Adolescence and Young Adulthood/Science

Component 2: Differentiation in Instruction

PORTFOLIO INSTRUCTIONS AND SCORING RUBRIC

NATIONAL BOARD
for Professional Teaching Standards®

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Contents

Overview

This document provides information about the Adolescence and Young Adulthood/Science (AYA/Science) Component 2 portfolio entry, instructions on how to develop and submit your evidence, and the scoring rubric used to assess your work.

Component 2: Differentiation in Instruction

This portfolio entry provides you with the opportunity to highlight your ability to evaluate learning strengths and needs for individual students; plan and implement appropriate differentiated instruction for those students; and analyze and modify instructional strategies and materials based on ongoing assessment. The tasks for all components and the rubrics used to assess candidate work have been developed in accordance with the Five Core Propositions and the certificate area Standards.

AYA/Science Component 2 Portfolio Entry

In the AYA/Science Component 2 portfolio entry:

- You demonstrate your strategies for linking instructional activities together to engage students in building conceptual understanding of one major idea in science.
- You choose three instructional activities, related instructional materials, two student responses to each activity, and a culminating assessment that highlight your ability to differentiate instruction.
- You submit a Written Commentary that provides an analysis and a context for your instructional choices.

AYA/Science Standards Measured by Component 2

Because the purpose of the tasks in the portfolio components is to measure your teaching practice, the overall focus of the portfolio entry and rubrics is on your pedagogical knowledge and skills and how successfully you are able to apply these knowledge and skills to advance student learning.

The portfolio entry for this component, "Differentiation in Instruction," measures the following AYA/Science Standards, and your submission will be evaluated based on these standards through the scoring rubric:

I. Understanding Students
II. Knowledge of Science
III. Curriculum and Instruction
IV. Assessment
V. Learning Environment
VIII. Diversity, Fairness, Equity, and Ethics
IX. Reflection

For the complete AYA/Science Standards, refer to **www.nbpts.org/certification/candidate-center/**.

The AYA/Science Component 2 scoring rubric defines the level of accomplished teaching that you must demonstrate. The wording in the rubric reflects levels of performance within the Component 2 tasks.

You should read the Standards and rubric while developing your portfolio entry to understand how the rubric guides assessors in evaluating your work.

Inside This Document

This document includes the following two sections: "Portfolio Instructions for AYA/Science Component 2," which describes how to develop and submit your evidence, and "Scoring Rubric for AYA/Science Component 2," which provides the scoring rubric used to assess your work.

Portfolio Instructions

The AYA/Science Component 2 portfolio instructions provide the following:

- Directions for developing and submitting your evidence of accomplished teaching.
- Forms required for this entry. As you prepare your portfolio, keep in mind some forms contain directions that are not repeated elsewhere; follow these directions carefully.
- An Electronic Submission at a Glance chart listing the materials you are required to collect and/or prepare as well as the release forms to keep for your records. Use this chart to complete and submit the appropriate materials to ensure proper scoring of your portfolio entry.

For more information about developing and submitting your portfolio entry, please refer to the *General Portfolio Instructions* and the *Guide to Electronic Submission* available at **www.nbpts.org/certification/candidate-center/**.

Scoring Rubric

The AYA/Science Component 2 scoring rubric is provided to assist you in understanding how your portfolio materials will be assessed. For more information about understanding and interpreting your scores, please refer to the *Scoring Guide* available at **www.nbpts.org/certification/candidate-center/**.

Portfolio Instructions for AYA/Science Component 2

This section contains the directions for developing and submitting the Component 2 AYA/Science portfolio entry and assembling it for submission. Entry directions include

- suggestions for planning your portfolio entry and choosing evidence of your teaching practice;
- questions that must be answered as part of your Written Commentary;
- an explanation of how to format, assemble, and submit your portfolio entry.

What Do I Need to Do?

Although accomplished science teachers teach many concepts, in this entry you will **choose one major idea in science** around which your submission will center.

In this entry, you

- demonstrate how the design and actual practice of your teaching over a time period of no less than **three weeks** and no more than **twelve weeks**, works to further students' understanding of a major idea in science;
- provide evidence of your ability to select and justify the appropriateness of a major idea in science (described below) for your students, and to plan and implement sequenced, equitable, and differentiated instruction to facilitate your students' understanding of that idea;
- analyze and assess student progress toward understanding the major idea, and reflect on how your sequence, implementation, and differentiation of instructional strategies works to further students' science learning over time.

What Do I Need to Submit?

For this entry, you must submit the following:

- **Completed Contextual Information Sheet (no more than 1 page)** that describes the broader context in which you teach (refer to the "Component 2 Forms" section of this document).
- **Written Commentary (no more than 13 pages)** that provides a context for your instructional choices and describes, analyzes, and reflects on the student work and your teaching.
- **Instructional activities materials.**
  - Three completed Instructional Activity Forms, **no more than 1 page each** (refer to the "Component 2 Forms" section of this document).
  - Three instructional activities and related instructional materials (**no more than 9 pages combined**). At least one of the activities must show connections to technology. A description of how you addressed the diversity of your students should be included.
- **Two student work samples** for each instructional activity (**no more than 18 pages combined**—forms do not count in page total). Include any written feedback you provided to the student and a description of how you differentiated instruction.
- **Culminating assessment (no more than 2 pages)** that shows how you differentiated the assessment (can be an instrument or a description of any alternative means of assessment).

The instructional period must range from a minimum of **three weeks** to a maximum of **twelve weeks.** In your response, you analyze student progress toward understanding the major idea and reflect on how your sequence of instructional strategies works to further students' science learning over time.

Originality Requirements. It may be helpful to have a colleague review your work before you submit it. However, all of the work you submit as part of your response to this portfolio component must be yours and yours alone. The written analyses and other evidence you submit must feature teaching that you did and work that you oversaw. For more detailed information, see the ethics and collaboration section in the *General Portfolio Instructions* and the National Board's ethics policy. If you submit materials and/or evidence which are in whole or in part substantially identical to those of another candidate, both of you could be disqualified from the certification process.

Before beginning to work on this entry, read the following directions for developing each element. Refer to the "Component 2 Forms" section of this document for the forms you will need to submit your materials. Word-processing files of these forms are also available to download from **www.nbpts.org/national-board-certification/candidate-center**.

The student work submitted for Component 2 and one of the two video recordings submitted for Component 3 may be from the same unit of instruction, but must be from different lessons that have unique lesson goals and objectives.

Selecting a Major Idea in Science

To begin, select **one** major idea in science. This is an important decision because you must relate your instruction to the chosen major idea and be able to explain how your instruction helps your students achieve a conceptual understanding of this major idea. You should also be able to describe why the major idea is considered "major" and why it is important and appropriate for your students.

The major ideas in science referred to in this document are expected to be addressed in any high school course (depending on the discipline[s] taught). Be sure that you can justify the major idea as important and appropriate for your students, and be sure the major idea is more than a fact, single concept, or description of phenomena.

Your major idea must meet at least one of the following criteria:

- It is an integral concept that provides foundational understanding of a scientific discipline, such as chemical bonding in chemistry, organic evolution in biology, forces and interactions in physics, or Earth systems in Earth/space science.
- It underlies most or all of the scientific disciplines, such as the relationship of structure to function or the flow of matter and energy in systems.
- It defines the nature of science, such as methods of scientific investigations or major turning points in the history of science.
- It exemplifies the relationship of science and technology to the lives of individuals and to societies, such as the effects of sanitation, disease control, or agricultural technology on human life span and population growth.

The time period covered must span a **minimum of three weeks and a maximum of twelve weeks**, so the idea you are addressing must support an instructional sequence that can be seen as a coherent whole or part of a whole within the allowable time frame.

Select **one** major idea that allows you to demonstrate both the types and sequence of instructional activities you use and the instructional decisions you make to help further your students' knowledge and understanding over time. It is not necessary to choose a major idea in science that is new to your teaching; rather, choose a topic that draws on your strengths, typical teaching methods, and curriculum. Choose a major idea that allows you to provide evidence of how you establish the relevance of science to your students; how you create a rich context for science, such as establishing connections to students' experiences, history, societal issues, and/or students' backgrounds; and how you are able to differentiate your instruction and the materials to facilitate fair and equitable access to the curriculum by diverse students.

Caution: It will be important to select an idea that is truly "major," as defined by the criteria above. Avoid selecting "minor" ideas such as how cells divide, Ohm's law, or how reaction rates are affected by temperature. These ideas are not substantial enough to show that you understand the unifying themes/crosscutting concepts of science or the breadth of their connections to other disciplines. In addition, a "minor" idea may not provide you with enough depth for an extended, unified instructional sequence.

Selecting Instructional Activities

Collect three samples of student work from each of two students in response to the instructional activities.

Selecting the Three Instructional Activities

Think through the entire instructional sequence before beginning the period of instruction. Of course, your instructional plans may well change as you respond to the unique challenges of this period of instruction, but having a logical, sequential plan in mind helps you craft your final response to this entry. The sequence should have these characteristics:

- Every instructional activity in the sequence should closely relate to the selected major idea in science. **Caution:** Although you may be developing several major ideas concurrently, for the purpose of this entry, focus only on the activities that relate to students' developing conceptual understanding of the one major idea you have selected. Avoid including activities that are only tangentially related to the major idea.
- The sequence of science activities should build on students' prior knowledge and experiences, and should meet their unique needs and interests as learners.
- The sequence of activities and implementation should ensure fairness and equity by accommodating students' diverse backgrounds and needs.
- The activities in the sequence should help students establish the relevance of science and understand the broader picture of how this idea is connected to the scientific disciplines and to other aspects of their lives. For example, include activities that draw on students' own backgrounds and experiences, or that involve them in issues relevant to their local community, rather than activities that only tangentially reference real-world connections to science concepts.
- The activities in the sequence should allow students to demonstrate their developing conceptual understandings of the major idea through some sort of response, written or otherwise, that you can include in the student work samples. **Caution:** Do not choose activities that result in student work samples that focus on factual recall or vocabulary, such as worksheets, lecture notes, or data-collection sheets. Choose instead activities that yield rich evidence of students' scientific thinking and reasoning, such as written lab reports, journal entries, or documentation of an extended project. Because of the nature of this type of student work, we have

allowed for **up to 18 pages** of student work samples. However, a fewer number of pages can demonstrate how students develop conceptual understandings of the major idea.

- The activities should elicit scientific thinking and reasoning on the part of students and allow students to demonstrate their thinking and reasoning in a tangible form that can be seen in the accompanying student work.
- The activities should show how you create and/or adapt (differentiate) instructional activities and instructional resources to meet the diverse needs of your students.
- The activities should demonstrate your skill in promoting student understanding through the conceptual challenges you pose and the student misunderstandings you confront.
- The instructional sequence should conclude with you showing how you prepare and use a culminating assessment (written, oral, performance-based, or other traditional forms of assessment) to measure student understanding of the major idea, to inform your instruction, and to provide feedback on the success of the sequence of instruction. (See "Selecting a Culminating Assessment" below.)

Carefully consider all the assessment strategies you will use before you begin the instruction on which your response will be based. Identify the most important understandings your students must acquire, and a logical order for them to acquire them in. Think about the points at which you must monitor "what they know" so that you can, if necessary, adjust your instruction. Identify several different ways that you are going to assess your students' understanding, both formally and informally, during the chosen instructional sequence.

As you and your students work through the instructional sequence, keep records of the instructional activities you engage in. Plan in advance to collect both supporting materials and student work samples from every activity. You may find it helpful to keep a log in which you describe and analyze each day's instruction or activity. The Instructional Activity Form, which can be found in the "Component 2 Forms" section of this document, can be used as one way to keep such a record.

When the instructional sequence is completed, review your notes from the sequence and choose three instructional activities that clearly demonstrate the nature and direction of your instruction during this period of time. "Instructional activities" can be interpreted broadly to mean the things your students do—either in or outside of class—that contribute to their learning, such as class discussions, laboratory work, interactive demonstrations, experiments, lectures, journal assignments, community or field work, and long-term projects. An activity can take place during a portion of a class period, an entire class period, or multiple class periods. When you have selected the three instructional activities, complete an Instructional Activity Form for each activity and insert the associated instructional materials. Then, read through them and check that each set communicates an accurate, complete, and focused picture of the nature and direction of your instruction about the major idea in science and your ability to differentiate your instruction to provide equitable and in-depth learning experiences.

Selecting the Two Students Whose Work You Will Feature

Next, select the two students whose work you will include as work samples. The two students you select should represent different instructional challenges to you and draw on the range of student needs, abilities, and interests in your classroom. By selecting different types of students, you may better display your teaching ability and flexibility.

To facilitate your selection, you may want to select several students from this class who meet these criteria and collect examples of their work over the course of the instructional sequence. Consider carefully before choosing your strongest students—the ones who seemed to have an aptitude for science when they entered your classroom. Though this kind of student presents an instructional challenge that is certainly worthy of inclusion in this response, you may find that less able students offer you better opportunities to demonstrate your contribution to their development.

After collecting the work of the students you have decided to follow, examine the work and decide which two students present the most interesting patterns of student work through the three instructional activities you have chosen to feature. Choose a pair of students whose work is likely to show their progression toward a conceptual understanding of the major idea, as well as the conceptual difficulties they encountered along the way. It would be a good idea to read carefully over the questions you will answer in the Written Commentary to get an idea of the type of analysis the selected work samples should be able to support.

Note: Your response will be scored based on the quality of your analysis, not on the level of students' work.

A signed release form is required for each student whose work samples are included. These release forms are available as PDF downloads from **www.nbpts.org/certification/candidate-center/**. Retain completed student release forms for your records; do not submit them with your evidence.

