



Science Program Evaluation

**Presented by: Jan Tuomi and Wendy
Binder**



February 17, 2011



How are you doing?

Evaluating Your Science Program
in K-12 Schools

Introduce you to a quick self-assessment tool, by:

1. Gathering some information on science program assessment practices.
2. Describing the background for our standards for high-quality science programs
3. Pointing out other routes to program assessment using these resources.
4. Finally... turning you loose with the quick self assessment.
5. Inviting you to continue the discussion and ask questions about your results in the NSTA Learning Center.

Agenda



- Concern over student achievement
- Get a clearer picture of what is going on in the classrooms
- Monitor planned implementation
- Pinpoint what may be going wrong
- Get data to back up what I know the problems are
- Spur action

Why evaluate the science program?



Why do YOU care?

- A. Prove I'm doing a good job.
- B. Do the best possible for all kids.
- C. The schools that are doing great should become models.
- D. Fight complacency.
- E. Other (post in chat)

Test score analysis	Having and monitoring a strategic plan	Deployment of science instructional coaches	Planning by representative teacher groups
Outside reviewers	Purchased or adopted audit tool	None	
Teacher survey or focus groups	Student survey or focus groups	Parent survey or focus groups	Principal evaluation tool

What methods have you used?

Aspects of Program

- Instruction
- Assessment
- Curriculum
- Classroom environment
- District leadership
- Resources
- Materials Management
- School leadership
- Teacher quality
- Results

Types of Evaluation

What is the best evaluation?



- ... to promote excellence and innovation in science teaching and learning for all.

NSTA's Mission

- NSTA provides national and international leadership in science education by identifying the qualities and standards for good science education; these are set forth in the form of position statements, which are used to support the improvement of science education at all levels.

NSTA Position Statements



- <http://www.nsta.org/about/positions.aspx?lid=tnavhp>

37 Official Positions



- Board
- Council
- President

Recommendation

Development

- Panel
- Director of Communications
- Board/Council member

- Board
- Council
- Membership

Review

Development and Review Process

- Research Findings
- Reports
- Publications

In addition...

A wealth of information



- Research Findings
 - Credible, Important Research Findings
- Reports
 - Data-rich reports reflecting consensus among experts reflecting a range of views
- Publications
 - Carefully reviewed

In addition...

A wealth of information





- Relatively short list
- Speak to decision-makers
- Common sense
- Action-oriented



Manageability



POLICY AND ADMINISTRATIVE SUPPORT OF THE SCIENCE PROGRAM

Standard 1: GOALS	A multi-year plan with clearly-stated goals guides development and improvement of the science program.
Standard 2: DISTRICT SUPERVISION	A leadership team supervises implementation of a comprehensive, coherent science program.
Standard 3: COMPLETE CURRICULUM	A rigorous, complete curriculum describes what all students should know and be able to do in science and high-quality instructional materials support its implementation.
Standard 4: RESOURCE ALLOCATION	The science program is supported by adequate resources, facilities and equipment.

15 Systemic Elements of High-Quality Science Programs

CLASSROOM IMPLEMENTATION OF SCIENCE CURRICULUM

Standard 5 LEADERSHIP	Leadership of administrators, teachers, and instructional coaches provides guidance, support and accountability for implementation of the science program
Standard 6: INSTRUCTION	Instruction develops student understanding of important science concepts, including scientific inquiry, and connects science learning to other subjects.
Standard 7: MATERIALS MANAGEMENT	Instruction is supported by adequate materials supplied in a manner that minimizes classroom preparation time.

15 Systemic Elements of High-Quality Science Programs

CULTURE OF HIGH EXPECTATIONS

Standard 8: CLASSROOM CULTURE	Classroom interactions develop positive attitudes toward learning science and model scientific inquiry.
Standard 9: PROFESSIONAL DEVELOPMENT	Teachers continually improve their abilities to help students learn science through participation in a professional learning community
Standard 10: EQUITABLE ACCESS	All students experience the standards-based curriculum and the school environment values achievement and contributions of all individuals
Standard 11: STUDENT ASSESSMENT	Student assessments are aligned with the curriculum, appropriate in form, and develop student responsibility for learning.

15 Systemic Elements of High-Quality Science Programs

ACCOUNTABILITY

Standard 14: -
DRIVEN DECISION
MAKING

Assessment/evaluation data are used to improve the science program.

Standard 15:
RESULTS

Indicators of student success are positive and improving.

15 Systemic Elements of High-Quality Science Programs



What does that mean?
What does it look like?
What should we do?

