will you provide meaningful feedback to your students?
- How will you use evidence of what students know and are able to do to plan next steps in instruction?
- How will you identify evidence and explain students' use of language that demonstrates the development of content understanding?

## What Do I Need to Do?

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- **Determine which assessment from your learning segment you will use to evaluate your students' developing knowledge and skills.** It should be an assessment to be completed by the entire class featured in the learning segment. The assessment should reflect the work of individuals, not groups, but may be individual work from a group task. The assessment should provide opportunities for students to demonstrate
  - conceptual understanding
  - use of scientific practices during inquiry
  - **evidence-based argument** about a scientific phenomenon
- **Define and submit the evaluation criteria you will use to analyze student learning** related to the science understandings described above.
- **Collect and analyze student work to identify quantitative and qualitative patterns of learning** within and across learners in the class.
- **Select 3 work samples to illustrate your analysis** that represent the patterns of learning (i.e., what individuals or groups generally understood and what a number of students were still struggling to understand). These students will be your focus students for this task. At least one of the students must have specific learning needs, for example, a student with an IEP (Individualized Education Program), an English language learner, a struggling reader, an underperforming student or a student with gaps in academic knowledge, and/or a gifted student needing greater support or challenge.
- **Document the feedback** you gave to each of the **3 focus students** either on the work sample itself, as an audio clip, or as a video clip.
- **Respond to prompts** listed in the Assessment **Commentary** section below **after analyzing student work from the selected assessment.**

- ❑ **Include and submit the chosen assessment, including the directions/prompts for the assessment.** Attach it (**no more than 2 pages**) to the end of the Assessment Commentary.
- ❑ Provide evidence of students' understanding and use of the targeted academic language function. You may choose evidence from video clips submitted in Task 2 **AND/OR** student work samples submitted in Task 3.

See [Task 3: Artifacts and Commentary Specifications](#) for instructions on electronic evidence submission. This evidence chart identifies supported file types, number of files, response length, and other important evidence specifications.

## What Do I Need to Write?

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### Assessment Commentary

Write the Assessment Commentary (**no more than 8 single-spaced pages, including prompts**) by providing your response to each of the prompts below.

#### 1. Analyzing Student Learning

- a. Identify the specific standards/objectives from the lesson plans measured by the assessment chosen for analysis.
- b. Provide the evaluation criteria you are using to analyze the student learning.
- c. Provide a graphic (table or chart) or narrative summary of student learning for your whole class. Be sure to summarize student learning for all evaluation criteria described above.
- d. Use evidence found in the **3 student work samples and the whole class summary** to analyze the patterns of learning for the whole class and differences for groups or individual learners relative to
  - conceptual understanding
  - use of scientific practices during inquiry
  - **evidence-based argument** about a scientific phenomenon

Consider what students understand and do well, and where they continue to struggle (e.g., common errors, confusions, need for greater challenge).

#### 2. Feedback to Guide Further Learning

Refer to specific evidence of submitted feedback to support your explanations.

- a. In what form did you submit your evidence of feedback for the 3 focus students?
  - Written directly on work samples or in a separate document;
  - In audio files; or
  - In a video clip from the instruction task (provide a time-stamp reference) or in a separate video clip?

- b. Explain how feedback provided to the 3 focus students addresses their individual strengths and needs relative to the standards/objectives measured.
- c. How will you support students to apply the feedback to guide improvement, either within the learning segment or at a later time?

### 3. Evidence of Language Understanding and Use

You may provide evidence of language use with your video clips from Task 2 AND/OR through the student work samples analyzed in Task 3.

Refer to examples from the clips (with time stamps) and/or student work samples as evidence.

- Explain the extent to which your students were able to use language (selected function, vocabulary, symbols, and additional identified demands) to develop content understandings.

### 4. Using Assessment to Inform Instruction

- a. Based on your analysis of student learning presented in prompts 1c–d, describe next steps for instruction
  - for the whole class
  - for the 3 focus students and other individuals/groups with specific needs

Consider the variety of learners in your class who may require different strategies/support (e.g., students with IEPs, English language learners, struggling readers, underperforming students or those with gaps in academic knowledge, and/or gifted students needing greater support or challenge).

