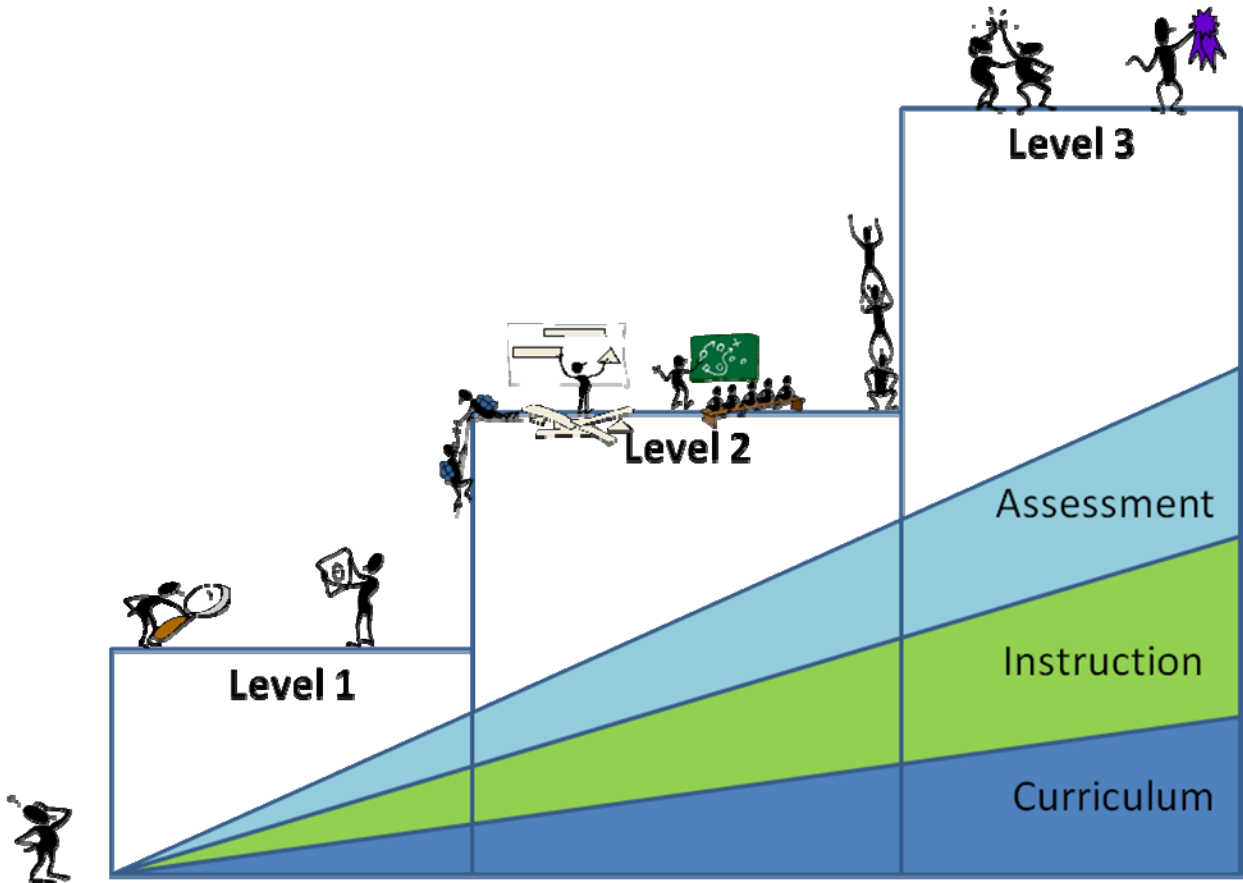




How are you doing?

A Super-Quick Evaluation of your K-12 Science Program©



Record your results _____ Date: _____ .

Curriculum	(pp. 3-7)	Level 1	Level 2	Level 3
Instruction	(pp. 8-11)	Level 1	Level 2	Level 3
Assessment	(pp.12-15)	Level 1	Level 2	Level 3

Where Do I Start?

For the purpose of getting started, the entire system behind a science program is pared down to three areas that comprise the heart of teaching and learning:

Curriculum

Instruction

Assessment

When indicators of undesirable practices in these areas arise, the pathways to solving those issues will involve other areas of the system, such as professional learning, materials management, resource allocation, or data-based decision making. The full set of NSTA's standards for high-quality science programs is available on the NSTA website, under the Professional Development tab, and "Science Program Improvement Review."

Audience

This resource is written for supervisors—such as principals, assistant principals, department chairs, and instructional coaches—and intends to support your role as an instructional leader. Naturally, teachers will find this tool helpful in recognizing what practices would help them become more effective. From the teachers' point of view, however, many of the best practices alluded to are simply not within your control to enact alone.

