

# **1. Learner engages in scientifically oriented questions**

What was your question and where did you get it?

# **2. Learner Gives priority to Evidence**

What was your evidence and how did you get it?

### **3. Learner formulates explanations from evidence**

What was your explanation and how did you get to it?

### **4. Learner connects explanations to scientific knowledge**

*Learner evaluates explanations in light of alternative explanations, particularly reflecting on scientific understanding.*

How reliable do you think your results are? How do your explanations differ from other groups results, from other research? Is there an alternative explanation to consider?

## 5. Learner communicates and justifies explanations

How did you communicate your results? How did you decide how and what to communicate?

| The 5 essential features of inquiry and their variations. |  |   |   |   |
|---|--|---|---|---|
| 1. Engages in scientifically oriented questions.          | Learner poses a question   | Learner selects among questions, poses new questions                | Learner sharpens or clarifies question provided by the teacher, material, or other source | Learner engages in question provided by teacher, materials, or other source |
| 2. Gives priority to evidence in responding to questions. | Learner determines what constitutes evidence and collects it                       | Learner directed to collect certain data                            | Learner given data and asked to analyze   | Learner given data and told how to analyze                                  |
| 3. formulates explanations from evidence.                 | Learner formulates explanation after summarizing evidence                          | Learner guided in process of formulating explanations from evidence | Learner given possible ways to use evidence to formulate explanation                      | Learner provided with evidence  |
| 4. Connects explanations to scientific knowledge.         | Learner independently examines other resources and forms the links to explanations | Learner directed toward areas and sources of scientific knowledge   |   | Learner given possible connections  |
| 5. Communicates and justifies explanations.               | Learner forms reasonable and logical argument to communicate explanations          | Learner coached in development of communication                     | Learner provided broad guidelines to use/sharpen communication                            | Learner given steps and procedures for communication                        |

## Myths about inquiry

- Inquiry-based instruction is the application of the scientific method.
- Inquiry-based instruction required that students generate and pursue their own questions.
- Inquiry-based instruction can take place without attention to science concepts.
- All science should be taught through inquiry-based instruction.
- Inquiry-based instruction can be easily implemented through the use of hands-on activities and educational kits.
- Student interest generated by hands-on activities ensures that inquiry teaching and learning are occurring.
- Inquiry-based instruction is too difficult to implement in the classroom.

*From: Doing Science: The Process of Scientific Inquiry, Grades 7-8, 2005*