How to Format and Submit Your Instructional Activity Materials

- Complete a new **1-page** Instructional Activity Form for each activity (refer to the "Component 2 Forms" section of this document). Include the associated instructional material after each form in your file for submission.
- Submit no more than **9 pages total** of instructional materials for all three activities combined. Additional pages will not be scored. Forms do not count toward this total. No materials will be returned.
- Be sure that your instructional materials are legible and refer to people and places in ways that preserve anonymity. Follow the "Guidelines for Referring to People, Institutions, and Places" section in *General Portfolio Instructions*.
- Format your instructional materials to fit onto an 8.5" × 11" page. If instructional materials contain Web pages, each 8.5" × 11" Web page print out or PDF counts as **1 page** toward your page total. Note, however, the following exceptions:
  - If instructional materials were created in a multimedia software program, you may format up to six slides on one 8.5" × 11" page, which counts as **1 page** toward your page total.
  - If submitting a smaller item such as a photo, you may insert a digitized image into a word-processing program document. Several smaller items can be grouped on a single page as long as they are readable.
- If instructional materials that are important for assessors to see are impractical to submit (e.g., slide projections, writing on a chalkboard or whiteboard, software, three-dimensional objects), submit a digitized drawing, image, or photograph, or a description/transcription of the material. (If you submit a description/transcription, it must be typed in double-spaced text with 1" margins on all sides using 11-point **Arial** font.)

Refer to the "Component 2 Electronic Submission at a Glance" chart in this document for file types acceptable for submission and complete submission requirements.

How to Format and Submit Your Student Work Samples

- Complete a new **1-page** Student Work Sample Form for each activity (refer to the "Component 2 Forms" section of this document). Include the associated student work sample after each form in your file for submission.
- Submit no more than **18 pages total** of student work samples for all three activities combined. Additional pages will not be scored. Forms do not count toward this total. No materials will be returned.
- Each student work sample must
  - represent a student's original work. The original electronic file or scanned image of student work is acceptable.
  - come from students who are in the class that is the basis for your Written Commentary.
  - be from the **same** two students, responding to the same three activities that you are featuring in this entry.
- Be sure that your student work samples are legible and refer to people and places in ways that preserve anonymity. Follow the "Guidelines for Referring to People, Institutions, and Places" section in *General Portfolio Instructions*.
- Format your student work samples to fit onto an 8.5" × 11" page. If student work samples contain Web pages, each 8.5" × 11" Web page print out or PDF counts as **1 page** toward your page total. Note, however, the following exceptions:
  - If student work samples were created in a multimedia software program, you may format up to six slides on one 8.5" × 11" page, which counts as **1 page** toward your page total.
  - If submitting a smaller item such as a photograph, you may insert a digitized image into a word-processing program document. Several smaller items can be grouped on a single page as long as they are readable.
- Do **not** submit video or audio recordings. If a student creates such a product or a multi-dimensional product, have **the student** write a **1-page** description of the assignment and what the student made. You may include photograph(s) or student-made drawings to accompany the description, if appropriate. The **1-page** description counts toward your page total.

Refer to the "Component 2 Electronic Submission at a Glance" chart in this document for file types acceptable for submission and complete submission requirements.

Selecting a Culminating Assessment

At the conclusion of the instructional sequence, show how you prepare and use a culminating or alternative assessment to evaluate the students' progress. You may include the instrument itself or a description of the assessment activity. It can be written, oral, performance-based, or any other traditional form of assessment. It should help you measure the student understanding of the major idea and inform your instruction by providing important feedback on the success of the sequence of instruction. You should describe how the assessment was designed and differentiated to meet the diverse needs and backgrounds of your students.

Culminating Assessment Format Specifications

The culminating assessment must be no more than **2 pages**. Additional pages will not be read. No materials will be returned.

Refer to the "Component 2 Electronic Submission at a Glance" chart in this document for file types acceptable for submission and complete submission requirements.

Composing Written Commentary

In this entry, you submit a Written Commentary that provides an analysis and a context for your instructional choices.

How to Organize and Present Your Written Commentary

- Create a word-processing document to compose your commentary. Enter the following section headings in the document:

  1. **Instructional Context**
  2. **Planning Instruction**
  3. **Analysis of Instruction and Student Work**
  4. **Reflection**

- Address the italicized questions in the following section entitled "What to Include in Your Written Commentary." Provide your analysis under the appropriate section heading in your document.
- Refer to the writing about teaching section in *General Portfolio Instructions* for advice on developing your commentary and to see Written Commentary examples.
- When writing your commentary, refer to people and places in ways that preserve anonymity. Follow the "Guidelines for Referring to People, Institutions, and Places" section in *General Portfolio Instructions*.
- Place your candidate ID number in the upper right corner of the first page of your commentary document.
- Use the following language and format specifications when writing your commentary:
  - Write in English.
  - Use double-spaced 11-point Arial font.
  - Format 1-inch margins on all sides of the document.

  Refer to the "Component 2 Electronic Submission at a Glance" chart in this document for complete submission requirements.

- Your commentary will be scored based on the content of your analysis; however, proofread your writing for spelling, mechanics, and usage.
- Submit a document for your commentary of **no more than 13 pages**. If you submit a longer document, only the first 13 pages will be scored.

What to Include in Your Written Commentary

Your Written Commentary must address the italicized questions provided below for each section. Statements in plain text that immediately follow an italicized question help you

interpret the question. It is not necessary to include the italicized questions within the body of your response. Use the suggested page lengths in parentheses after each section heading as a guideline when addressing the questions in each section.

