Inquiring into Science Instruction Observation Protocol (ISIOP)

TEACHER PRE-OBSERVATION QUESTIONNAIRE

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Teacher Pre-Observation Questionnaire

Please complete prior to scheduled observation so the observer will be able to put your instruction into a larger context.

Your Name: _____ Date of Observation: _____

1. Briefly describe the major activities or parts of the lesson to be observed.

2. What are the main learning goals for the lesson to be observed? (i.e., What should students know, understand, be able to do, following the lesson?)

3. Please provide the context of the lesson to be observed (e.g., What was covered in prior lessons that particularly relate to the observed lesson? Where is this lesson placed in the current instructional unit?)

4. Is this lesson part of a scientific investigation cycle—where the cycle could include several lessons?
__ Yes (both bullets below are true for this investigation)
- a stated, explicit research question about the natural world is explored
- a systematic method is used to collect data to address the investigation question

__No (**please skip to question 8**)

5. To which phase of the scientific investigation cycle does the observed lesson belong? (check all that apply)
- ☐ Phase I: generate questions and/or explore phenomena
- ☐ Phase II: design and plan an investigation
- ☐ Phase III: conduct an investigation and collect/record data
- ☐ Phase IV: analyze, interpret, and/or model data
- ☐ Phase V: draw conclusions and/or communicate findings

6. Are all the students in the class investigating the same research question in this investigation?
__Yes __No

If **yes**, how was this question generated? (select all that apply)
☐ from the curriculum ☐ students generated

What is the research question?_____

_____

_____

If **no**, is: __ each *group* of students investigating a different question? **OR**
__ each *individual* student investigating a different question?

Who determined the questions to be investigated? (select all that apply)
☐ I assigned them to students ☐ Students chose

7. Over how many class periods (including the lesson to be observed) has this investigation been taking place?
_____

How many total class periods remain in this investigation (after the lesson to be observed)?
_____ (your best guess)

How long (in minutes) are your science class periods? _____

8. Please record the number of students assigned to the class to be observed:
Breakdown: Males: _____ Special ed: _____ ELL:_____
Females: _____ Special ed: _____ ELL:_____

Just a couple of quick questions about you:

9. Which would you say best describes your typical approach to teaching?
☐ I focus on science content in my lessons and use labs to illustrate science principles/phenomena to students
☐ I use science investigations to introduce and teach content and process skills simultaneously
☐ Other (please describe):

10. During the past three years, have you participated in professional development that heavily focused on scientific inquiry classroom practices?
___ Yes (please describe the experience briefly):

___ No

If the class to be observed is a **middle school** class (grades 6–8), please fill out **page 3**.
If it is a **high school** class (grades 9–12), please fill out **page 4.**

Science Content—Middle School

Below is a list of **middle school** (grades 6–8) science content from the *National Science Education Standards*. Please consider your lesson and check "yes" for the content ***you intend to explicitly address*** in the lesson to be observed (check all that apply). Then **rate the extent** to which each science domain (e.g., life science, science and technology, etc.) will be the focus of the lesson compared with other things to be covered, such as assignment directions or other administrative tasks.

Life Science	YES
Structure and function in living systems: e.g., the cells, organs and human systems	**11.**
Reproduction and heredity: e.g., types of reproduction, genes, and chromosomes role	**12.**
Regulation and behavior: e.g., biological relationship of internal processes to changing environmental stimuli	**13.**
Populations and ecosystems: e.g., definitions of and basic functioning of ecosystems	**14.**
Diversity and adaptations of organisms: e.g., role of biological evolution	**15.**
16. Overall Rating: Extent that the lesson will address these, **or other**, Life Science concepts: *Not at all = 0 a little = 1 some = 2 a lot = 3*	

Earth Science	YES
Structure and processes of the earth system: e.g., plate motion, rock and water cycles, atmosphere, weather patterns	**17.**
Earth's history: e.g., same processes produced different conditions on earth over time, fossil record	**18.**
Earth in the solar system: e.g., gravity's role, seasonality, sun's influence on earth systems	**19.**
20. Overall Rating: Extent that the lesson will address these, **or other**, Earth Science concepts: *Not at all = 0 a little = 1 some = 2 a lot = 3*	

