# SCIENCE
# Early Adolescence

## Component 2:

Differentiation in Instruction

## Component 3:

Teaching Practice and Learning Environment

## Component 4:

Effective and Reflective Practitioner

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## Component 2: Differentiation in Instruction

**a. Knowledge of Students (KOS)**

- Did you collect information about the students from a variety of sources? This may include the following:
  - Building profile, district office, district public information, counselors, social workers, other educational professionals, IEPs, parents
  - Surveys of non-confidential issues: pre/post surveys, learning styles, interest, personalities, etc.
  - Internet search on your city for community data
- Did you use the guiding questions to give a clear and complete picture of the class?
- Did you include all the information which was relevant to setting the goals?

**b. Goals/Connections (G/C)**

- Did you identify the **major idea and learning goals** in science that you have chosen as the focus of your response? Did you clearly explain how they are connected to one another and why you consider this major idea in science and these goals to be important and appropriate for your students at this time?
- Did you clearly show the NGSS and **scientific practice or practices** you elected to support student learning of the major idea? Why are they appropriate and relevant for the teaching of this major idea? How will the development of these practices support students' learning of science?
- Did you provide rationale for why they are relevant for this group of students, based on their needs, and how your instruction will assist the students in meeting the goals you have set? (Be sure to include how the concepts and skills are central to science.)
- Did you determine a pretest/diagnostic tool and use data/information from the tool to provide rationale for your goals?
- Did you use data/information to develop goals for EACH lesson in the unit and identify specific connections to student needs?

**c. Instruction (INS)**

- Did you clearly describe 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? (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.)
- Did you identify challenges that are inherent in teaching this major idea to your students? Did you explain how your instruction was designed to meet these challenges? Did you modify your planned instruction in any way to meet these challenges? If so, did you explain any modifications you made and the reasons for them.

- ❖ Did you provide examples of how student strengths and weaknesses and/or interests directed your instruction?
  - Explain how strengths and weaknesses were determined.
  - Explain what the students were asked to do and what they actually did.
  - Cite in your commentary and on student work where you used differentiated instruction to assist student learning.
- ❖ Did you give a specific explanation of how the goals were met? (Address each goal, concept, and skill and explain how each lesson helped meet the goals you set, both overall and individually.)
- ❖ Did you demonstrate how each lesson was built on the previous lesson? (Justify your instructional sequence. Explain how it was based on student needs and your instructional goals.)
- ❖ Did you explain how the instructional sequence/activities moved the students from a broad/vague understanding to a deeper understanding of the concept?
- ❖ Did you show how the lessons established connections to other contexts of science?

**d. Students' Conceptual Understanding (CU)**

- ❖ Did you show how the three featured instructional activities worked together to further students' understanding of the major scientific idea(s)? Was there a strong and meaningful connection between the featured activities?
- ❖ Did you explain how the featured activities are central and critical to the main idea?
- ❖ Did each activity further the students' understanding of the material in relation the unit goals?
- ❖ Did you demonstrate a strong connection between the activities and the main idea of the unit and state or national standards as well as the scientific practices?

**e. Assessment (ASMT)**

Remember: the word "evidence" relates to materials sent in the entry to verify the commentary. The word "tool" refers to equipment, technology, materials, approaches, and strategies used to demonstrate performance.

- ❖ Did you identify which parts of the assessments measured a specific goal?
- ❖ Did you indicate diagnostic, formative, and summative assessments used?
- ❖ Did you explain how the data collected helped modify your instructional method?
- ❖ Did you explain how you individualized assessments to meet students' needs and provide rationale for making modifications or not making modifications?
- ❖ Did you show assessment variety (performance-based, paper pencil, constructed response, compare/contrast, physical product, portfolio entry, formal/informal observations)?
- ❖ Did you identify how the assessment demonstrated student growth and tied to the goals? (Cite specific evidence to support this.)
- ❖ Did you explain how the assessment results showed a need for either further instruction or advanced instruction?

- ❖ Did you clearly explain how the assessments were relevant to students and provided immediate feedback?
- ❖ Did you explain the **role of assessment** within your teaching? (What is the relationship between your approach to assessment and the learning goals you set for your students? Why is this approach appropriate for your students?)
- ❖ Did you explain how you **differentiated your assessments** to meet the unique needs of your students?
- ❖ Did you clearly explain how you provided relevant feedback to the students?