Every school is unique

For each of the three areas (curriculum, instruction, and assessment) this quick assessment is divided into three levels:

Level 1: Ensuring the most basic requirements are in place.

Level 2: Ensuring that the science program is rigorous, equitably accessible, and complete.

Level 3: Ensuring that a good science program is responsive to student needs, achieving the highest possible student assessment results, and keeping up with current science knowledge.

In reality, a program evaluation will probably not be so linear, and in one school elements of all three levels may exist! The levels just help you get oriented. Ideally, you will eventually get acquainted with all the levels in order to respond to staff turnover, curriculum revisions, new assignments and the many other challenges that lie ahead.

Get Started

Consult our overviews of each area, and take a quick, rough survey to estimate your levels.

For follow-up assistance, please visit the NSTA Learning Center online, and the "Program Evaluation" discussion forum there. Details are on the last page.

Curriculum Overview

Among the three core areas, *Curriculum* focuses on the content that students should know in order to be ready for further study (grade-to-grade) and ultimately graduate as a scientifically literate citizen. This content must be aligned with science standards that ensure it is rigorous and complete, including the students' ability to understand how science knowledge is generated and how to think scientifically. *Curriculum* drives *Instruction and Assessment* by setting student learning goals. Supervisors will:

1. Start by finding out what science curriculum is in use by collecting information from the teachers. Then, if it is not in place, developing agreement among all teachers of science at your site about what science concepts belong in each grade or course. Where science is not being taught, this step can be developed in conjunction with *Instruction*, Level 1, with an eye toward Level 2. The goal for Level 1 is:

Science is being taught according to a curriculum agreed upon by all teachers, and (where available) according to district guidance.

2. Now the focus on curriculum sharpens to ensure it is standards-based and appropriately rigorous. There is often a big gap between what the curriculum intends to be taught and what is actually being taught. The causes behind watered-down or incomplete science instruction are numerous, but the supervisor's responsibility is to the students—their instruction should give them the opportunity to learn the complete and appropriately rigorous science curriculum. The goal for Level 2 is:

The science curriculum is aligned with standards, and therefore appropriately rigorous and complete.

3. Ultimately, the faculty needs to take ownership of the science curriculum, and based on their analysis, refine the curriculum to ensure their students' success. Collaborative actions at Level 3 are interactive with actions for *Instruction* and *Assessment*, and all based on analysis of data on student learning. The goal for Level 3 is:

Our science program is not only rigorous and complete, but also adapted and refined to enable all our students to meet their full potential.



	Levels		
Curriculum	1	2	3
Instruction	1	2	3
Assessment	1	2	3

Directions: Using your personal knowledge, or during a conversation with a few lead science teachers, estimate where you currently are in Science Curriculum—Level 1, 2 or 3. Some sample thoughts are provided. This is a rough estimate to get you started. You can always decide later to retreat or advance levels.

Curriculum Level 1 Goal: Science is being taught according to a curriculum agreed upon by all teachers, and (where available) according to district guidance.

Have you already met the Level 1 curriculum goal?

If your assessment resembles this:

I'm sure the teachers have all agreed on what the science curriculum is for each grade or course. It is written down, accessible to all teachers, and used by all in planning science units.

Then:



Go to Level 2

If your assessment is more like these:

- *I don't know.*
- *I'm assuming the curriculum is agreed upon because they use the same instructional materials.*
- *What a teacher chooses to teach in science classes is seen as an individual choice.*
- *Some teachers of science work together and therefore agree on what to teach, some other teachers do not work together and therefore make individual decisions about the curriculum.*
- *The science department spends some time on a common curriculum (for example, mapping the curriculum), but their work is incomplete.*

Then:

You are at Level 1
Now go to INSTRUCTION



Curriculum Level 2 Goal: The science curriculum is aligned with standards, and therefore appropriately rigorous and complete.

Have you already met the Level 2 curriculum goal?

If your assessment resembles this:

I am sure that every student has the opportunity to learn the content for each grade or course, as described in the state or national standards. And the reason I am sure is:

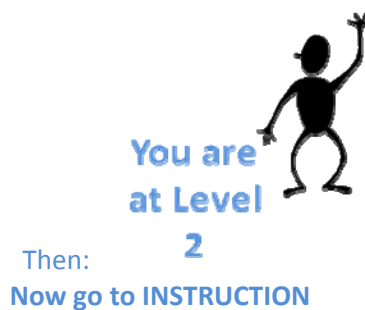
- *The science staff spent a significant amount of time aligning the curriculum with standards, AND every teacher follows that guidance.*
- *Or, the district had a committee align a district-wide curriculum with standards, AND every teacher follows that guidance.*

Then:



If your assessment is more like these:

- *I don't know.*
- *There is a district curriculum, but I have no idea if it is rigorous or complete*
- *I'm assuming the standards are covered because we follow a traditional course of study, or we bought a "standards-based" set of instructional materials*
- *I assume each teacher has the expertise to translate the standards--which are widely available--to an appropriate curriculum.*
- *The science department has had some professional development on the science standards, but I'm not sure what they did with that information.*



Curriculum Level 3 Goal: Our science program is not only rigorous and complete, but also adapted and refined to enable all our students to meet their full potential.