1. Instructional Context (Suggested length: 1 page)

Provide the following information in addition to the context that you supply on the Contextual Information Sheet, which focuses on the school or district at large. In this section, address the following questions about your selected class:

- *What are the number, ages, and grades of the students in the class featured in this entry, and subject matter of the class?* (Example: 32 students in grades 10 through 12, ages 15 through 19, Biology 1—an introductory level course in plant and animal biology)
- *What are the relevant characteristics of this class that influenced your instructional strategies for this instructional sequence: ethnic, cultural, and linguistic diversity; the range of abilities of the students; the personality of the class?*
- *What are the relevant characteristics of the students with exceptional needs and abilities that influenced your planning for this instruction (e.g., the range of abilities and the cognitive, social/behavioral, attentional, sensory, and/or physical challenges of your students)?* Give any other information that might help the assessor "see" this class.
- *What are the relevant features of your teaching context that influenced the selection of this instructional sequence?* This might include other realities of the social and physical teaching context (e.g., available resources, scheduling of classes, room allocation—own classroom or shared laboratory facilities) that are relevant to your response.

2. Planning Instruction (Suggested length: 4 pages)

In this section, address the following questions:

- *What is the major idea in science that you have chosen as the focus of your response to this entry?*
- *What were your goals for student learning in connection to the major idea during the featured period of instruction?*
- *Why do you consider this major idea in science and these goals to be important and appropriate for your students to learn about?*
- *What were the activities you and your students engaged in, and how were they sequenced and organized to build on students' interests, prior knowledge, and developing understandings as the sequence unfolded?* Describe the instructional sequence you developed to facilitate student growth in understanding of the major idea. The sequence may have included more than the three activities you choose to feature here. Describe the entire sequence, and note which activities you are featuring.

Note: You may choose to augment your overview of the instructional sequence with a graphical element, such as a flowchart, web, outline, or diagram, depicting the activities you and your students participated in and their relationship to one another. If you choose to include a graphical element, ensure that it is legible and that it is included in your total page count.

- *What challenges are inherent in teaching this major idea to your students? How is your instruction designed to meet these challenges? Did you modify your planned instruction in any way to meet these challenges?* Explain any modifications you made and the reasons for them.

- *How did you facilitate in-depth, fair, and equitable learning for students?*
- *How did you differentiate instruction and the materials to meet the unique needs of your students?*
- *What general criteria did you use to assess student work? How were these criteria developed, and how did you communicate them to students? What are your overarching criteria, or standards, that you apply to science assessment in general?*
- *How did you differentiate your assessments to meet the unique needs of your students?*
- *What technologies did you use during this sequence of activities and why did you choose them?* Cite specific examples from the instructional sequence that show you or your students interacting with these technologies.

3. Analysis of Instruction and Student Work (Suggested length: 6 pages)

In your response to the questions in this section, refer explicitly to the three instructional activities featured in this entry and the accompanying student work to provide concrete examples to illustrate your points. Cite activities by number and student work by student first name, student identifier (Student A or Student B), and activity number. In this section, address the following questions:

- *What are specific examples of ways the three activities worked together to further your students' understanding of the selected major idea in science?* Refer to specific aspects of each of the three featured activities and/or the student work.
- *How did you provide students with a context for the science featured in this sequence by establishing connections to students' backgrounds, experiences, interests, and/or other disciplines and areas of study (e.g., mathematics, history, technology's impact on society, ethics, etc.)? In other words, how did you help students make meaning of science and internalize its relevance?* Refer to specific aspects of each of the three featured activities and/or the student work.
- *What are specific examples of ways you made good use of instructional resources to support your teaching and extend student learning? Based on your students and your teaching context, why did you select these instructional resources to support your teaching?* Refer to specific aspects of each of the three featured activities, supporting materials, and/or the student work.
- *Why did you choose this student? What instructional challenge(s) does this student represent? What is important to know about this student to understand and interpret the attached responses? How did you differentiate the activities to facilitate equitable access and in-depth understanding for this student?*
- *What are the salient characteristics of each of the three pieces of work for each student? What does the work tell you about the student's growth in understanding of the major idea in science? What does the work tell you about any challenges or misunderstandings this student is experiencing?*
- *How did technology contribute to the students' learning?* Describe either how students used technology to explore the major idea, or how the major idea was linked to issues in technology and society. Links to technology need to be evident in only one of the three chosen instructional activities.
- *How did you assess these pieces of work, and how did you provide feedback or further instruction to the student based on your assessment?*

4. Reflection (Suggested length: 2 pages)

Using the student work submitted to illustrate your discussion, in this section address the following questions:

- *How successful was the instructional sequence in advancing student understanding of the selected major idea? What worked and what didn't work?* Cite specific evidence from the three instructional activities and student work samples. Consider both your evaluation of student work and your analysis of the instructional sequence, together, against the goals you set.
- *What would you do differently, and why, if you were given the opportunity to teach this particular sequence with these students again?* Include in your discussion a self-assessment of how well you differentiated the sequence and instruction, met individual students' needs, and contributed to the overall understanding gained by your students.
- *In the overall scheme of instruction, how useful and appropriate was your culminating assessment in illustrating student understanding of the major idea?*

Component 2 Electronic Submission at a Glance

Use the following chart to determine how to group your evidence and submit it electronically. Forms are available as word-processing files that you can download from **www.nbpts.org/certification/candidate-center/** as well as on the following pages of this document.