INSTRUCTION

- Teachers plan instruction aligned with the curriculum and designed to help students understand science concepts.
- Instruction is designed to help students learn to think scientifically and understand the nature of science.
- Formative assessments guide teachers' decisions about instruction.
- Teachers often capitalize on opportunities to connect science with other subjects.

**Add specific objectives
and 4-level rubrics**

6-B Instruction is designed to help students learn to think scientifically and understand the nature of science.

Component Missing	Incomplete Implementation	Basics in Place	Best Practice <i>In addition to Basics</i>
Instruction is rarely planned to develop scientific inquiry abilities or understandings. Activities and assessments fail to incorporate the inquiry content standards.	Teachers do not fully understand scientific inquiry, or inquiry-based pedagogy. Consequently, their choice of instructional strategies, facilitation and timing of activities, and conversations with students often do not capitalize on opportunities to develop understanding of scientific inquiry.	Multiple times each week, students at every grade level engage in scientific inquiry in the classroom, lab, or field. This includes opportunities to design investigations, engage in scientific reasoning, manipulate equipment, record data, analyze results, and discuss their findings. Teachers model and teach scientific thinking.	Students routinely present explanations of scientific concepts based on evidence gathered through inquiry and scientific analysis, participate in discussions demonstrating their capacity to be flexible and creative thinkers, and draw conclusions based on data and ability to replicate results. Students have multiple opportunities each year to engage in scientific inquiries they have independently designed.

Sample Rubric



Let's Pause for Questions from the Audience?

Next: How do I get and use these tools?

3 ideas for dissemination

1. Expert reviewers, applying their knowledge, experience and perspective, will produce an unbiased, well-rounded report for use by local leaders.
2. Training local reviewers would help build their capacity to understand best practices and plan ongoing improvements.
3. Empowering supervisors with manageable information would support a vital element in program improvement.

How to use the information

PROS

- Generates a detailed and comprehensive report
- Backed by NSTA
- Non-political
- Priorities defined for immediate action

CONS

- Perceived as threatening
- Cost considerations
- Is top-down



Expert Reviewers Option



Questions for Wendy?

Expert reviewer option



What's your reaction to this option?

- A. Sounds great
- B. Probably good for our district/school situation
- C. Undecided/Need more information
- D. Not sure if it would work here
- E. No way



PROS

- Builds capacity to understand best practices and monitor program
- Cost efficient
- Potential to reach all schools

CONS

- Requires participation of experienced teachers.
- Outcomes may lack rigor
- May be perceived as personally or politically biased
- Ongoing use threatened by turnover, budget, etc.

Trained District Reviewers Option

- Currently choosing pilot-test site
- May become a “summer institute”

District reviewer option status



What's your reaction to this option?

- A. Sounds great
- B. Probably good for our district/school situation
- C. Undecided/Need more information
- D. Not sure if it would work here
- E. No way

Pros

- Fills an unmet need
- Empowers a neglected driver of the system
- Could drive best practices in school leadership

Cons

- Can not assume science content or pedagogy knowledge
- Has to be very easily accessible in terms of time, commitment
- Will a less than comprehensive knowledge of the system work?



Supervisor Support Option



- *Supervising Science* website under development and pilot testing
- Access modes under discussion

Supervisors' option status



What's your reaction to this option?

- A. Sounds great
- B. Probably good for me
- C. Doesn't apply to me
- D. Skeptical
- E. No way

- NSTA website
 - Professional Development tab
 - Science Program Improvement Review
- NSTA conferences
 - NSTA booth and sessions
- NSTA Learning Center
 - Discussion Forums tab
 - Web Seminars
 - Science Program Evaluation

For more information





Let's Pause for Questions from the Audience?