Keep up the good work and keep your science curriculum the best by continuing to support best practices.

Now go to INSTRUCTION

Instruction Overview

Among the three core areas, *Instruction* focuses on the teachers' delivery of the *Curriculum* and the teacher's ability to develop student understanding (as measured by *Assessments*). Supervisors will:

1. Start by ensuring that science is being taught, that the amount of time spent is consistent with policies and the fact that science is a core subject, and the subject matter is consistent with the agreed-upon curriculum (Level 1 Curriculum expectations). The instruction may not be of the highest quality, but at least science is being taught. If your attention toward science has been minimal, this level is specifically designed to help you begin to reassert your leadership, as well. The goal for Level 1 is:

Science is being taught with attention equal to other core subjects.

2. Learn how to recognize good science instruction--without becoming a science expert. This level helps focus your classroom observations, ask good questions of teachers of science, and know what to expect of the classroom environment. Actions at this level are aligned with Level 2 of *Curriculum* and *Assessment*, with a focus on being standards-based and appropriately rigorous. The goal for Level 2 is:

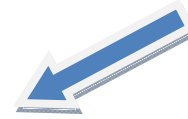
Instruction develops understanding of important science concepts in the standards-based curriculum and includes the development of scientific inquiry practices.

3. Refine your high-quality instruction to ensure that every student in the school is mastering science content, and teachers are a part of a professional learning community that, under your leadership, supports continuous improvement. Collaborative actions at Level 3 are completely interactive with actions for *Curriculum* and *Assessment*, and all based on analysis of data on student learning. The goal for Level 3 is:

Instruction is differentiated based on formative student assessments, and delivered in settings that enable students to receive individualized support, such as more time and additional resources.



	Levels		
Curriculum	1	2	3
Instruction	1	2	3
Assessment	1	2	3



Instruction Level 1 goal is: Science is being taught with attention equal to other core subjects.

Have you already met the Level 1 instruction goal?

If your assessment resembles this:
I'm positive science is being taught according to state and district policy guidelines (which means at least 3 hours per week—see SPIR standards for more information.)



Then:

Go to Level 2

If your assessment is more like these:

- *I don't know.*
- *There is an emphasis on literacy and mathematics achievement that I know (or suspect) has led to a de-emphasis on science.*
- *Only some teachers are teaching science, due to their experience, interests, or their level of collaboration with colleagues.*
- *I don't even know what the required minutes per week are for science.*
- *I know a lot of the teachers switch off between social studies and science units, and I'm not sure whether a complete science curriculum is being delivered.*



You are at Level 1

Then:

Now go to ASSESSMENT

Instruction, Level 2 Goal is: Instruction develops understanding of important science concepts in the standards-based curriculum and includes the development of scientific inquiry practices.

Have you already met the Level 2 Instruction goal?

If your assessment resembles this:
I have a basic understanding of how to recognize good science instruction, and I usually can see these kinds of signs:

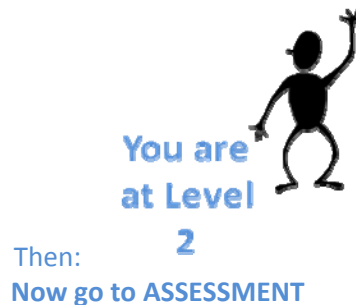
- *Students are engaged with a science question. (not topic)*
- *Students observe scientific phenomena, often hands-on.*
- *Students are collecting, organizing data, and then drawing conclusions.*
- *Teachers ask students to explain their thinking.*
- *Over a unit, there is a mix of lecture, reading, active engagement, small group, and individual work.*

Then:



If your assessment is more like these:

- *I don't often see the kind of instruction described above.*
- *Due to factors beyond my control, I don't really know what is going on in the classrooms.*
- *I know the science instruction is probably weak—the test scores are low, and student engagement is mediocre—but I don't really know what to do next.*
- *I have qualified teachers and depend on their experience and education to ensure instruction in science is the best quality possible.*
- *The teachers never, or rarely, have time to plan together about science instruction.*



Instruction, Level 3 Goal is: Instruction is differentiated based on formative student assessments, and delivered in settings that enable students to receive individualized support, such as more time and additional resources.



Keep up the good work and keep your science instruction the best by continuing best practices. Remember, for new teachers or curriculum changes, you may need to provide support at Levels 1 or 2.