Adolescence and Young Adulthood/Science Component 2: Differentiation in Instruction				
What to Submit	**Supported File Types**	**Number of Files to Submit**	**Response Length**	**Additional Information**
Contextual Information Sheet(s) (form provided)	pdf	1	**No more than 1 page**	• Use 11-point Arial font • Single space
Written Commentary	pdf	1	**No more than 13 pages**	• Use 11-point Arial font • Double space with 1" margins on all sides
Instructional Activities (form provided)	pdf	3	**No more than 9 pages** of instructional materials for three activities combined—forms do not count in page totals	**Submit 3 files of instructional activities:** • Instructional Activity #1 Completed Instructional Activity Form and Instructional Activity #1 materials • Instructional Activity #2 Completed Instructional Activity Form and Instructional Activity #2 materials • Instructional Activity #3 Completed Instructional Activity Form and Instructional Activity #3 materials
Student Work Samples (form provided)	pdf	3	**No more than 18 pages** for six student work samples combined (two students, three work samples each)—forms do not count in page totals	**Submit 3 files of work samples:** • Completed Student Work Sample Form and two Instructional Activity #1 student work samples • Completed Student Work Sample Form and two Instructional Activity #2 student work samples • Completed Student Work Sample Form and two Instructional Activity #3 student work samples
Culminating Assessment	pdf	1	**No more than 2 pages**	Submit the assessment instrument or a description of any alternative means of assessment; if description is written: • Use 11-point Arial font • Double space with 1" margins on all sides

A signed release form is required for each student whose work samples are included. These release forms are available as PDF downloads from **www.nbpts.org/certification/candidate-center/**. **Retain completed student release forms for your records; do not submit them with your evidence.**

Component 2 Forms

This section contains forms required for Component 2. You may complete these forms in two ways depending on the content of the form:

- For forms that require descriptions or explanations of evidence, you must download the word-processing files available at **www.nbpts.org/certification/candidate-center/**, fill them out electronically, and then upload the electronic file or scanned image with the associated evidence to your National Board account.

OR

- For forms that do not require descriptions or explanations of evidence and that are used solely to identify submitted evidence, you may print out the forms on the following pages, fill them out by hand, scan the completed forms with the associated evidence, and then upload the electronic file to your National Board account.

As you prepare your portfolio, keep in mind some forms contain directions that are not repeated elsewhere; follow these directions carefully.

A signed release form is required for each student whose work samples are included. These release forms are available as PDF downloads from **www.nbpts.org/certification/candidate-center/**.

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AYA/Science Contextual Information Sheet

Directions: Respond to the prompts below (**no more than 1 single-spaced page in Arial 11-point font, including prompts**) by typing your responses within the brackets following each prompt. Do not delete or alter the prompts; both the prompts and your responses are included in the total page count allowed. Pages exceeding the maximum will not be scored.

This form asks you to describe the broader context in which you teach:

- In this component, you are asked to provide specific information about the students in the class you have featured in the portfolio entry. This is *in addition* to the information requested here.
- For clarity, please avoid the use of acronyms.

Candidate ID#: [ ]

1. Briefly identify the **type of school/program** in which you teach and the **grade/subject configuration** (single grade, departmentalized, interdisciplinary teams, etc.).

[ ]

2. Briefly identify.

   Grades: [ ] Age Levels: [ ] Number of Students Taught Daily: [ ]

   Average Number of Students in Each Class: [ ]

   Courses: [ ]

3. What information about your teaching context do you believe would be important for assessors to know to understand your portfolio entry? Be brief and specific.
   Note: You might include details of any state or district mandates, information regarding the type of community, and access to current technology.

[ ]

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AYA/Science Instructional Activity Form

Directions: Use a new form for each of the three activities.

Respond to the prompts below (**no more than 1 single-spaced page in Arial 11-point font, including prompts**) by typing your responses within the brackets following each prompt. Do not delete or alter the prompts; both the prompts and your responses are included in the total page count allowed. Pages exceeding the maximum will not be scored.

Include the associated instructional materials after this completed form in your file for submission.