- b. Explain how these next steps follow from your analysis of student learning. Support your explanation with principles from research and/or theory.

## How Will the Evidence of My Teaching Practice Be Assessed?

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When preparing your artifacts and commentaries, refer to the rubrics frequently to guide your thinking, planning, and writing. For Task 3: Assessing Student Learning, your evidence will be assessed using rubrics 11–15, which appear in the following pages.

## Assessment Rubrics

### Rubric 11: Analysis of Student Learning

How does the candidate analyze evidence of student learning of procedural fluency AND conceptual understanding and/or reasoning/problem solving skills?

Level 1	Level 2	Level 3	Level 4	Level 5
<p>The analysis is <b>superficial or not supported</b> by either student <b>work samples or the summary of student learning</b>.</p> <p><b>OR</b></p> <p>The evaluation criteria, learning objectives, and/or analysis are <b>not aligned with each other</b>.</p>	<p>The analysis <b>focuses on what students did right OR wrong</b> using evidence from the summary or work samples.</p>	<p>The analysis focuses on what students did right <b>AND</b> wrong and is <b>supported with evidence</b> from the summary and work samples.</p> <p><b>Analysis includes some differences in whole class learning.</b></p>	<p>Analysis uses <b>specific examples</b> from work samples to <b>demonstrate patterns of student learning consistent with the summary</b>.</p> <p><b>Patterns are described for whole class.</b></p>	<p>Analysis uses specific evidence from work samples to <b>demonstrate the connections between quantitative and qualitative patterns of student learning for individuals or groups</b>.</p>

## Assessment Rubrics continued

### Rubric 12: Providing Feedback to Guide Learning

What type of feedback does the candidate provide to focus students?

Level 1	Level 2	Level 3	Level 4	Level 5
<p>Feedback is unrelated to the learning objectives OR is inconsistent with the analysis of the student learning.</p> <p><b>OR</b></p> <p>Feedback contains significant content inaccuracies.</p>	<p>Feedback addresses only errors OR strengths generally related to the learning objectives.</p> <p><b>OR</b></p> <p>Feedback is inconsistently provided to focus students.</p>	<p>Feedback is accurate and primarily focuses on either errors OR strengths related to specific learning objectives, with some attention to the other.</p> <p>Feedback is provided consistently for the focus students.</p>	<p>Feedback is accurate and addresses both strengths AND needs related to specific learning objectives.</p> <p>Feedback is provided consistently for the focus students.</p>	<p><b>Level 4 plus:</b> Candidate describes how s/he will guide focus students to use feedback to evaluate their own strengths and needs.</p>



## Assessment Rubrics continued

### Rubric 13: Student Use of Feedback

How does the candidate provide opportunities for focus students to use the feedback to guide their further learning?

Level 1	Level 2	Level 3	Level 4	Level 5
<p>Opportunities for applying feedback are not described.</p> <p><b>OR</b></p> <p>Candidate provides limited or no feedback to inform student learning.</p>	<p>Candidate provides vague explanation for how focus students will use feedback to complete current or future assignments.</p>	<p>Candidate describes how focus students will use feedback on their strengths and weaknesses to revise their current work, as needed.</p>	<p>Candidate describes how s/he will support focus students to use feedback on their strengths and weaknesses to deepen understandings and skills related to their current work.</p>	<p><b>Level 4 plus:</b> Candidate guides focus students to generalize feedback beyond the current work sample.</p>

## Assessment Rubrics continued

### Rubric 14: Analyzing Students' Language Use and Science Learning

How does the candidate analyze students' use of language to develop content understanding?