[Now go to ASSESSMENT](#)

Assessment Overview

Among the three core areas, *Assessment* focuses on the students' developing understanding of the *Curriculum* and the effectiveness of *Instruction* in reaching all students. Supervisors will:

1. Start observing and working with a leadership team to make an inventory of the assessments in use and available, such as those provided in the instructional materials or by the district. Teachers have many opportunities to assess student learning including conversations with students, observations, student written work, as well as more formal quizzes and tests. Two types of assessment should be put in place: "formative" which are those used to make sure the students understand the sub-concepts as instruction proceeds, and "summative" which assess the student's understanding of the big ideas or main concepts of the entire unit of study. The goal for Level 1 is:

Student learning is being assessed in the classroom as instruction progresses, and student understanding is being assessed at the end of units of instruction.

2. Learn how teachers are using a variety of assessments to find out if students are learning, and what instructional strategies are being used to help struggling students catch up. This level helps focus your classroom observations, ask good questions of teachers of science, and know what to expect of the classroom environment. Actions at this level are aligned with Level 2 of *Curriculum* and *Instruction*, with a focus on being standards-based and appropriately rigorous. The goal for Level 2 is:

Assessments of student learning are available for each key science concept, aligned with *Curriculum* and *Instruction*, and the data is used to improve instruction.

3. Refine your assessment practices to ensure that every student in the school is mastering science content, and teachers are a part of a professional learning community that, under your leadership, supports continuous improvement. Collaborative actions at Level 3 are completely interactive with actions for *Curriculum* and *Assessment*, and all based on analysis of data on student learning. The goal for Level 3 is:

Our science program is not only rigorous and complete, but also adapted and refined to enable all our students to meet their full potential. (Same as *Instruction*.)



	Levels		
Curriculum	1	2	3
Instruction	1	2	3
Assessment	1	2	3

Assessment Level 1 goal is: Student learning is being assessed in the classroom as instruction progresses, and student understanding is being assessed at the end of units of instruction.

Have you already met the Level 1 assessment goal?

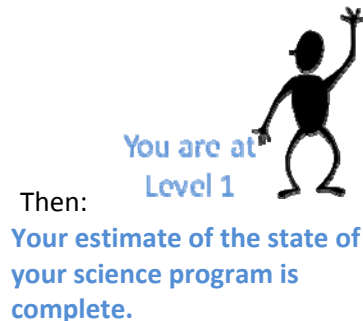
If your assessment resembles this:

I am familiar with how the teachers of science arrive at their grades. I know that assessments of student learning are being given regularly.



If your assessment is more like these:

- *I don't know.*
- *The teachers grade on participation and attendance.*
- *The students are expected to complete worksheets, but I'm not sure if they really understand.*
- *The grades on the report cards are dismal, and so are the test scores.*
- *The grades on the report cards make me think that the students should be doing better on the state science test.*



Assessment, Level 2 Goal is: Assessments of student learning are available for each key science concept, aligned with *Curriculum* and *Instruction*, and the data is used to improve instruction.

Have you already met the Level 2 Assessment goal?

If your assessment resembles this:

As a staff, the teachers do all three of these things:

- *Use a variety of assessments to make sure the students understand as instruction proceeds (for example, observations, questioning, discussions, quizzes, performance tasks).*
- *They have agreed upon final tests for key concepts, and discuss their students' results among the grade level or course teacher.*
- *Instruction strategies, pacing, and intervention methods may be revised as a result of assessment data.*



Then:

If your assessment is more like these:

- *Some but not all the points above are in place.*
- *I leave assessment to the individual teachers, I'm not sure how to become aware myself without getting swamped with time-consuming work.*
- *Some of the teachers attended professional development on assessment, but I'm not sure what they did with that information.*
- *The teachers never, or rarely, have time to plan together about science assessment.*



Then:

Your estimate of the state of your science program is complete

Assessment, Level 3 Goal is: Our science program is not only rigorous and complete, but also adapted and refined to enable all our students to meet their full potential. (Same as *Instruction*.)



Keep up the good work and keep your science assessment and instruction the best by continuing use of best practices. Remember, for new teachers or curriculum changes, you may need to provide support at Levels 1 or 2.

Your estimate of the state of your science program is complete.

For further resources, professional development opportunities, and connections to coaches and colleagues, please join us online at the

The logo for the NSTA Learning Center. It features the word "THE" in a small, blue, sans-serif font on the left. To its right is "NSTA" in a large, bold, blue, sans-serif font. Further right, the words "Learning Center" are written in a blue, sans-serif font, with "Learning" and "Center" on separate lines.

in the “Evaluation and Assessment”
Discussion Forum

<http://learningcenter.nsta.org/discuss>

The Learning Center is NSTA's e-professional development portal to help you address your classroom needs and busy schedule. You can gain access to more than 6,000 different resources, of which over 1,800 are free. Create your free account and watch the overview to get started.