Next: The quick assessment



And finally...here's the

Quick Self Assessment

- Flow chart style

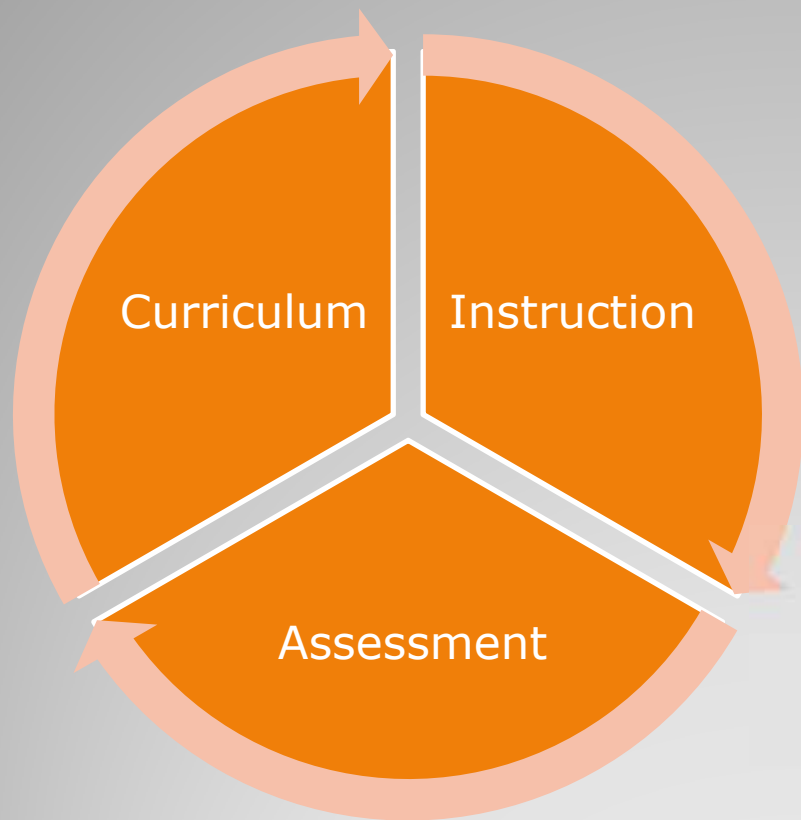


- Based on your current knowledge

- Gets your feet wet



Results: estimate of quality



Levels 1, 2, 3

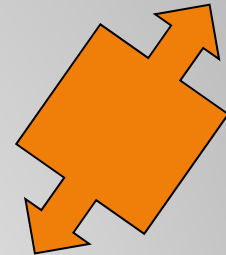
Just the Basics

1. Overview of Curriculum, Instruction, Assessment



2. Level 1 Goal Statement

3. Description of meeting that goal
If yes, go to Level 2



4. If no, look at these statements...
If these are similar to your thoughts, you are on
level 1

Format



1. Go to **NSTA Learning Center**
 - <http://learningcenter.nsta.org/>
2. Log in or register
3. Go to **Discussion Forums** tab
4. Go to **Evaluation and Assessment** Forum
5. Then find our topic: Evaluating Science Programs
6. Download and print your PDF copy of the Quick Assessment.

What to do

Thank you to the sponsor of tonight's Web Seminar:



This web seminar contains information about programs, products, and services offered by third parties, as well as links to third-party websites. The presence of a listing or such information does not constitute an endorsement by NSTA of a particular company or organization, or its programs, products, or services.

[Back to NSTA.org](#)
[Contact Us](#)
[Help](#)
[Feedback](#)

The NSTA Learning Center

Search the Learning Center

[Online Advisors Home](#)
[My PD Tools](#)
[Subjects](#)
[Learning Resources & Opportunities](#)
[Discussion Forums](#)
[Education Administrator](#)

My Learning Center

Welcome, Learning Center [Log Out](#)

[Welcome](#)
[My Library](#)
[My PD Indexer](#)
[My PD Plan and Portfolio](#)
[My PD Record and Certificates](#)
[My Calendar](#)
[My Notepad](#)
[New: Discussion Forums](#)
[Help Desk](#)

Welcome to Your Professional Development Web Space!

Learning Center, you've already earned **2875 Activity Points!**

You've recently earned:
 **Diamond Commenter**
[Post comment/questions](#)

You're close to earning:
 **Platinum Commenter**
[Post 45 more comment/questions](#)

Be sure to **update your profile and review your points & badges!**

With these resources you can build your professional development plan, track your activities and assess your progress. You can start at "Explore Learning Opportunities" below or by creating your game plan with the PD Plan and Portfolio tool. You may also review an [archived Web Seminar](#) or a [multimedia overview](#) of the Learning Center.

Activity Progress Bar
 Your Activity Matters!
 It saves Polar Bears!

Winter Holiday Giveaway!
Earn Triple Points
 for all Activity
 Now - Jan 31

Featured PD Resource
 **Science OBJECTS** **FREE**
[Rocks: Environments of Formation](#)

<http://learningcenter.nsta.org>



<http://www.elluminate.com>

National Science Teachers Association

Dr. Francis Q. Eberle, Executive Director

Zipporah Miller, Associate Executive Director
Conferences and Programs

Al Byers, Assistant Executive Director e-Learning

NSTA Web Seminars

Paul Tingler, Director

Jeff Layman, Technical Coordinator

