Talk Science Challenge

How do we engineer deep engagement with web-based PD resources?

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What is Talk Science?

Professional development to increase the productivity of science discussions

Hybrid model that blends:

1. Web-based study
2. Grade level study group meetings
3. Implementation of teaching strategies into classroom practice
4. Criterion-based self-assessment

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Expected Change

Teachers orchestrate more productive science discussions in which students reason with evidence.

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Four Features (contributing to stickiness)

1. **Alignment** with the curriculum
2. **Vivid video** cases of the same discussions teachers will lead and of scientists thinking aloud about the science investigations students do
3. **Sharp focus** on nine doable teaching strategies
4. School-based learning **community**

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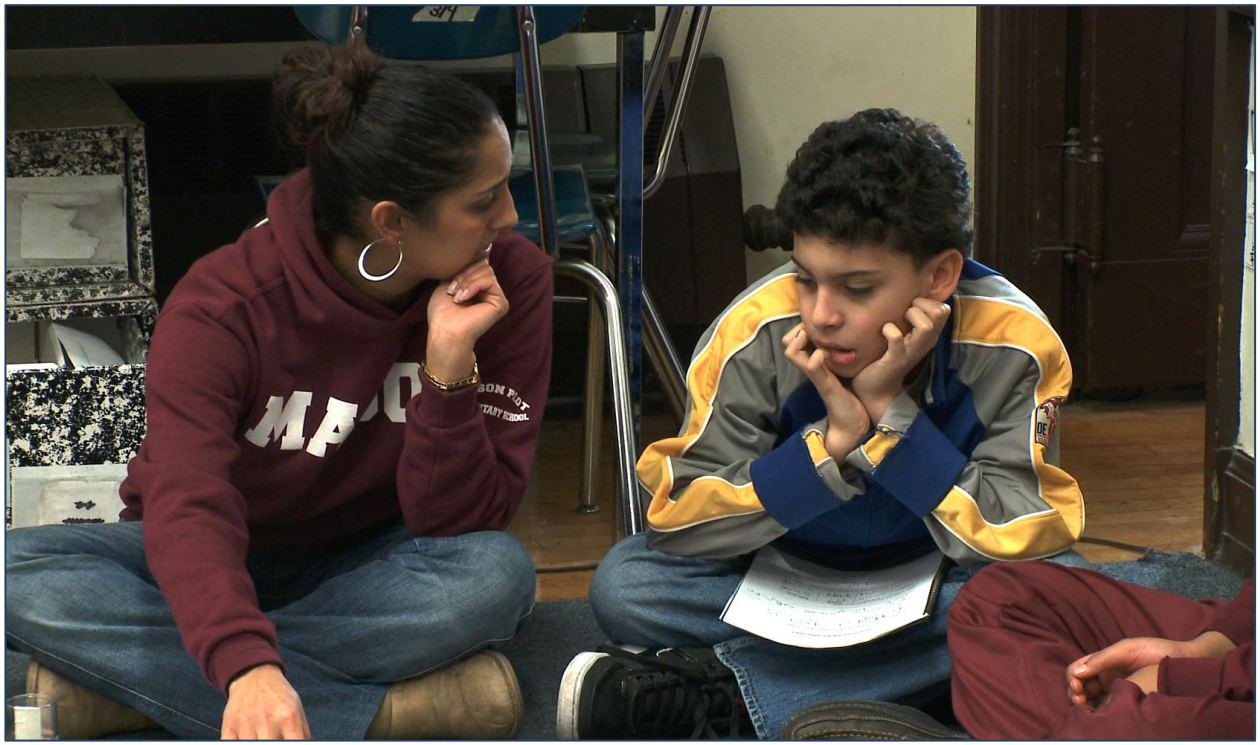
Based on a Problem



(Teacher belief: Stickiness factor)