Activity #: [ ] **Candidate ID#:** [ ]

1. Describe the instructional activity. What did you do? What did the students do?

[ ]

2. What is the purpose of this activity? What did you want your students to learn?

[ ]

3. What instructional resources did you use for this activity (e.g., printed materials, community resources, laboratory equipment)? How were they used?

[ ]

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AYA/Science Student Work Sample Form

Directions: Use a new form for each work sample from a student, generated in response to the activity you indicate.

Indicate the student (A or B) and the activity number (1, 2, or 3) below.

Include the associated student work sample after this completed form in your file for submission. Label the work sample with the student's first name, the student identifier (A or B), and the activity number (1, 2, or 3).

Candidate ID#: [ ]

Student: A [ ] B [ ]

Activity: 1 [ ] 2 [ ] 3 [ ]

Scoring Rubric for AYA/Science Component 2

Level 4

The **LEVEL 4** performance provides *clear, consistent, and convincing* evidence that the teacher is able to select and justify the appropriateness of a major idea in science, successfully use specific knowledge about students to plan and implement differentiated sequenced instruction, and provide appropriate assessment to facilitate students' understanding of that idea.

The Level 4 performance provides *clear, consistent, and convincing* evidence:

- that the teacher is able to establish the selected major idea in science and related learning goals as central to science and justify them as appropriate for his or her students and specific teaching context.
- of the teacher's strong command of science content linked with appropriate science pedagogy.
- that the instructional sequence reflects consideration of the unique learning needs of students, shows high expectations for all students, and demonstrates proficiency in recognizing the challenges of teaching this idea and sequence, including awareness of potential student misunderstandings and how to address these misunderstandings through appropriate pedagogical responses.
- of the teacher's ability to differentiate and adapt instruction and instructional materials to meet the unique needs of learners and to provide fair, equitable, and relevant access to in-depth learning.
- of the teacher's ability to be resourceful in adapting and/or creating rich and appropriate instructional resources, including the use of appropriate technologies, to enhance student learning about science.
- that the instructional activities work together to further the stated learning goals in a logical sequence that allows students to actively explore the major idea. The instructional activities also deepen students' conceptual understanding of the major idea, and situate the major idea within a broader context in a way that establishes direct connections to students' prior knowledge, experience, and other disciplines.
- that the teacher uses an integrated approach to assessment that furthers high and appropriate learning goals and enhances instruction.
- that the teacher's rationale for the assessments, including the culminating assessment, is appropriate given the instructional context and the stated learning goals for these students.
- that the teacher is able to describe, analyze, and evaluate students' work, showing knowledge of students and insight into their learning.
- that the teacher is able to engage in reflective thinking that describes his or her practice accurately, analyzes it fully and thoughtfully, and reflects on its implications and significance for future teaching.

Overall, there is *clear, consistent, and convincing* evidence that the teacher is able to plan and implement differentiated sequenced instruction of a major idea in science to facilitate his or her students' understanding of that idea and to connect the idea to technology.

Level 3

The **LEVEL 3** performance provides *clear* evidence that the teacher is able to select and justify the appropriateness of a major idea in science, successfully use specific knowledge about students to plan and implement differentiated sequenced instruction, and provide appropriate assessment to facilitate students' understanding of that idea.

The Level 3 performance provides *clear* evidence:

- that the teacher is able to establish the selected major idea in science and related learning goals as central to science and justify them as appropriate for his or her students and specific teaching context.
- of the teacher's strong command of science content linked with appropriate science pedagogy.
- that the instructional sequence reflects consideration of the unique learning needs of students, shows high expectations for all students, and demonstrates proficiency in recognizing the challenges of teaching this idea and sequence, including awareness of potential student misunderstandings and how to address these misunderstandings through appropriate pedagogical responses.
- of the teacher's ability to differentiate and adapt instruction and instructional materials to meet the unique needs of learners and to provide fair, equitable, and relevant access to in-depth learning.
- of the teacher's ability to adapt and/or create appropriate instructional resources, including the use of appropriate technologies, to enhance student learning about science.
- that the instructional activities work together to further the stated learning goals in a logical sequence that allows students to actively explore the major idea. The instructional activities also deepen students' conceptual understanding of the major idea and situate the major idea within a broader context in a way that establishes direct connections to students' prior knowledge, experience, and other disciplines.
- that the teacher uses an integrated approach to assessment that furthers appropriate learning goals and enhances instruction.
- that the teacher's rationale for the assessments, including the culminating assessment, is somewhat appropriate given the instructional context and the stated learning goals for these students.
- that the teacher is able to describe, analyze, and evaluate students' work, showing knowledge of students and insight into their learning.
- that the teacher is able to engage in reflective thinking that describes his or her practice accurately, analyzes it, and reflects on its implications and significance for future teaching.

The Level 3 performance may show some inconsistency and imbalance in the analysis or in the sources of evidence. One part of the performance may be more indicative of accomplished practice than the other, but viewed as a whole, there still remains *clear* evidence that the teacher is able to plan and implement differentiated sequenced instruction of a major idea in science to facilitate his or her students' understanding of that idea and to connect the idea to technology.