**f. Analysis (ANA)**

- ❖ Did you show how you provided students with a context for the science featured in this sequence? (Be specific if, for example, you established **connections to students' backgrounds, experiences, interests, and/or other disciplines and areas of study**. In other words, **how did you help students make meaning of science and relate it to their own lives?** Refer to specific aspects of each of the three featured activities and/or the student work.)
- ❖ Did you give specific examples of ways you made good use of instructional resources to support your teaching and extend student learning? Did you explain why select these instructional resources based on your students and your teaching context?
- ❖ Did you explain why you chose these students? Did you identify instructional challenges they represent? Did you identify details it is important to know about these students to understand and interpret the attached responses? Did you explain how you differentiated the activities to facilitate equitable access and in-depth understanding for them?
- ❖ Did you identify the significant characteristics of each of the three pieces of work for each student? Did you clearly explain what the work tell you about each student's growth in understanding of the major idea in science and process toward the scientific practice goals? Did you identify what the work tells you about any **challenges or misunderstandings** each student is experiencing? (Cite specific examples for the evidence.)
- ❖ Did you show how technology contributed to the student learning? (Describe either student use of technology to explore the major idea, or how the major ideas were linked to issues in technology and society. Links to technology need to be evident in only one of the three chosen instructional activities.)

**g. Connections (Conn)**

- ❖ Did you make clear and overt connections between the major scientific idea(s), instructional activities, student analysis, feedback, and next steps?

**g. Pedagogy/Content Knowledge (PCK)**

- ❖ Throughout your commentary, is your language (explanations, vocabulary, terminology, etc.) scientifically accurate and course appropriate? In other words, how did you demonstrate a strong command of the science content?
- ❖ How did you demonstrate your ability to utilize appropriate science pedagogy in your instructional sequencing, your decision-making, and your analysis of student performance?

**h. Reflection (R)**

- ❖ In relation to the instructional sequence, did you discuss what worked **and** what did not work in advancing student understanding of the selected major idea? (Cite specific examples.)
- ❖ Did you analyze your teaching practice for the strengths and weaknesses revealed through your chosen instructional sequence?
- ❖ Did you discuss what you could do better or differently and why? Did you cite evidence from student responses to support your statements?
- ❖ Did you discuss what went well and what you want to repeat and why? Did you cite evidence from student responses?
- ❖ Did you clearly explain specific modifications to your future teaching because of this experience?
- ❖ Did you analyze how well your assessment strategy worked during the instructional sequence and describe what modifications might be made to improve assessment?
- ❖ Did you 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 gaining by your students.

## Component 3: Teaching Practice and Learning Environment

**a. Knowledge of Students (KOS)**

- Aside from the Information asked for in the guiding questions, what else do you know about these students as learners (e.g., learning styles, interests, individual personalities, cliques/groups, etc.)?
- Did you provide some individual examples of different learning needs for some of your students?

**b. Goals/Connections (G/C)**

- Did you have specific goals for the videos and did your activities align with the goals?
- Did you explain how students' prior knowledge affected the goals you set?
- Did you articulate clear and logical sequencing for your instructional goals?
- Did you explain the link between prior knowledge and the activity in the video?
- Did you explain why the goals were appropriate for these specific students at this time?
- Did you articulate how your instructional approach and resources specifically support student learning of these goals?
- Did you clearly link the learning goals of the lesson with the students' long-term learning goals?
- Did you clearly justify why this lesson Is being taught as a whole-class lesson, small-group lesson or other instructional format? (The contents of the two videos combined must represent different instructional formats **and** different teaching strategies.)

**c. Instruction (INS)**

- Did you provide evidence that you support students in the development of building ideas, helping one another, and articulating discoveries?
- Did you demonstrate how you facilitate instruction so that it was student driven? Did they take responsibility for their learning?
- Did you demonstrate how you get students back on track if they are not understanding?
- Did you demonstrate how you extend the lesson if the students are understanding?
- Did you demonstrate how you support student use of scientific practices?
- Did you make any modifications in response to student needs? Did you explain how you knew to make these modifications and describe their impact?