Level 1	Level 2	Level 3	Level 4	Level 5
<p><b>Candidate identifies language use that is superficially related or unrelated to the language demands (function,<sup>7</sup> vocabulary, and additional demands).</b></p> <p><b>OR</b></p> <p><b>Candidate does not address students' repeated misuse of vocabulary.</b></p>	<p><b>Candidate provides evidence that students use vocabulary associated with the language function.</b></p>	<p>Candidate explains and provides evidence of students' use of the language function as well as <b>vocabulary OR additional language demand(s).</b><sup>8</sup></p>	<p>Candidate explains and provides evidence of students' use of the language function, vocabulary, <b>and</b> additional language demand(s) <b>in ways that develop content understandings.</b></p>	<p><b>Level 4 plus:</b> <b>Candidate explains and provides evidence of language use and content learning for students with varied needs.</b></p>

<sup>7</sup> The selected language function is the verb identified in the Planning Commentary Prompt 4a (analyze, explain, interpret, etc.).

<sup>8</sup> These are the additional language demands identified in the Planning Commentary Prompt 4c (vocabulary and/or symbols, plus either syntax or discourse).

## Assessment Rubrics continued

### Rubric 15: Using Assessment to Inform Instruction

How does the candidate use the analysis of what students know and are able to do to plan next steps in instruction?

Level 1	Level 2	Level 3	Level 4	Level 5
<p>Next steps <b>do not follow</b> from the analysis.</p> <p><b>OR</b></p> <p>Next steps are <b>not relevant to the standards and learning objectives</b> assessed.</p> <p><b>OR</b></p> <p>Next steps are <b>not described in sufficient detail</b> to understand them.</p>	<p>Next steps <b>focus on repeating instruction, pacing or classroom management issues.</b></p>	<p>Next steps <b>propose general support that improves student learning related to:</b></p> <ul style="list-style-type: none"> <li>• conceptual understanding,</li> <li>• use of scientific practices during inquiry, <b>OR</b></li> <li>• evidence-based argument about a scientific phenomenon.</li> </ul>	<p>Next steps <b>provide targeted support to individuals or groups to improve their learning relative to:</b></p> <ul style="list-style-type: none"> <li>• conceptual understanding,</li> <li>• use of scientific practices during inquiry, <b>OR</b></li> <li>• evidence-based argument about a scientific phenomenon.</li> </ul> <p>Next steps are <b>loosely connected with principles from research and/or theory.</b></p>	<p>Next steps provide targeted support to individuals <b>and</b> groups to improve their learning relative to:</p> <ul style="list-style-type: none"> <li>• conceptual understanding,</li> <li>• procedural fluency, <b>AND</b></li> <li>• reasoning/problem solving skills.</li> </ul> <p>Next steps are <b>justified with principles from research and/or theory.</b></p>

# Professional Responsibilities

Refer to the following table for an overview of your professional responsibilities in developing evidence for edTPA. If you are submitting artifacts and commentaries to Pearson for official scoring, refer to the Pearson website, [www.edTPA.com](http://www.edTPA.com), for complete and current information before beginning your work. Whether or not you are submitting to Pearson, you should fulfill the professional responsibilities described below.

