SSTELLA Practices Progression

CONTEXTUALIZING SCIENCE ACTIVITY

Framing

Not Present	Present
The teacher…	
does not make reference to relevant contexts.	**makes some references to relevant contexts, either…** local, ecological, home, community, social (e.g., socio-scientific issues), global, multicultural science, or other socio-cultural experiences.

Introducing	Implementing	Elaborating
Teacher references…		
• Do not contribute to a **relevant framing context** throughout the lesson. **(**e.g., references act as a "hook" [or series of hooks]). • Either appear **more relevant to the teacher** than the students OR their relationship with the science content is **ignored/distorted** by the teacher.	• **Frame lesson using an overarching driving question or scenario/problem in a relevant context** (see "present" list). • Appear **relevant to the students** AND their relationship with the science content is **clearly acknowledged** by the teacher.	• **Allow student contributions and/or experiences to frame the lesson in a relevant context (with teacher facilitating connection to the big idea).** • Are **driven by the students** AND their relationship with the science content is co-construct by teacher and students.

Adapting (unplanned) & Applying

Not Present	Present
The teacher…	
does not provide opportunities for students to contribute their lived experiences or funds of knowledge.	provides opportunities for students to contribute their lived experiences or funds of knowledge.

Introducing	Implementing	Elaborating
Teacher…		
acknowledges students contributions, but does not connect them to science learning.	connects student contributions to science content and relevant contexts (local, ecological, home, community, social [e.g., socio-scientific issues], global, multicultural science, or other socio-cultural experiences).	facilitates opportunities for students to **build on and respond to peer contributions**, and explicitly encourage students to connect contributions to science learning and relevant contexts.

SSTELLA Practices Progression

SCIENTIFIC SENSE-MAKING THROUGH SCIENTIFIC/ENGINEERING PRACTICES

Communicating the "big idea"

Not Present	Present
The teacher…	
might communicate a general science topic, but not a "big idea" in science or a learning objective.	communicates a "big idea" in science, and a learning objective or general expectations for success (at least implicitly).

Introducing	Implementing	Elaborating
The teacher communicates the "big idea"…		
• Implicitly: Mentions only once or is stated in passing during instruction • Learning objective or expectation for meeting objective is vague or somewhat unrelated to the big idea.	• Explicitly: Draws students' attention to the big idea and connects to prior/on-going activities. • Learning objective and expectation for meeting objective are specific and aligned with the big idea with some opportunity for student reflection.	• Explicitly: Draws students attention to the big idea through a partial model or ill-defined problem and connects to prior/on-going activities • Learning objective and expectation for meeting objective are specific and aligned with the big idea with some opportunity for student reflection of how conceptions about the big idea have changed.

Pressing for MODEL- or PROBLEM-based scientific/engineering practices

Not Present	Present
The teacher plans classroom activities that….	
focus solely on recalling facts/terms or understanding science concepts.	Engage students in scientific or engineering practices with at least some momentary sense-making supports (e.g., visuals, graphic organizers, multimedia, realia).

Introducing	Implementing	Elaborating
Students engage in scientific and engineering practices through…		
• Teacher lead inquiry: Teacher provides all questions to investigate, procedures, and resources for an activity, leaving students to merely carry out, record, and report (but not share) findings (i.e., cookbook labs). • A momentary or limited support to help students make sense of the science.	• Guided or "open-ended" inquiry: Students are primarily responsible for asking questions to investigate, and/or planning the investigation, and sharing findings to other groups/the class. • The teacher facilitates connection between scientific/ engineering practice(s) and content. • Multiple supports that help students make sense of the science.	• Guided or "open-ended" inquiry that centers around testing or revising, discussing, and critiquing/reflecting on a scientific model or problem: Students are primarily responsible for asking questions to investigate, defining problems, and/or planning the investigation, and sharing findings to other groups/the class. • The teacher facilitates connection between the scientific/ engineering practice(s) and content related to the model or problem. • Multiple and sustained supports that help students make sense of the science

SSTELLA Practices Progression

SCIENTIFIC DISCOURSE THROUGH SCIENTIFIC/ENGINEERING PRACTICES

Facilitating PRODUCTIVE student talk

Not Present	Present
The teacher…	
does not engage students (small group or whole class) in discussion around science ideas.	engages students (small group of whole class) in discussion around science ideas.