**d. Learning Environment (LE)**

- Did you explain the steps you took to establish a safe and equitable environment?
- What evidence shows that students are willing/able to communicate different viewpoints without repercussions?

- ❖ Is the learning environment conducive to scientific reasoning and discourse?
- ❖ Did you connect your instructional format to the needs of your students, the content, and the learning goals? Did you clearly explain the connections?

**e. Engagement (ENG)**

- ❖ Does the video show that the students appreciate, or are learning to appreciate, diverse opinions?
- ❖ Did you cite specific examples of significant student-student interaction?
- ❖ Does the video should show both teacher-student and student-student interaction?
- ❖ Did you cite examples of how student discourse relates to the topic even when you are not with them (such as how one group continues working when you leave to work with another group)?

**f. Assessment (ASMT)**

- ❖ Did you identify specific instances in each video where student learning was monitored and evaluated?
- ❖ Did you identify specific instances in each video where you made instructional adjustments (if any) and tell why you made them?
- ❖ Did you identify specific instances in each video where you provided constructive feedback? (Remember that feedback is not always verbal.)
- ❖ Did you show how your content knowledge allowed you to correct and re-direct misconceptions during the lessons seen on the video?

**g. Analysis (ANA)**

- ❖ Did you cite specific examples from the video that show students meeting the goal(s) and explain how they show this?
- ❖ Did you cite specific examples from the video that show students' needs for the future and explain how they show this?
- ❖ Did you explain how did your planning and actions during the lesson enhanced student attainment of the goal(s)?

**h. Reflection (R)**

- ❖ Did you describe how your past experience impacted your actions before and during the lesson?
- ❖ Did you explain and provide clear evidence to support you're actions before, during, and after the lesson?
- ❖ Did you discuss what went well and what you want to repeat and why; citing evidence from the video?
- ❖ Did you discuss specific next steps and why you chose them?

- Did you discuss what you could do better or differently and why; citing evidence from the video?
- Did you answer to what extent you achieved your goals; citing evidence from the video?
- Did you tell how you would modify your teaching as a result of this activity and why? Is there anything you would seek out to improve your practice (collaboration with a colleague, observation of a colleague, training on a strategy, etc.)?

# Component 4: Effective and Reflective Practitioner

***Do the forms and collect the evidence before beginning work on the written commentary.***

**a. Knowledge of Students (KOS)**

- Have you collected statistical, anecdotal, and empirical evidence?
- Did you talk to previous teachers, school counselors, special education staff, ESOL staff, and other professionals?
- Did you survey parents to find out about technology available at home (e.g., internet access, laptops, cell phones), study habits, social concerns, etc.?
- Did you survey students to find out about the same things as you would with parent surveys as well as learning styles, interests, participation in activities, etc.?
- Did you get all you can from permanent records and administrative sources; e.g., attendance records, previous grades, standardized test scores, pertinent medical records?
- Did you include information that you collected at the beginning of the year as well as later in the year? (The assessor needs to know that you could adjust your teaching based on the knowledge you have about the class at any time during the year including the first week.)

**b. Use of KOS (USE)**

- Did you use the information collected to describe the entire class?
- Did you cite specific details from the attached evidence in your description in the answer to question 2 on the Group Profile and Information Sheet?
- Did you analyze and synthesize the information to discern patterns from the information you attached?
- Did you note those students who are outliers from the general pattern of the class for each trait you used in the whole class description?
- Did you analyze all the information to determine what was useful in describing the class?
- In selecting the pertinent information to use in the description, did you think outside the box? Remember: It is hard for students to do word problems if they are unable read; spatial relations covered on standardized tests may give information that is important concerning students' artistic abilities; patterns which are tested in science and math often show up in music; analysis in social studies relies upon the ability to read both print and non-print text and analyze data; students have difficulty analyzing literature if they do not understand society, culture, and history.

- ❖ Did you not only rank the information from most to least important but also tell how you made that determination?