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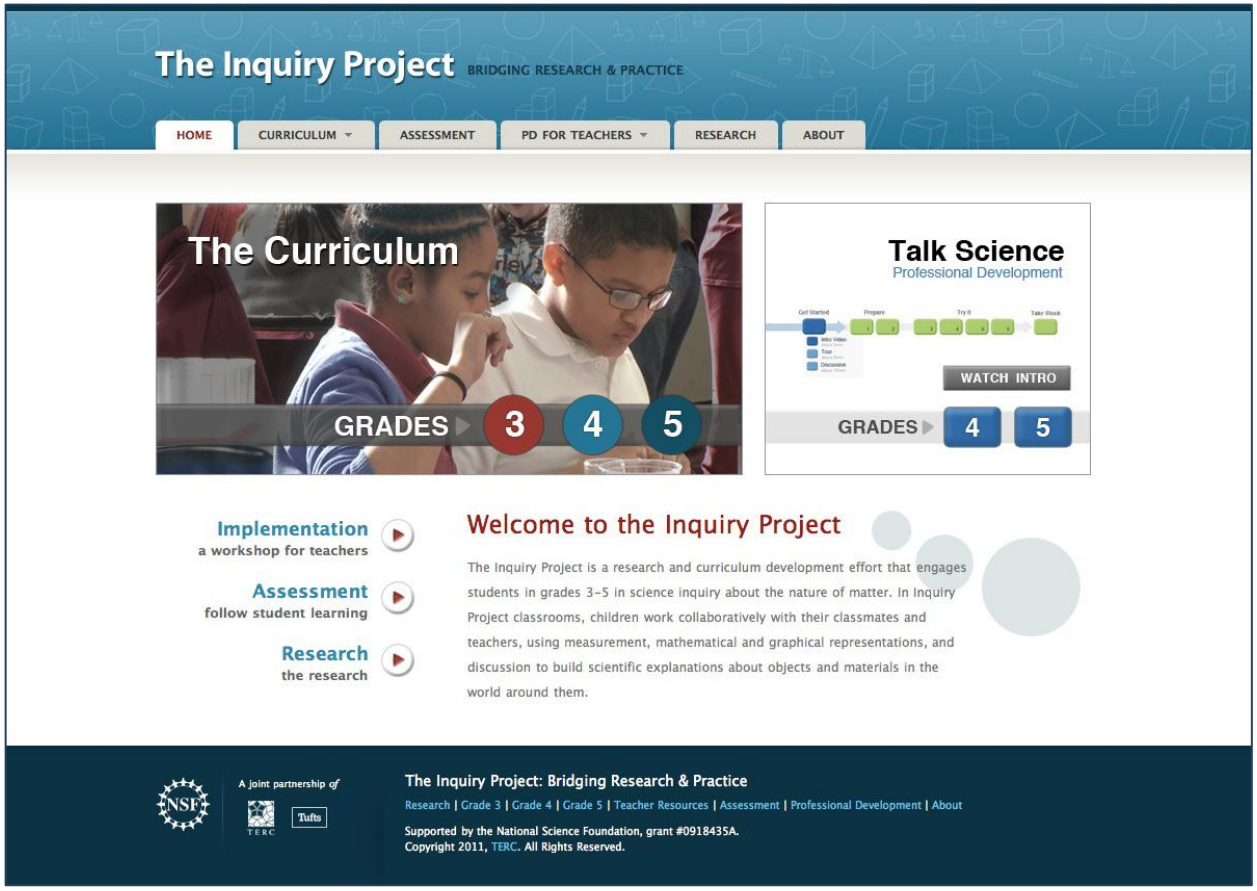
PD Aligned with the Curriculum



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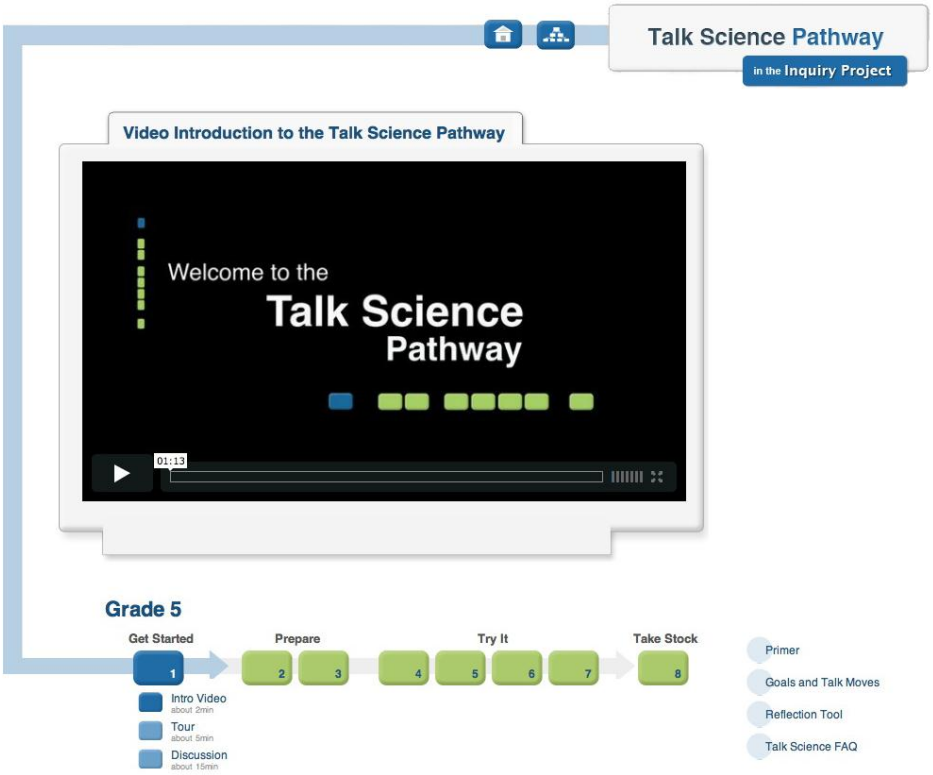
Professional Development Pathway

"Game Like" (stickiness factor)



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Talk Science Pathway

in the Inquiry Project

Video Introduction to the Talk Science Pathway

Grade 5

Get Started	Prepare		Try It				Take Stock
1	2	3	4	5	6	7	8

- Intro Video (about 2min)
- Tour (about 5min)
- Discussion (about 15min)

- Primer
- Goals and Talk Moves
- Reflection Tool
- Talk Science FAQ

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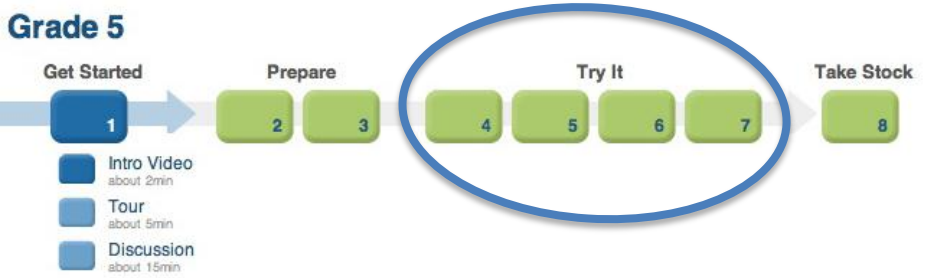
Grade 5



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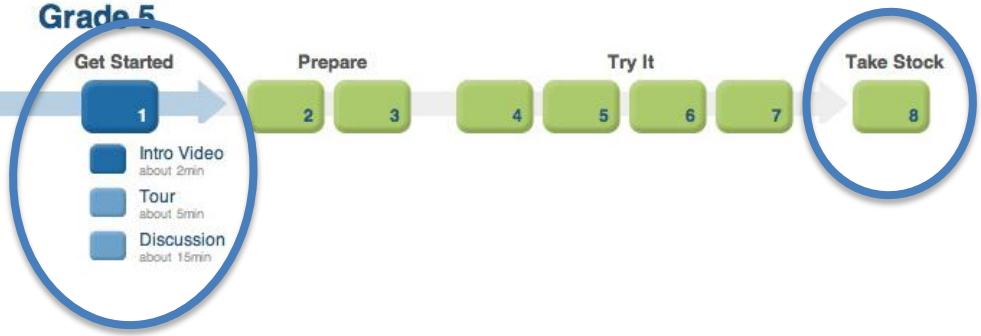

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Video to Demystify

How Scientists Think

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Video to Reveal

Productive Science Discussion

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a Sharp Focus on 9 Strategies

