

Classroom Observation Protocol
PRE OBSERVATION DATA

Teacher _____ Date _____

School _____ Grade/Level _____

Observer _____ Program _____

(Fill this out prior to observing classes.)

Class period or time of class:

Topic or topics:

Placement of class or lesson within the unit of study:

Placement of class or lesson within the NCISE teaching model (1-Invite; 2-Explore, Discover, Create; 3-Explanations and Solutions; 4-Take Action):

Purpose (objectives):

Intended outcomes:

Materials Used (teacher-made, manufactured, district or department-developed; characterization of materials):

How students will be assessed (for this lesson):

CLASSROOM ACTIVITIES

Teacher:

Date:

(Fill this out as you are observing classes.)

Introduction to Lesson: provides introduction/ motivation/ "invitation"; explains activity and how it relates to previous lessons; assesses students' prior knowledge

Student Grouping _____

Duration _____

First Activity/Task: Content; nature of activity, what students doing, what teacher doing; interactions.

Student Grouping _____

Duration _____

Second Activity/Task: Content; nature of activity, what students doing, what teacher doing; interactions.

Student Grouping _____

Duration _____

Third Activity/Task: Content; nature of activity, what students doing, what teacher doing; interactions.

Student Grouping _____

Duration _____

State whether activities are sequential or are different activities/tasks done at the

same time:

OTHER OBSERVATIONAL DATA

Teacher:

Date:

(Fill this out as you are observing classes.)

1 - Description of the classroom:

2 - Teaching aids/materials (per activity/task if appropriate):

3 - Assessment strategies used (per activity/task if appropriate):

4 - Time not devoted to teaching and nature of non-academic or procedural activity (e.g., management, announcements, discipline); description of non-instructional event :

STUDENT DATA

Teacher:

Date:

(Fill this out during/after the classroom observation.)

1 - Number and gender of students; number of minorities/majority:

2 - Describe the content of a student's journal or notebook for the class.

Use pages 3-4 of *Instructions for Filling Out the Classroom Observation Protocol* for operational definitions of student behaviors.

Student Behaviors:

most students off task	-----	most students on task
students interact with each other around non-academic or procedural issues	-----	students interact with each other around content issues
students are hesitant to enter into the discussion/activity	-----	students actively and enthusiastically participate in the discussion/activity

TYPOLOGY: INQUIRY-BASED TEACHING AND LEARNING

Teacher:

Date:

(Fill out after the classroom observation.)

Use pages 4-8 of *Instructions for Filling Out the Classroom Observation Protocol* for operational definitions for typology.

Students:

look for correct answer -----	accept or revise their "hypotheses" based on evidence
do not reflect on others' ideas -----	reflect on others' comments/ideas
seek information to complete the assigned work -----	seek clarification of conceptual understanding

Teacher Role:

source of knowledge -----	facilitator
questions/comments seek memory/ facts -----	questions/comments seek comprehension/ opinion

Classroom Activities:

algorithms ----- heuristics

Emphasis:

abstract ----- connected to real-
world

Materials:

prescribed program ----- compiled by teacher

TYPOLOGY: INQUIRY-BASED TEACHING AND LEARNING -- Page 2

Teacher:

Date:

For Discussions

Amount of Time Observed:

Percent of students contributing to the discussion:

closed questions ----- open-ended questions

teacher seeks facts ----- teacher seeks student understanding

students do not use evidence to support claims ----- students use evidence to support claims

teacher talks ----- students talk

students talk only to teacher ----- students talk to one another

teacher provides reasoning ----- teacher helps students reason through thinking process

For Laboratory/Hands-On/Fieldwork

Amount of Time Observed:

Part of a project (Yes, no):

Grouping (pairs, threes, fours):

Cooperative/collaborative (yes, no):

students follow a

students answer a

procedure to answer
a question or conduct
an investigation -----

question or solve a
problem using open-
ended instructions

students take
measurements or
determine facts to
answer questions
(one answer) -----

students collect
and manipulate data
in order to answer
questions (several
answers possible)

REFLECTIONS AND INTERPRETATIONS

Teacher:

Date:

(Fill this out as soon as possible after the classroom visit.)

- 1 - Overall, what happened during the classroom observation (e.g., which stage of NCISE model was the teacher using and how effective was its implementation)?

- 2 - What didn't happen (e.g., students didn't grasp the idea of the lesson)?