**c. Goals and Connections (G/C)**

- ❖ Did you tie the assessments to the goals and to the needs of this class of students at this point in time?
- ❖ Did you use these sentence stems for the last question on the Instructional Context Form: "The formative assessment ties to the goals because…"; "The formative assessment ties to the class' strengths/needs because…"; "The summative assessment ties to the goals because…"; "The summative assessment ties to the class' strengths/needs because…"?
- ❖ Do the strengths or needs you used in the sentence stems clearly show up in your description of the class in question 2 on the Group Profile and Information Sheet?
- ❖ Does your summative assessment cover all your goals, either directly or indirectly?

**d. Assessments (ASMT)**

- ❖ Did you tell in the commentary how you used the class' description in planning for the **types** of assessment you would use; e.g., visual, hands-on, written auditory, etc.?
- ❖ Will the assessments give you measurable data that can be reported in some way, usually in a spreadsheet?
- ❖ If you used a rubric, is it tied directly to the goals and will it measure each goal separately?
- ❖ Did you tell how you guaranteed that the assessment **results** are fair, consistent, and accurate?

**e. Analysis and Use of Data (AUD)**

- ❖ Did you cite specific details from the results of the assessments when you presented your analysis in the commentary?
- ❖ Did you describe patterns of learning regarding the goals and note outliers when you discussed the results of the assessments?
- ❖ Did you tell how you altered instruction because of the formative assessment results?
- ❖ Did you tell how the summative assessment results impacted/will impact instruction of future units?
- ❖ Did you tie the alterations/future plans to the results, goals, and class description?

**f. Feedback (FB)**

- Can you describe clearly how the results of the assessments provide feedback to the students in a form they can use to improve their learning? For example, does the rubric have an individual criterion focusing on each part of the goal; does the rubric have clear descriptors so the student knows precisely what must be done to move to the next level; how does a student know why one answer Is better than another on a multiple choice test?

**g. Student Self-Assessment (SSA)**

- Is the self-assessment example developmentally appropriate; i.e., kindergarteners probably just state how they think they are doing while seniors also give rationale for the decision and pinpoint perceived weaknesses/strengths?
- Did you clearly state how this helped drive your instruction and planning for the unit from that point forward?

**h. Professional Learning Need (PLN)**

- Does your professional need highlight something that was **learned** by you or your colleagues or both you and your colleagues?
- Did you answer these questions with question 1 on the Professional Learning Need Form: "What was the need"; "How did you know it was a need"; and "What did you do to meet the need"?
- Did your answer to question 2 on the Professional Learning Need Form tell how the evidence you attached ties to the action you took to meet the need, thus proving that you took the action you said you did?
- Does the commentary clearly answer the question "What was the impact of my action on student learning?"
- Did you cite examples from the attached evidence when answering the previous question?

**i. Student Need (SN)**

- Does the student need highlight something that was **needed** but out of the ordinary?
- Was the need school-wide or class specific or even student specific? Did you state this in the commentary?
- Did you answer these questions with question 1 on the Student Need Form: "What was the need"; "How did you know it was a need"; and "What did you do to meet the need"?
- Did the action you took require collaboration, leadership, and/or advocacy on your part? (While the directions and the guiding questions often use just the word "collaboration," any of these is appropriate for this section.)
- Do you know what true collaboration entails?

- ❖ Did you're answer to question 2 on the Student Need Form tell how the evidence you attached ties to the action you took to meet the need, thus proving that you took the action you said you did?
- ❖ Does the commentary clearly answer the question "What was the impact of my action on student learning?"
- ❖ Did you cite examples from the attached evidence when answering the previous question?

**j. Reflection (R)**

- ❖ Did you tell how effective your efforts at gathering information for knowledge of students was for this class?
- ❖ Did you discuss what you could have done better or differently or more efficiently? Did you discuss what other types of information you might have gathered?
- ❖ Did you discuss the effectiveness of your assessments in measuring your students' performance and what you learned about effective assessment during the unit?
- ❖ Did you discuss what you could have done better or differently or more efficiently in terms of the assessments (including self-assessments)?
- ❖ Did you discuss the impact on both your professional learning and work to meet student needs? (Even though the commentary has only one question in the reflection section about this, you want to discuss both aspects.)
- ❖ Did you discuss specific future plans relating to the above parts?
- ❖ Did you answer the question of why for each of the above questions in this section?