Goals for Productive Discussions and Nine Talk Moves

Goal One: Help Individual students share, expand and clarify their own thinking		
1.	**Time to Think:** – Partner Talk – Writing as Think Time – Wait Time	
2.	**Say More:** "Can you say more about that?" "What do you mean by that?" "Can you give an example?"	
3.	**So, Are You Saying...?:** "So, let me see if I've got what you're saying. Are you saying...?" (always leaving space for the original student to agree or disagree and say more)	
Goal Two: Help Students listen carefully to one another		
4.	**Who Can Rephrase or Repeat?** "Who can repeat what Javon just said or put it into their own words?" (After a partner talk) "What did your partner say?"	
Goal Three: Help Students deepen their reasoning		
5.	**Asking for Evidence or Reasoning:** "Why do you think that?" "What's your evidence?" "How did you arrive at that conclusion?"	
6.	**Challenge or Counterexample:** "Does it always work that way?" "How does that idea square with Sonia's example?" "What if it had been a copper cube instead?"	
Goal Four: Help Students think with others		
7.	**Agree/Disagree and Why?:** "Do you agree/disagree? (And why?)" "What do people think about what Ian said?" "Does anyone want to respond to that idea?"	
8.	**Add On:** "Who can add onto the idea that Jamal is building?" "Can anyone take that suggestion and push it a little further?"	
9.	**Explaining What Someone Else Means:** "Who can explain what Aisha means when she says that?" "Who thinks they could explain why Simon came up with that answer?" "Why do you think he said that?"	

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Video to Unpack

Effective Strategies

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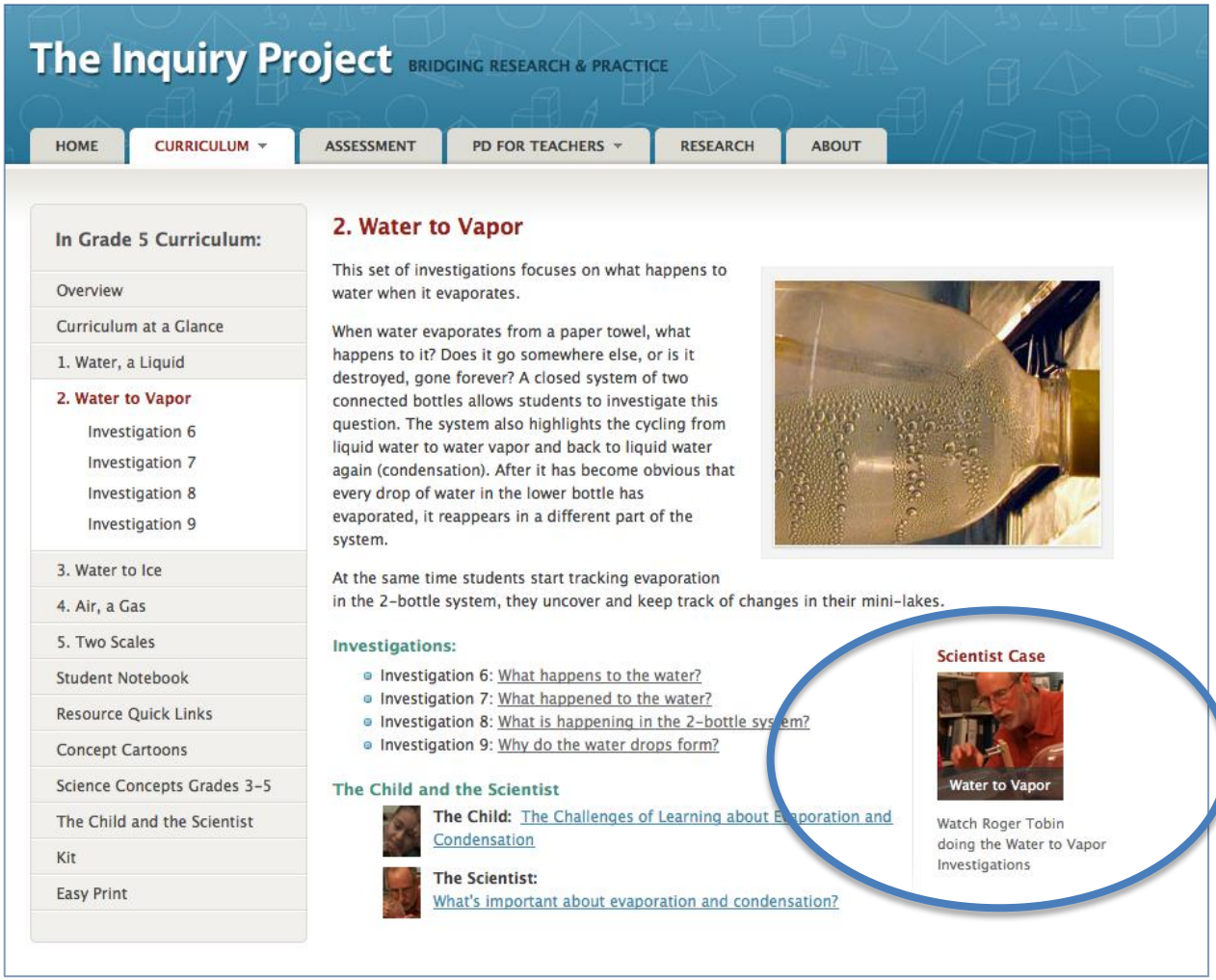
Continued Engagement



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Enact Professional Learning in the Classroom

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Meet with Colleagues

to Reflect and Plan

"Book Club Like"

STUDY GROUP: TRY IT 5
PREPARING TO TEACH SECTION 2: WATER TO VAPOR
SUGGESTED GUIDE (1 HOUR)

ORGANIZATION

To make the most of your time with colleagues: arrive on time and stay till the close of the meeting, come prepared to share ideas from the video cases and your own "In your Classroom" experiences, remain focused on the agenda, and support each other in sharing ideas and resolving challenges.

Date and time:

Location:

Group facilitator:
Host the meeting, send out time/place/agenda reminder, prepare resources, introduce and facilitate discussion, encourage all to contribute. Role may rotate among members.

Time keeper and recorder:
Keep track of time, audiotape the discussion, and send a post-meeting summary. Role may rotate among members.

Web study prior to meeting:
Scientist Case: The Water to Vapor Investigations
Classroom Case: The Role of Explanation Discussions
Strategy: Goal 2— Listening Carefully

What to bring:
Transcripts with annotations for Scientist and Classroom Cases

Study group resources:

AGENDA & DISCUSSION QUESTIONS

Classroom Video Case
In science, explanations depend on observation, measurement, and well-established scientific principles. What is it that Colleen does to support her students in generating explanations that are based on data and evidence?

Colleen asks the question: "How do we know the salt is still there?" What makes this a particularly good organizing question for the discussion? (You may want to revisit Clip 2.)

In the video case (clip 3) students struggle to explain why they can't see the salt. Does someone put forward an idea Colleen might build on? What might she do next?

In Try It 5 we focus on the skill of listening. This skill is important as students need to know what their peers' ideas are in order to build understanding together. But scientists do even more than listen to each other, they listen with careful attention to the data. They ask, What data supports this explanation? How robust is the data? How else might the data be interpreted? What moves does Colleen use to encourage students to listen with a scientific ear? What moves could you use?

Is there something from this case that you might want to incorporate into your discussions?

Plan for "In Your Classroom"
The second section of the curriculum focuses on ideas about: systems, water vapor, condensation and evaporation. Look at the learning goals for Investigations 6-9 to see what ideas are highlighted. Based on your review of the goals and the Scientist Case, what ideas will you emphasize during class discussions?

Summary—Insights from this meeting:

PLANS FOR OUR NEXT STUDY GROUP MEETING (Try It 5)

Date and time (1 hour):

Location:

Group Facilitator:

Before the next meeting, study the following cases
- Scientist Case: The Water to Ice Investigations
- Classroom Case: The Role of Data Discussions
- Strategy: Deepen their Reasoning

What to bring:
- Your annotated transcripts from the video cases

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Our Next Challenge

So, technology is creating solutions and raising new problems ---

How do we engineer deeper engagement with web-based PD?

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