- 3 - Alternative ways instructor might have handled the lesson/question/situation:

- 4 - Characterize students and their attitudes toward the subject matter and the teacher:

- 5 - Notable non-verbal behavior:

- 6 - Surprises/concerns, especially related to the program goals (e.g., the teacher didn't appear to be using the science immersion method):

**INSTRUCTIONS FOR FILLING OUT THE CLASSROOM
OBSERVATION PROTOCOL**

Try to schedule your visit to coincide with the main purpose for your visit. For example, our experience has shown that to ascertain the extent to which inquiry is part of the learning process, observing during a discussion of a previously-conducted experiment or hands-on exercise provides the best data.

During your visit collect any worksheets, lab sheets, other hand-outs or work associated with the lesson.

PRE OBSERVATION DATA

If possible, try to fill this out prior to observing classes.

Class period or time of class:

Note the time and/or class period(s) you will be observing classes. Ask the teacher how often s/he teaches science and to what extent science is a regular part of the day or week.

Topic or topics:

Ask the teacher to tell you the names of the topic or topics that will be addressed in the class(es) you will be observing.

Placement of class or lesson within the unit of study:

Note whether the topics taught are somewhat in the beginning, middle, or end of the unit of study.

Placement of class or lesson with the NCISE teaching model:

Note which stage the class or lesson represents. Note also the extent to which the

teacher reports s/he is cognizant of and/or follows the model.

Purpose (objectives):

Ask the teacher to list the objectives for all the classes you will be observing. These may or may not be the same as “Intended Outcomes” below. Often teachers will state some formal objectives for “Purpose” then tell you what he or she expects students to get out of the lesson in “Intended Outcomes.”

Intended outcomes: (See above)

Materials Used (teacher-made, manufactured, district or department-developed?):

Ask the teacher to describe what materials he or she will be using to teach the lesson. These materials may include anything from textbooks to overheads to worksheets to a computer program. Be sure to try to get a copy of any materials used such as student worksheets or reports.

The materials can be characterized in a variety of ways. Record here the extent to which the materials may support the program goals (e.g., Do the materials promote development of thinking skills?)(Page 2, Notes on filling out the classroom observation form)

How students will be assessed (for this lesson):

Ask the teacher what methods are planned, and try to get a copy of any assessment tools/instruments.

CLASSROOM ACTIVITIES

As you are observing the class, take notes on what you observe in the appropriate boxes. If you like to write extensive notes and/or you have arranged for one observer to take notes and the other person to fill out the protocol, write on the back of the Classroom Activities sheet.

Introduction to Lesson:

Describe how the teacher starts the lesson (e.g., gives a content overview, relates the content to previous work or to science). While it is assumed the student grouping will be whole class, there may be an occasion where it is not. Fill in the amount of time (Duration) the teacher introduces the lesson.

Activity/Task:

Describe the content and the nature of the lesson or classroom activities including the method of teaching, how/if students are grouped/interacting. It is particularly important to note if the lesson/activities relate to what the teacher experienced over the summer (process as well as content). Describe what the

students are doing e.g., listening and taking notes, writing answers to questions. Describe how the teacher is interacting with the students, and how the students are interacting with one another.

If several activities are occurring at the same time indicate so at the bottom of the page. If more room is needed for notes, write on the back of the sheet.

OTHER OBSERVATIONAL DATA

Fill this out during the classroom observation.

1 - Description of the classroom:

Describe how the seating is arranged, number and kind of windows and lights, describe/list any special equipment or materials. Note especially if there are separate areas for different activities (e.g., a “library” with a place for students to sit). Describe what is on the walls, especially bulletin board displays. Give an overall general description of the size of the room, e.g., ‘large’ is sufficient.

2 - Teaching aids/materials (per activity/task if appropriate):

All materials including chalkboard, overhead projector, teacher-made handouts, textbook, should be listed.

(Page 3, Notes on filling out the classroom observation form)

3 - Assessment strategies used (per activity/task if appropriate): If during the observation the teacher uses some form of assessment strategies, record them. For example, a teacher may circulate among students doing work in small groups and make notations on a checksheet.

4 - Time not devoted to teaching and nature of non-academic or procedural activity (e.g., management, announcements, discipline); description of non-instructional event:

Give approximate percent of time or actual time not directly devoted to instruction (teacher instruction, self-instruction, student-to-student instruction). Non-instructional time may be a variety of things including stopping to discipline students, talking about last night’s ballgame, or listening to announcements over the intercom.

STUDENT DATA

Complete items 1 and 2 when appropriate, e.g., you may get the data on number of minorities from the teacher after the observation, or, you may make that

assessment yourself during your observation.