Introducing	Implementing	Elaborating
Discussion around science ideas…		
is limited to closed ended student responses and evaluation of student ideas.	results in brief development of student thinking, hypotheses, and/or questions about science ideas though **dialogic strategies and feedback** (e.g. revoicing, reporting, restating, quoting, questioning, etc.). All students are encouraged to talk through mixed groups, clear ground rules, group roles, etc.	results in a **sustained instructional conversation engaged in science** (ICES) about student conceptions, hypotheses, and/or questions about science ideas (w/ talk between students) with both students and teacher using **dialogic strategies and feedback** (e.g. revoicing, reporting, restating, quoting, questioning, etc.).

Pressing for scientific EXPLANATION AND ARGUMENTATION

Not Present	Present
The teacher…	
d**oes not** provide any opportunity for students to explain or argue about natural phenomenon (teacher might explain him/herself).	**provides an opportunity** and some assistance in showing student how to construct/critique explanations or arguments.

Introducing	Implementing	Elaborating
Opportunity to explain or argue…		
• Focuses on **components** (e.g., stating/identifying claims or evidence, or use formulaic statements, declarations), but not completely formed explanations or arguments related to the big idea. • Assistance is limited to structural components (sentence frames, reminders to use evidence)	• **Focuses on fully supported** scientific explanations or arguments related to the big idea. • Assistance helps students understand the quality (what counts as evidence?) and reason for explaining or arguing (relation to nature of science or alternative discourse forms)	• Focuses on student collaboration (whole class or small group), including **discussion, critique, and/or revision** of an explanation or argument. • Assistance helps students understand the quality and reason for explaining or arguing, and includes teacher or peer feedback on explanations or arguments

SSTELLA Practices Progression

ENGLISH LANGUAGE AND DISCIPLINARY LITERACY DEVELOPMENT

Promoting opportunities for English Language Development for ELs through Student Interaction

Not Present	Present
The teacher provides…	
no opportunity for student talk related to lesson content.	opportunity for student talk related to lesson content.

Introducing	Implementing	Elaborating
Opportunity for student talk…		
happens by only by a **few students** who are nominated either by himself or herself or by the teacher.	includes **widespread student interaction** (class discussions, partner or small group interaction, or student presentations), but **little or no support for ELs to** engage in this participation.	includes **widespread student interaction** and support for ELs to engage in this participation (wait time, modeling, prep time, scaffolding roles, etc.).

Promoting opportunities for English Language Development for ELs through vocabulary

Not Present	Present
The teacher…	
avoids key science terms or uses key science terms, but provides no support for students to comprehend or use them.	provides some support for student to comprehend or use key science terms.

Introducing	Implementing	Elaborating
Vocabulary support…		
supplants opportunities to comprehend or use key science terms and is teacher-driven (e.g., copying teacher words, definitions in glossary; front-loading vocabulary).	(a) Uses visuals, contextual cues, graphic representations, paraphrases, or definitions to help students comprehend **and use** new vocabulary. -OR- (b) recognizes students' developing scientific understandings using "everyday" words but encourages students to use key terms as appropriate for the instructional activity.	(a) Uses visuals, contextual cues, graphic representations, paraphrases, or definitions to help students comprehend **and use** new vocabulary. -AND- (b) recognizes students' developing scientific understandings using "everyday" words but encourages students to use key terms as appropriate for the instructional activity. -AND- c) provides opportunities for students to demonstrate appropriate use of key science terms, with feedback from teacher on understanding and accurate use of new words.

SSTELLA Practices Progression

Pressing for AUTHENTIC science literacy TASKS

Not Present	Present
The teacher provides…	
no opportunities for students to read, write, and/or discuss written texts (texts include representations such as graphs/models or multimedia texts).	**opportunities** for students to read, write, and/or discuss texts (texts include representations such as graphs/models or multimedia texts).

Introducing	Implementing	Elaborating
Opportunities for students to read, write, and/or discuss texts…		
• F**ocus on science concepts and not** on scientific/engineering *practices.* • Include **no strategies** to support texts, or strategies that focus on **general reading and writing**.	• Focus on **scientific/engineering practices.** • Include strategies to **support discipline-specific writing.**	• Focus on scientific/ engineering practices and **the ways in which texts are communicated to different audiences for different purposes.** • Include strategies to **support discipline-specific writing** along with teacher/peer feedback.