

Criteria for Workshop Review

15 September 2014

These criteria are based on work done with the DOE (NCISE templates), documents written by expert professional developers (e.g., *Leading Every Day*), and teaching recommendations from *Inquiry and the National Science Education Standards* as well as *A Framework for K-12 Science Education*. These criteria do not include the obvious ones such as making sure everything works and is accessible before the workshop, and to conduct the workshop as a facilitator. The criteria address the ultimate purpose of the workshops to create an effective learning environment for participants; to engage participants in science process that increases scientific literacy (with particular regard to data use) and provide mechanisms to ensure what they are learning is transferred to the classroom.

General Best Practice for all Professional Development

1. Articulate clear goals and objectives; then return to the goals and objectives as the end of the session (and/or each day) to determine the extent to which they have been achieved—if you don't know where you are going, how do you know when you get there? Initially provide objectives (a) and revisit at the end (b).
2. Have an agenda but be flexible—stick to the agenda especially breaks; **leave time for discussion/reporting out.**
3. Create a risk-free environment in which questions can be freely asked and participants are treated with respect (e.g., list/listen to all ideas—but be pragmatic about it such as respecting time for each participant to respond—don't let one person dominate).
4. Collaboratively develop group norms (cell phones, accessing email, respecting others' time, etc.); have a clear *stated* purpose overall and for each agenda item.
5. Determine/assess prior knowledge so as to build on what participants already know; make outside presenters aware of the level of learners. Initially (a) and during the workshop (b).
6. The workshop should be conducted so participants are acting as learners then provided opportunities to reflect as teachers—appropriate for adult learners.
7. Introductions to activities/agenda items provide context, **interest**, necessary and sufficient content; connections to what they already know (not only in the beginning of the session but for activities/agenda items).
8. Have participants work in small groups and have reporting-out strategies as a whole group; reporting out should NOT be perfunctory—something should be done with the information reported out such as for QN in particular:
 - Have teachers report their implementation plan for a lesson or whatever; homework could be to sketch out a lesson from their plan or someone else's then describe the next day.
 - List the ideas on flip chart paper (or other) group ideas (such as around “big ideas”) and discuss and/or discuss some of the more interesting/potentially effective ideas.

- Have a quick session each day on implementation ideas then discuss at the end of the workshop.

For content (a) and for implementation (b)

9. Grouping should have a specific purpose (e.g., experienced participants helping those newer to the content/skills; new teachers grouped together for extra help from the facilitator)
10. Have participants interact and reflect as collaborators—community of learners.
11. Allow teachers to actively construct knowledge—hands-on, minds-on opportunities and follow-up discussions/reporting out/sharing ideas (e.g., verbal, “poster” session, lists on flip charts—something more electronic if available).
12. Provide opportunities for teachers to plan for use of new knowledge and skills in their own classrooms *with their own curriculum*.
13. Follow-on support structures are made available and discussed/presented.

Specifics for Science Education/QuarkNet

1. Balance between science content and process—immerse teachers in scientific process.
2. Focus on “habits of mind,” real-world science, depth rather than breadth.
3. Guided inquiry techniques – ask probing questions; provide context; provide the activities/questions/problems to solve; provide needed skill/knowledge development to ensure understanding.
4. Model effective teaching and learning practices (generally and science)
 - a. Provide opportunities for teachers to support their claims with evidence
 - b. Identify and have participants practice data collection, organization, interpretation as scientific process
5. Follow the QN Data Portfolio Model and conceptual framework – make it explicit to participants (simple to complex use of data = starting with their current levels of understanding).
6. Emphasize/discuss/focus on big ideas in science, e.g., many DP activities focus on calibration so emphasize it and its importance

Bibliography

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