Physical Science	YES
Properties and changes of properties in matter, properties of substances	**21.**
Motions and forces: e.g., motion can be described by position, direction, and speed	**22.**
Transfer of energy: e.g., heat, light, electrical, sound, chemical, atomic, mechanical	**23.**
24. Overall Rating: Extent that the lesson will address these, **or other**, Physical Science concepts: *Not at all = 0 a little = 1 some = 2 a lot = 3*	

Science and Technology	YES
Technological design cycle: e.g., identify problem, design solution, implement design, evaluate, communicate the process	**25.**
Understanding about science & technology: e.g., not the same as scientific inquiry, technological solutions have trade-offs	**26.**
27. Overall Rating: Extent that the lesson will address these, **or other**, Science and Technology concepts: *Not at all = 0 a little = 1 some = 2 a lot = 3*	

Describe any "other" concepts you included in your Overall Ratings because they were not part of the listed content:

_____

_____

Science Content—High School

Below is a list of **high school** (grades 9–12) science content from the *National Science Education Standards*. Please consider your lesson and check "yes" for the content ***you intend to explicitly address*** in the lesson to be observed (check all that apply). Then **rate the extent** to which each science domain (e.g., life science, science and technology, etc.) will be the focus of the lesson compared with other things to be covered, such as assignment directions or other administrative tasks.

Life Science	YES
The cell: e.g., structure, functions (especially DNA, photosynthesis), cellular growth and differentiation	**11.**
Molecular basis of heredity: e.g., role of chromosomes in reproduction, mutations	**12.**
Biological evolution: e.g., factors influencing it, role of natural selection, classification schemes	**13.**
The interdependence of organisms in ecosystems and energy flow in ecosystems	**14.**
Matter, energy, and organization in living systems	**15.**
Biological governance of organism behavior: e.g., nervous system, role of internal and external stimuli	**16.**
17. Overall Rating: Extent that the lesson addressed these, or other, Life Science concepts: *Not at all = 0 a little = 1 some = 2 a lot = 3*	

Earth Science	YES
Energy in the earth system: e.g., convection circulation, global climate	**18.**
Geochemical cycles: e.g., the water or carbon cycle	**19.**
The origin and evolution of the earth system: e.g., techniques to estimate geologic time	**20.**
The origin and evolution of the universe: e.g., big bang theory, formation of elements	**21.**
22. Overall Rating: Extent that the lesson addressed these, or other, Earth Science concepts: *Not at all = 0 a little = 1 some = 2 a lot = 3*	

Physical Science	YES
Structure of atoms, nuclear forces, and radioactive isotopes	**23.**
Structure and properties of matter: e.g., atomic bonds, elements, compounds, molecules	**24.**
The nature of chemical reactions: e.g., reaction rates, types of reactions, catalysts	**25.**
Motions and forces: e.g., relationships between force and acceleration, gravitational force, electrical force	**26.**
Conservation of energy and the increase in disorder: e.g., kinetic and potential energy transfer	**27.**
Interactions of energy and matter: e.g., waves (seismic, light, electromagnetic) effect on material properties	**28.**
29. Overall Rating: Extent that the lesson addressed these, or other, Physical Science concepts: *Not at all = 0 a little = 1 some = 2 a lot = 3*	

Science and Technology	YES
Technological design cycle: e.g., identify problem, design solution, implement design, evaluate, communicate the process	**30.**
Understanding about science and technology: e.g., differences between purposes and practices of scientific inquiry and developing technological knowledge	**31.**
32. Overall Rating: Extent that the lesson addressed these, or other, Science and Technology concepts: *Not at all = 0 a little = 1 some = 2 a lot = 3*	

Describe any "other" concepts you included in your Overall Ratings because they were not part of the listed content: