Case Analysis Protocol

The protocol and cases were written collaboratively by members of the Science 20/20 team.

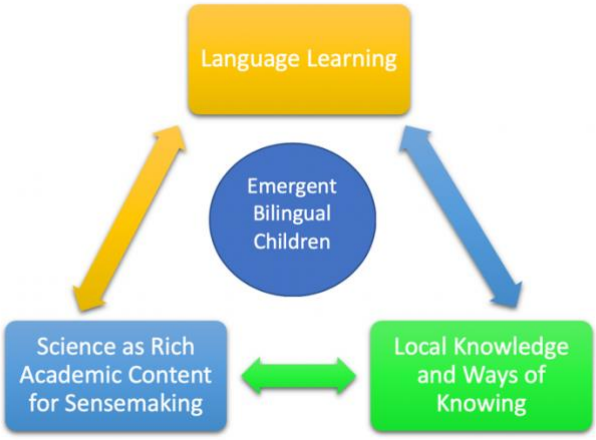
Description: Each case represents the lived experiences of those connected to the project as researchers, teachers, students, and student teachers. They are real, but names and minor details have been changed so as not to completely identify those involved. We do not intend for these cases to be black and white, right or wrong. Instead, each case illuminates areas of strength and potential and allow for self-reflection. They may ask us to articulate and question our own biases, assumptions, and taken-for-granted practices. Cases such as these are intended to surface tensions. Having group norms and protocols in place before engaging in case analysis is important for the success of the protocol. In discussing the case, we encourage you to think through the complexity of each case, seek to understand, imagine what else might be true, and exercise asset orientations.

Protocol: **Part 1.** Familiarize yourself with the Science 20/20 Framework before reading the case.

Science 20/20 Framework

Guiding Principles

1. *View **students as capable partners** in knowledge building.*
2. *Invite **productive participation** in science practices and sensemaking.*
3. *Utilize caring **formative assessment** and seek to understand what students know.*



Part 2. Read the case thoroughly. Once everyone has had enough time to read the case thoroughly, summarize the main events in the case and identify the problem(s) posed by the case.

Part 3. Use the Science 20/20 Framework and Guiding Principles to facilitate an open discussion related to the case. Same questions and prompts might include:

1. *What scientific practices and literacy practices are present in the case?*
2. *How has the teacher(s) and how might the teacher(s) invite students to draw on their funds of knowledge and local knowledge?*
3. *Where do you see evidence of students positioned as knowers, productive participation, and/or formative assessment?*
    1. *What are the opportunities to position students as knowers, invite productive participation, and incorporate formative assessment?*
4. *What else might be true?*

Part 4. Connect back to your context. Reflect. How might this case and the discussion of the case inform your work?

A Case of Analyzing Student Data

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Keywords/phrases
formative assessment
scientific practices
content storyline
teacher education
emergent bilinguals

Kindergarten student teacher Ms. Jansen looks at the KLEW (what you think you **K**now, **L**earned, **E**vidence, **W**onderings) chart that the students reviewed before lunch. Ms. Jansen started this chart with only K, L, E, and W written at the top at the start of their unit on worms. Now that they were nearing the end of their unit, this chart contains most of the students' shared thinking across the lessons.

Ms. Jansen first looks at the K-section of the chart. Students had told her what they thought they already knew about worms. As the unit continued over the course of several weeks, Ms. Jansen had listened to the ideas students shared and filled in the other sections of the chart with information they learned during our observations and investigations. Her goal for the end of the unit was for the students to be able to talk about 1) how worms live in the dirt, 2) they don't like light, and 3) they only like a little water.

She then looks over to the science content they learned. "They don't like the flashlight." Ms. Jansen notices that her students only agreed that worms don't like the flashlight and not light as a whole. She had questioned her students about whether it was all light or just the flashlight, but Kylie, a student in the class, had claimed that they only saw the worm go in the dirt with the flashlight. This was a valid piece of evidence for the E-section, but it did not lead to the second goal of the unit. This understanding would have major implications for the next lesson in the unit when they set up an environment for the worms since students need to understand that there needs to be a light blocker on the plastic farm.

Ms. Jansen scans the L-section of the chart; "they like a little water," was written. This matches her third goal for the unit; however, she knew this did not represent the class' thoughts. She remembered how one student had said this after consistent questioning to guide students to this response. The amount of time it took for one student to say this sentence made her think that students did not completely understand worms' relationship with water. She pushed too much.

Ms. Jansen turns to the E-section of the chart, remembering that students had trouble understanding what the word *evidence* meant. Ms. Jansen had hastily defined it at the beginning of the unit and only referred back to its meaning a couple times when no one responded to her questions, *"How do you know that? What's your evidence?"*

Ms. Jansen then takes a step back and examines the language on the chart. Despite stating that students could speak whichever language they preferred during the science talks, the additions to the chart were all in English. She remembers telling them this, but thinking back, she realizes she didn't exemplify the rule herself. Almost all of the words she and her students used during the discussion were in English. She does not remember encouraging students to use Spanish in the discussion either. While this isn't the only way to support the emergent bilinguals in her classroom, this was something she wanted to encourage so students knew their first language was valued, could process the content in Spanish and English, and could start to build metalinguistic skills to further their English language development. Ms. Jansen thought to herself, "*Where do I go from here?"*

Note: We also find that many of our cases are complementary to and can be analyzed with the protocol and Equity Literacy Framework in Gorski and Pothini's text *Case Studies on Diversity and Social Justice Education* (2nd Ed., 2018). [http://www.edchange.org/cases/Case-Analysis-Model.pdf]