Level 2

The **LEVEL 2** performance provides *limited* evidence that the teacher is able to select and justify the appropriateness of a major idea in science, successfully use specific knowledge about students to plan and implement differentiated sequenced instruction, and provide appropriate assessment to facilitate students' understanding of that idea.

The Level 2 performance provides *limited* evidence:

- that the teacher is able to establish the selected major idea in science and related learning goals as central to science and justify them as appropriate for his or her students. The goals may be vague, of limited significance, or only loosely related to instruction.
- of the teacher's own command of science content and science pedagogy.
- that the instructional sequence reflects consideration of the unique learning needs of students or shows high expectations for all students.
- that the teacher demonstrates proficiency in recognizing the challenges of teaching this idea and sequence, and shows limited awareness of potential student misunderstandings and/or how to address these misunderstandings.
- of the teacher's ability to differentiate and adapt instruction and instructional materials to meet the unique needs of the learners and to provide fair, equitable, and relevant access to learning. Although the teacher may address diversity and differentiate instruction to provide access to learning, that learning may not be as in-depth as desired by the goals and assessment criteria. The diversity of the learners may be addressed, but not integrated into the curriculum.
- of the teacher's ability to be resourceful in adapting and/or creating appropriate instructional resources, including the use of appropriate technologies, to enhance student learning about science. Although they may have students involved in activities, the activities may lack intellectual value or substance. The activities may emphasize procedural skills or factual recall over scientific understanding.
- that the instructional activities work together to further the stated learning goals. The connections to students' prior knowledge and experience and other disciplines may be somewhat vague and/or may not work well together to deepen students' conceptual understanding of the major idea.
- that the teacher uses an integrated approach to assessment that furthers the learning goals and enhances instruction. The teacher's rationale for the assessments and the culminating assessment is somewhat weak or unclear and the assessments may only be loosely tied to the learning goals.
- that the teacher is able to describe, analyze, and evaluate students' work, and the analysis may consist largely of what each student got "right" and "wrong" or focus primarily on affective issues such as engagement of students.
- that the teacher is able to engage in reflective thinking about his or her practice. The reflection may be oversimplified or sketchy and show limited understanding of implications and significance for future teaching.

The Level 2 performance may be characterized by evidence that hints at accomplished practice, but overall, there is *limited* evidence that the teacher is able to plan and implement differentiated sequenced instruction of a major idea in science to facilitate his or her students' understanding of that idea and to connect the idea to technology.

Level 1

The **LEVEL 1** performance provides *little or no* evidence that the teacher is able to select and justify the appropriateness of a major idea in science, successfully use specific knowledge about students to plan and implement differentiated sequenced instruction, and provide appropriate assessment to facilitate students' understanding of that idea.

The Level 1 performance provides *little or no* evidence:

- that the teacher is able to establish the selected major idea and related learning goals as central to science and justify them as appropriate for his or her students. The goals may not be goals at all, but rather activities. When stated, goals are trivial, inappropriate, or unrelated to instruction.
- of the teacher's own command of science content or pedagogy, and there may even be indications that he or she has some science misunderstandings.
- that the instructional sequence reflects consideration of the unique learning needs of students or shows high expectations for all students.
- that the teacher demonstrates proficiency in recognizing the challenges of teaching this idea and sequence and shows little or no awareness of potential student misunderstandings or how to address these misunderstandings.
- of the teacher's ability to differentiate and adapt instruction and instructional materials to meet the unique needs of learners and to provide fair, equitable, and relevant access to learning. The activities may not provide access to all learners, may be biased toward some learners, or may not take into consideration the diversity of the students.
- of the teacher's ability to be resourceful in adapting and/or creating appropriate instructional resources, including the use of appropriate technologies, to enhance student learning about science. The activities may require students to simply recall information, participate in superficial activities, or complete "fill-in-the-blank" types of assignments.
- that the instructional activities work together to further the stated learning goals. The activities may be trivial or cover the science topic in a superficial manner and may not work well together to deepen students' conceptual understanding of the major idea. There may not be any connections to students' prior knowledge, experience, or other disciplines.
- that the teacher uses an integrated approach to assessment that furthers the learning goals or enhances instruction. The goals are unclear or may be missing.

  The teacher shows little or no rationale for the assessments and the culminating assessment.
- that the teacher is able to describe, analyze, and evaluate students' work. Analysis may consist solely of what each student got "right" and "wrong."
- that the teacher is able to engage in reflective thinking that describes and analyzes his or her practice and understands its implications and significance for future teaching. The reflection may be missing or unrelated to the instructional evidence.

Overall, there is *little or no* evidence that the teacher is able to plan and implement differentiated sequenced instruction of a major idea in science to facilitate his or her students' understanding of that idea and to connect the idea to technology.

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