Responsibility	Description
<b>Protect confidentiality</b>	To protect confidentiality, please remove your name and use pseudonyms or general references (e.g., “the district”) for your state, school, district, and cooperating teacher. Mask or remove all names on any typed or written material (e.g., commentaries, lesson plans, student work samples) that could identify individuals or institutions. During video recording, use students’ first names only.
<b>Acquire permissions</b>	<p>Before you record your classroom instruction, ensure that you have the appropriate permission from the parents/guardians of your students and from adults who appear in the videorecording.</p> <p>Your program will provide you with the procedures and forms needed to obtain these permissions, according to agreements with the school or district in which you are student teaching or completing your internship.</p> <p>If your program does not provide the necessary forms, you may refer to the sample forms found on the Pearson website.</p> <p>The release forms are not to be submitted with your materials, but you should follow your campus policy for retaining them.</p>
<b>Cite sources</b>	Provide citations for the source of all materials that you did not create (e.g., published texts, websites, and material from other educators). List all citations by lesson number at the end of the Planning Commentary.
<b>Align instruction with state standards</b>	As part of the assessment, you will document the alignment of your lesson plans with state-adopted academic content standards or Common Core State Standards that are the target of student learning. Refer to the education agency website for your state to obtain copies of relevant standards for this assessment.
<b>Follow the guidelines for candidate support at <a href="http://www.edTPA.com">www.edTPA.com</a></b>	<p>Follow the <i>guidelines for candidate support</i> found at <a href="http://edTPA.com">edTPA.com</a> as you develop your evidence for edTPA. Although you may seek and receive appropriate support from your university supervisors, cooperating/master teachers, university instructors, or peers during this process, the ultimate responsibility for completing this assessment lies with you. <b>Therefore, when you submit your completed work, you must be able to confirm your adherence with certain statements, such as the following:</b></p> <ul style="list-style-type: none"> <li>■ I have primary responsibility for teaching the students/class during the learning segment profiled in this assessment.</li> <li>■ I have not previously taught this learning segment to the student/class.</li> <li>■ The video clip(s) submitted show me teaching the students/class profiled in the evidence submitted.</li> <li>■ The student work included in the documentation is that of my students, completed during the learning segment documented in this assessment.</li> <li>■ I am sole author of the commentaries and other written responses to prompts and other requests for information in this assessment.</li> <li>■ Appropriate citations have been made for all materials in the assessment whose sources are from published text, the Internet, or other educators.</li> </ul>

# Secondary Science Context for Learning Information

Use the Context for Learning Information to supply information about your school/classroom context.

## About the School Where You Are Teaching

1. In what type of school do you teach?  
Middle school:  
High school:  
Other (please describe):  
  
Urban:  
Suburban:  
Rural:
2. List any special features of your school or classroom setting (e.g., charter, co-teaching, themed magnet, remedial course, honors course) that will affect your teaching in this learning segment.
3. Describe any district, school, or cooperating teacher requirements or expectations that might affect your planning or delivery of instruction, such as required curricula, pacing plan, use of specific instructional strategies, or standardized tests.

## About the Class Featured in This Assessment

1. What is the name of this course?
2. What is the length of the course?  
One semester:  
One year:  
Other (please describe):
3. What is the class schedule (e.g., 50 minutes every day, 90 minutes every other day)?
4. Is there any ability grouping or tracking in science? If so, please describe how it affects your class.
5. Identify any textbook or instructional program you primarily use for science instruction. If a textbook, please provide the title, publisher, and date of publication.
6. List other resources (e.g., electronic whiteboard, graphing calculators, on-line resources) you use for science instruction in this class.

## About the Students in the Class Featured in This Assessment

1. Grade level composition (e.g., all seventh grade; 2 sophomores and 30 juniors):  
\_\_\_\_\_
2. Number of
  - students in the class \_\_\_\_\_
  - males \_\_\_\_\_ females \_\_\_\_\_
3. Complete the chart below to summarize required or needed supports, accommodations or modifications for your students that will affect your instruction in this learning segment. As needed, consult with your cooperating teacher to complete the chart. The first two rows have been completed in italics as examples. Use as many rows as you need.

Consider the variety of learners in your class who may require different strategies/supports or accommodations/modifications to instruction or assessment.

- English language learners
- gifted students needing greater support or challenge
- students with Individualized Education Programs (IEPs) or 504 plans
- struggling readers
- underperforming students or those with gaps in academic knowledge

Learning Needs Category	Number of Students	Supports, Accommodations, Modifications, and/or Pertinent IEP Goals
<i>Example: Visual processing</i>	<i>2</i>	<i>Close monitoring, Large size graph paper</i>
<i>Example: Struggling readers</i>	<i>5</i>	<i>Provide oral explanations for directions and simplified text</i>

# Secondary Science Evidence Chart

Your evidence must be submitted to the electronic portfolio management system used by your teacher preparation program. Your submission must conform to the artifact and commentary specifications for each task. This section provides instructions for all evidence types as well as a description of supported file types for evidence submission, number of files, response lengths, and other information regarding format specifications.