1 - Number and gender of students; number of minorities/majority:

Record the total number of students present during most of the class (it is expected that occasionally a student will enter or leave during the class period). Record the number of females and males. Under certain circumstances figuring minorities is not always easy, partly because of students with varied racial and ethnic backgrounds. An estimation is acceptable. You may want to get this information from the teacher prior to the classroom observation.

2 - Describe the content of a student's journal or notebook for the class.

Find out from the teacher if the students are expected to keep a journal or notebook. If the teachers gives you permission, ask one of the students if you can look at his or her notebook. Record the kinds of entries, the number of pages, and especially note if there is any evidence of problem solving, data collection and analysis, self-evaluation or other type of critical thinking.

OPERATIONAL DEFINITIONS FOR STUDENT BEHAVIORS

The continua include undesirable student behaviors on the left and desirable student behaviors on the right. For each indicate the degree or percentage of desirable and undesirable behavior.

- most students off task = 50% or more of the students are not on task for at least 50% of the class period.

most students on task = 90 - 100% of students are on task for the entire class period (100% of the time).

(Page 4, Notes on filling out the classroom observation form)

- students interact with each other around procedural issues = they are asking one another such things as, "What did he say?" or, "Do we answer questions 5 and 6 or just 6?"

students interact with each other around content issues = students are actively interacting around the lesson or topic. In some cases students may seem off topic because they are talking about a related issue. Even if the issue is not directly related it should be considered as interacting around content issues.

- students are hesitant to enter into the discussion/ activity = students do not

actively engage in discussion or engage in an activity and are likely only to answer direct questions posed by the teacher. You may see body language that corroborates their reluctance.

students actively and enthusiastically participate in the discussion/ activity = during a discussion, students are probably calling out answers and/or engaging one another in some point of discussion such as arguing with one another around an issue. During an activity, students are actively engaged.

OPERATIONAL DEFINITIONS FOR TYPOLOGY

The typology is meant to capture, in retrospect, the observer's overall interpretation of where the teacher's practice may fall on each of the continua. The items in the left column are generally more 'traditional' and the items in the right column generally reflect more inquiry. No value judgment of the teacher is intended. Value judgements should be left to REFLECTIONS AND INTERPRETATIONS. Each item is intended to refer to something that might be transferred from the teacher's participation in the program to their classroom practice. Place an 'x' on the spot you feel best indicates what you observe for that class/lesson. You might think of the line in terms of percent, e.g., if the teacher acts like a source of knowledge for 40% of the time and is a facilitator 60% of the time put the 'x' to the right of the half-way point toward 'facilitator'.

Write any explanatory notes in the margin or indicate "N/A" if the continuum is not applicable to the classroom you observed. For example, the continuum in the Discussion section, "teacher helps students reason through the thinking process --- teacher provides reasoning" is not applicable in cases where there is no attempt to bring students' understanding or thinking about a subject/idea to a higher level. In this case record both 'N/A' and a brief comment about the nature of the discussion. (Page 5, Notes on filling out the classroom observation form)

Students:

- look for correct answer = students do an activity or engage in discussions and focus on "getting the correct answer" (as opposed to "seek truth").

accept or revise their "hypotheses" based on evidence = students have developed some ideas prior to the current lesson, perhaps through a classroom activity. This was their prior idea; it may even have been an hypothesis they developed. Now, they use new evidence, either direct or through a discussion, and revise their idea based on that evidence.

- do not reflect on others' ideas = students do not build on what other students say nor refer to what other students might be saying; neither do they act on other students' ideas and/or suggestions.

reflect on others' comments/ideas = students relate to what others' say through discussion or taking some action. Students build on what other students say but may not directly acknowledge them by name.

- seek information to complete the assigned work = students may ask questions about procedure such as asking the teacher or other students if they should finish the exercise for homework, or, may ask direct questions about how to answer a particular question in order to complete an assigned task.

seek clarification of conceptual understanding = students ask the teacher or other students for explanations and clarifications of the questions asked in order to better understand the content. During a discussion a student may relate an experience s/he has had related to the topic in order to fit this information into his or her conceptual understanding of the topic.

Teacher Role:

- source of knowledge = teacher is the "sage on the stage" and neither seeks nor acknowledges student input. The teacher may ask students questions but only in order for them to relate facts or content-specific information.

facilitator = teacher seeks input from students and encourages students to explain, predict, describe, etc. in order to increase their and other students' understanding. The teacher will often seek a student's misunderstandings and ask other students to offer a better/different explanation, prediction, etc. versus "correcting" a student. In laboratory or hands-on activities, the teacher will offer suggestions and/or work with the students to find solutions or work out problems.

(Page 6, Notes on filling out the classroom observation form)

- questions/comments ask for memory/fact = teacher looks for the correct answer around a fact such as asking for a definition. The teacher generally asks short answer questions that require memory.

questions ask for comprehension/opinion = teacher asks probing questions and/or encourages discussion which requires student understanding. (Understanding = the student can apply what they know to a new situation by explaining, giving examples, predicting, and interpreting.) The teacher

generally asks questions that require processing, however, the processing may not be in the form of a direct question. Look for implicit and well as explicit questioning.

Classroom Activities:

- algorithms = procedural steps or formula to solve problems and/or answer questions. This is most often seen in mathematics classes where students are taught to use a specific procedure to solve mathematics problems. In science class it is often seen in 'cookbook' laboratory manuals.

heuristics = use of overall strategies or plan to solve problems and/or answer questions. This can be seen wherever students are asked to use critical thinking skills. (Critical thinking skills include problem solving, evaluation, decision-making, deductive and inductive reasoning.)

- abstract = the content may be of academic interest but is not directly related to a student's everyday experience. Students usually perceive the content as something they must learn in school, and may have to know to pass a test, but isn't anything they would have to deal with in their 'real-life.'
(Note: it is students' perceptions that count, therefore, to make this entry, you have to talk with students or base your judgment on something said in class.)

connected to real-world = the content is perceived as relevant to something in the students' lives or to the understanding of something in the real-world. It may also be related to something that exists in the real-world, such as something the teacher experienced at the Lab, but is not directly part of the students' experiences.

- prescribed program = students/teacher use(s) the assigned textbook or some part of a commercially prepared textbook package such as worksheets. If the prescribed program promotes compiling materials, place and 'x' in the position that best describes the proportion of prescribed versus compiled. Note that the Pre Observation Data sheet has a place for characterizing the materials.

(Page 7, Notes on filling out the classroom observation form)

compiled = students/teacher use several different kinds of materials such as another textbook, books, magazines, audio-visual, computer materials compiled by the teacher.

Discussions: note whether or not this is more like 'recitation' than 'discussion.'

- closed questions = no matter who talks with whom, the discussing group seeks to determine the right answer, which is usually a fact. (Note: the "questions" may be implicit. This continuum is meant to capture the overall tenor of the discussion as being closed or open.) A typical closed question is, "What is 4 x 4?", or "What are the temperature and moisture conditions that define a desert?"

open-ended questions = no matter who talks with whom, members of the discussing group are seeking possible explanations/causes/descriptions/understandings. A typical open-ended question is, "What do you think might happen if...?", or "If you got a '4' for the answer and I got a '6', why might our answers be different?"

- teacher seek's facts = the teacher encourages students to determine 'the' answer to a question or 'the' solution to a problem.

teacher seeks student understanding = the teacher seeks students' understandings and misunderstandings, often as a way to determine class, and individual progress (perhaps as a form of assessment).

- students do not use evidence to support claims = students give factual answers or read facts off a workbook or lab page without further explanation.

students use evidence to support claims = students provide data or collaborating evidence to support what they are saying. For example they might say, "I saw that the longer the water was heated the higher the temperature got which explains that ..."

- teacher talks = amount of time teacher talks during the discussion.

students talk = amount of time students talk during the discussion. (Note also the number of students who are doing the talking.)

- students talk only to teacher = the 'discussion' may be characterized as more of a recitation when the interaction is between teacher and students, however, the continuum suggests that there is probably some mixture among students talking with the teacher and talking to another.

students address one another = students turn toward and talk with one another without the teacher as a mediator. (Note: this is to be taken literally. Students may refer to what one another has said without talking directly to that student. This kind of interaction is captured in another continuum.)

- teacher provides reasoning = teacher may help students understand a topic/principle/idea through providing them with the reasoning behind what they are telling students.

teacher helps students reason through thinking process = teacher asks for students' reasoning, encouraging them to support and contradict one another through discussion. At both ends of this continuum, student understanding may reach a higher level, but this end of the continuum is intended to capture the constructivist approach whereby students are helped in their understandings starting from their own perspectives/observations.

For laboratory/Hands-on/Fieldwork

- students follow a procedure to answer a question or conduct an investigation = this refers to what educators often call "cookbook" investigations.

students answer a question or solve a problem using open-ended instructions = this refers to anything that is more inquiry-oriented.

- students take measurements or determine facts to answer questions (one answer = the results of the investigation are a series of one right answers even though the students may be taking measurements and even collecting other data.

students collect and manipulate data in order to answer questions (several possible answers) = there is no one answer but several answers that are appropriate because students are collecting and manipulating data related to a phenomena.