## Task 1: Artifacts and Commentary Specifications

What to Submit	Supported File Types	Number of Files		Response Length	Additional Information
		Min	Max		
Part A: Context for Learning Information	.doc; .docx; .odt; .pdf	1	1	<b>No more than 3 pages</b> , including prompts	<ul style="list-style-type: none"> <li>Use Arial 11-point type.</li> <li>Single space with 1" margins on all sides.</li> </ul>
Part B: Lesson Plans for Learning Segment	.doc; .docx; .odt; .pdf	1	1	N/A	<ul style="list-style-type: none"> <li>Submit 3–5 lesson plans in 1 file.</li> <li>Within the file, label each lesson plan (Lesson 1, Lesson 2, etc.).</li> </ul>
Part C: Instructional Materials	.doc; .docx; .odt; .pdf	1	1	<b>No more than 5 pages of KEY</b> instructional materials per lesson plan	<ul style="list-style-type: none"> <li>Submit materials in 1 file.</li> <li>Within the file, label materials by corresponding lesson (Lesson 1 Instructional Materials, Lesson 2 Instructional Materials, etc.).</li> <li>Order materials as they are used in the learning segment.</li> </ul>
Part D: Assessments	.doc; .docx; .odt; .pdf	1	1	N/A	<ul style="list-style-type: none"> <li>Submit assessments in 1 file.</li> <li>Within the file, label assessments by corresponding lesson (Lesson 1 Assessments, Lesson 2 Assessments, etc.).</li> <li>Order assessments as they are used in the learning segment.</li> </ul>
Part E: Planning Commentary	.doc; .docx; .odt; .pdf	1	1	<b>No more than 9 pages</b> , including prompts	<ul style="list-style-type: none"> <li>Use Arial 11-point type.</li> <li>Single space with 1" margins on all sides.</li> <li>Respond to prompts before teaching the learning segment.</li> </ul>

## Task 2: Artifacts and Commentary Specifications

What to Submit	Supported File Types	Number of Files		Response Length	Additional Information
		Min	Max		
Part A: Video Clips	flv, asf, qt, mov, mpg, mpeg, avi, wmv, mp4, m4v	2	2	Running time <b>no more than 10 minutes each</b>	<ul style="list-style-type: none"> <li>Before you record your video, obtain permission from the parents/guardians of your students and from adults who appear on the video.</li> <li>Refer to <a href="#">Task 2, What Do I Need to Do?</a> for video clip content and requirements.</li> <li>When naming each clip file, include the number of the lesson shown in the video clip.</li> </ul>
Part B: Instruction Commentary	.doc; .docx; .odt; .pdf	1	1	<p><b>No more than 6 pages</b> of commentary, including prompts</p> <p>If needed, <b>no more than 2 pages</b> of supporting documentation</p>	<ul style="list-style-type: none"> <li>Use Arial 11-point type.</li> <li>Single space with 1" margins on all sides.</li> </ul> <p><b>IMPORTANT:</b></p> <ul style="list-style-type: none"> <li>Insert documentation at the end of the commentary file if <ul style="list-style-type: none"> <li>graphics, texts, or images that you or the students are using are not clearly visible in the video</li> <li>portions of the video are inaudible</li> </ul> </li> <li>If submitting documentation, include the video clip number, lesson number, and explanatory text (e.g., "Clip 1, lesson 2, text from a whiteboard that is not visible in the video," "Clip 2, lesson 4, transcription of a student response that is inaudible").</li> </ul>



## Task 3: Artifacts and Commentary Specifications

What to Submit	Supported File Types	Number of Files		Response Length	Additional Information
		Min	Max		
Part A: Student Work Samples	.doc; .docx; .odt; .pdf	3	3	N/A	<ul style="list-style-type: none"> <li>Use correction fluid, tape, or a felt-tip marker to <b>mask or remove students' names, your name, and the name of the school before copying/scanning any work samples.</b></li> <li>On each work sample, indicate the student number (Student 1 Work Sample, Student 2 Work Sample, or Student 3 Work Sample) and refer to them accordingly in the Assessment Commentary.</li> <li>When naming each work sample file, include the student number.</li> <li>If your students' writing is illegible, write a transcription directly on the work sample.</li> </ul>
Part B: Evidence of Feedback	<p><b>For written feedback not written on the work samples:</b> .doc; .docx; .odt; .pdf</p> <p><b>For audio feedback:</b> flv, asf, wmv, qt, mov, mpg, avi, mp3, wav, mp4, wma</p> <p><b>For video feedback:</b> flv, asf, qt, mov, mpg, mpeg, avi, wmv, mp4, m4v</p>	0	3	N/A	<ul style="list-style-type: none"> <li>Document the location of your evidence of feedback in the Assessment Commentary.</li> <li>If feedback is not written on the student work samples or recorded on the video clip(s), submit only 1 file for each student—a document, video file, <b>OR</b> audio file—and indicate the student number (Student 1 Feedback, Student 2 Feedback, or Student 3 Feedback) in the corresponding feedback.</li> <li>When naming each feedback file, include the student number.</li> </ul> <p><b>IMPORTANT:</b> Do not submit an additional file for Part B if your feedback is</p> <ul style="list-style-type: none"> <li>written on the student work samples</li> <li>shown in the video clip(s)</li> </ul>
Part C: Assessment Commentary	.doc; .docx; .odt; .pdf	1	1	<p><b>No more than 8 pages</b> of commentary, including prompts</p> <p>Plus <b>no more than 2 pages</b> of an analyzed assessment</p>	<ul style="list-style-type: none"> <li>Use Arial 11-point type.</li> <li>Single space with 1" margins on all sides.</li> </ul> <p><b>IMPORTANT:</b> Include a copy of the analyzed assessment, including directions/prompts.</p>
Part D: Evaluation Criteria	.doc; .docx; .odt; .pdf	1	1	N/A	<ul style="list-style-type: none"> <li>Indicate the lesson number on the corresponding evaluation criteria (Lesson 1 Evaluation Criteria, Lesson 2 Evaluation Criteria, etc.).</li> </ul>

# Secondary Science Glossary

Source citations for glossary entries are provided as footnotes in this section.

**academic language:** Oral and written language used for academic purposes. Academic language is the means by which students develop and express content understandings. Academic language represents the language of the discipline that students need to learn and use to participate and engage in meaningful ways in the content area. There are **language demands** that teachers need to consider as they plan to support student learning of content. These **language demands** include **vocabulary, language functions, syntax, and discourse**.

- **discourse:** Discourse includes the structures of written and oral language, as well as how members of the discipline talk, write, and participate in knowledge construction. Discipline-specific discourse has distinctive features or ways of structuring oral or written language (text structures) that provide useful ways for the content to be communicated.<sup>9</sup> In science, language structures include symbolic representations such as chemical equations (which can be translated into words), graphic and tabular representations (which are shorthand language for complex sets of data), lists (e.g., materials lists), and narrative (e.g., analysis and conclusions sections in a lab report). If the function is to draw conclusions, then appropriate structures could include charts of investigative results or sentence starters to structure an analysis such as “The results of the investigation show...,” “This data suggests that....”
- **language demands:**<sup>10</sup> Specific ways that academic language (vocabulary, functions, discourse, syntax) is used by students to participate in learning tasks through reading, writing, listening, and/or speaking to demonstrate their disciplinary understanding.
- **language functions:** The content and language focus of the learning task represented by the active verbs within the learning outcomes. Common language functions in science include **interpreting** written investigative procedures, diagrams, figures, tables, graphs, and dense authoritative text; **writing or presenting** causal explanations; **explaining** models of scientific phenomena; **predicting** from models and data from scientific inquiries; **comparing** based on common attributes, **summarizing** scientific data from inquiries; **justifying** conclusions with scientific evidence; **evaluating** data and investigative procedures; **classifying** based on attributes; **describing** processes and procedures; **drawing conclusions** based on investigative results; and so on.
- **syntax:** The set of conventions for organizing symbols, words, and phrases together into structures (e.g., sentences, graphs, tables).<sup>11</sup>

<sup>9</sup> Quinn, H., Lee, O., & Valdés, G. (2012). Language demands and opportunities in relation to next generation science standards for ELLs. Retrieved from <http://ell.stanford.edu/publication/3-language-demands-and-opportunities-relation-next-generation-science-standards-ells>

<sup>10</sup> O'Hara, S., Pritchard, R., & Zwiers, J. (2012). Identifying academic language demands in support of the common core standards. *ASCD Express*, 7(17). Retrieved from <http://www.ascd.org/ascd-express/vol7/717-ohara.aspx>

<sup>11</sup> Zwiers, J. (2008). *Building academic language: Essential practices for content classrooms*. San Francisco, CA: Jossey-Bass.

- **vocabulary:** Includes words and phrases that are used within disciplines including: (1) words and phrases with subject-specific meanings that differ from meanings used in everyday life (e.g., table); (2) general academic vocabulary used across disciplines (e.g., compare, analyze, evaluate); and (3) subject-specific words defined for use in the discipline.<sup>12</sup>

**artifacts:** Authentic work completed by you and your students including lesson plans, copies of instructional and assessment materials, video clip(s) of your teaching, and student work samples. Artifacts are submitted as part of your evidence.

**assessment (formal and informal):** “[R]efer[s] to all those activities undertaken by teachers and by their students . . . that provide information to be used as feedback to modify the teaching and learning activities.”<sup>13</sup> Assessments provide evidence of students’ prior knowledge, thinking, or learning in order to evaluate what students understand and how they are thinking. Informal assessments may include, for example, student questions and responses during instruction and teacher observations of students as they work. Formal assessments may include, for example, quizzes, homework assignments, lab reports, journals, and projects.

**assets (knowledge of students):**

- **personal:** refers to specific background information that students bring to the learning environment. Students may bring interests, knowledge, everyday experiences, and family backgrounds, and so on, that a teacher can draw upon to support learning.
- **cultural:** refers to the cultural backgrounds and practices that students bring to the learning environment, such as traditions, languages, world views, literature, art, and so on, that a teacher can draw upon to support learning.
- **community:** refers to common backgrounds and experiences that students bring from the community where they live, such as resources, local landmarks, community events and practices, and so on, that a teacher can draw upon to support learning.

**central focus:** A description of the important understandings and core concepts that you want students to develop within the learning segment. The central focus should go beyond a list of facts and skills or procedures, align with content standards and learning objectives, and address the subject-specific components in the learning segment. For example, the subject-specific components for secondary science are conceptual understanding, use of scientific practices during inquiry, and **evidence-based argument** about a scientific phenomenon. A central focus for the learning segment might be relationships between symbolic expressions and graphs of lines. The learning segment would focus on understanding factors producing genotypes and phenotypes. The learning segment would focus on conceptual understandings of genotypes, phenotypes, dominant genes, and so on, an investigation of how relationships between genotypes are expressed in phenotypes, and an argument of how these **relationships** would affect distributions of phenotypes in a population.

<sup>12</sup> Quinn, H., Lee, O., & Valdés, G. (2012). Language demands and opportunities in relation to next generation science standards for ELLs. Retrieved from <http://ell.stanford.edu/publication/3-language-demands-and-opportunities-relation-next-generation-science-standards-ells>

<sup>13</sup> Black, P., & William, D. (1998). Inside the black box: Raising standards through classroom assessment. *Phi Delta Kappan*. Retrieved from <https://www.measuredprogress.org/documents/10157/15653/InsideBlackBox.pdf>

**commentary:** Submitted as part of each task and, along with artifacts, make up your evidence. The commentaries should be written to explain the rationale behind your teaching decisions and to analyze and reflect on what you have learned about your teaching practice and your students' learning.

**electronic submission:** Your evidence is submitted electronically through the electronic portfolio management system used by your teacher preparation program. Your submission must conform to the specifications listed in the [Secondary Science Evidence Chart](#).

**engaging students in learning:** Using instructional and motivational strategies that promote students' active involvement in learning tasks that increase their knowledge, skills, and abilities related to specific learning objectives. Engagement in learning contrasts with student participation in learning tasks that are not well designed and/or implemented and do not increase student learning.

**evaluation criteria:** Performance indicators or dimensions that are used to assess evidence of student learning. They indicate the qualities by which levels of performance can be differentiated and that anchor judgments about the learner's degree of success on an assessment. Evaluation criteria can be represented in various ways, such as a rubric, a point system for different levels of performance, or rules for awarding full versus partial credit. Evaluation criteria may examine correctness/accuracy, cognitive complexity, sophistication or elaboration of responses, or quality of explanations.

**evidence:** Consists of **artifacts** that document how you planned and implemented instruction **AND commentaries** that explain your plans and what is seen in the video recording(s) or examine what you learned about your teaching practice and your students' learning. Evidence should demonstrate your ability to design lesson plans with instructional supports that deepen student learning, use knowledge of your students to inform instruction, foster a positive learning environment that promotes student learning, monitor and assess student progress toward learning objectives, and analyze your teaching effectiveness. Your evidence must be submitted electronically using the electronic portfolio management system used by your teacher preparation program.

**learning environment:** The designed physical and emotional context, established and maintained throughout the learning segment to support a positive and productive learning experience for students.

**learning objectives:** Student learning outcomes to be achieved by the end of the lesson or learning segment.

**learning segment:** A set of 3–5 lessons that build one upon another toward a central focus, with a clearly defined beginning and end.

**learning task:** Includes activities, discussions, or other modes of participation that engage students to develop, practice and apply skills and knowledge related to a specific learning goal. Learning tasks may be scaffolded to connect prior knowledge to new knowledge and often include formative assessment.

**nature of science:** Science is “a set of practices that shows that theory development, reasoning, and testing are components of a larger ensemble of activities that includes networks of participants and institutions; specialized ways of talking and writing; the development of models to represent systems or phenomena; the making of predictive inferences; construction of appropriate instrumentation; and testing of hypotheses by

experiment or observation.”<sup>14</sup> Science teachers create a community of learners who learn how to work together to develop, test, refine, and share scientific ideas based on evidence about how the biological and physical worlds work.

**patterns of learning:** Includes both quantitative and qualitative consistencies for different groups of students and individuals across the whole class. Quantitative patterns indicate the number of similar correct responses or errors across or within student assessments. Qualitative patterns include descriptions of understandings and/or misunderstandings, and/or partial understandings that underlie the quantitative patterns.

**preconceptions:** Student ideas about the physical and biological worlds and how they work or about the nature of science, based on their observations, experiences, and what they have heard.

**prior learning and prerequisite skills:** Includes students’ content knowledge and skills as well as academic experiences developed prior to the learning segment.

**rubrics:** Subject-specific evaluation criteria used to score your performance on edTPA. These rubrics are included in the handbook following the directions for each task. The descriptors in the five-level rubrics address a wide range of performance representing the knowledge and skills of a novice not ready to teach (Level 1) to the advanced practices of a highly accomplished beginner (Level 5).

**scientific practices through inquiry:** The practices, as defined by the *Next Generation of Science Standards*, focus on eight key components:

- Asking questions
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information

**variety of learners:** Students in your class who may require different strategies or support. These students include but are not limited to students with IEPs, English language learners, struggling readers, underperforming students or those with gaps in academic knowledge, and/or gifted students.

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<sup>14</sup> National Research Council. (2012). *A Framework for K–12 Science Education: Practices, Crosscutting Concepts, and Core Ideas*. Retrieved from [http://www.nap.edu/openbook.php?record\\_id=13165](http://www.nap.edu/openbook.php?record_id=13165)