STUDIO DAY TEMPLATE

A guide to facilitating full-day science studios.

ABSTRACT

Studio Days are a form of job-embedded professional development that take place during a school day. School teams develop a vision of "what is possible" in instruction and to take principled risks with practices. Multiple role-actors (classroom teachers, coaches, administrators and researchers) collaborate to provide real-time feedback within current lessons. Although Studio Days feature a wide variety of science content, the goal of each science studio day is the same: to support students in improving explanations, models and arguments of scientific phenomena. Prior to the studio the Coach or School Team Leader helps facilitate a common planning meeting with teachers from a school; they design a unit of instruction and lessons to be used for the following studio day. On the day of the studio, teachers and others attending studio days engage in multiple rounds of co-planning, co-teaching, and co-debriefing.

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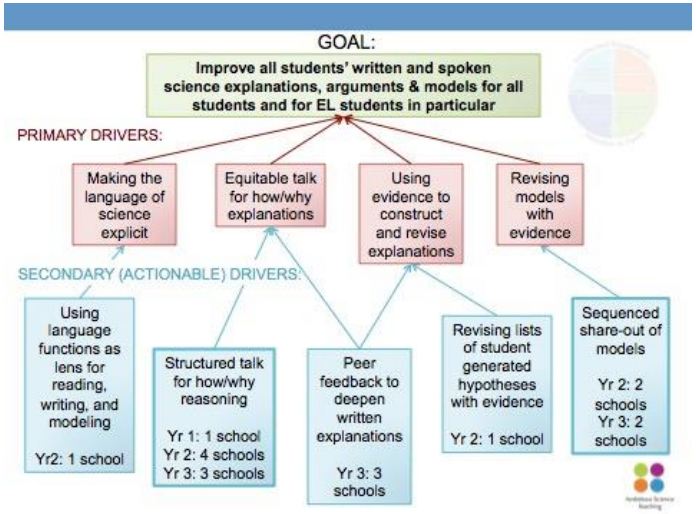
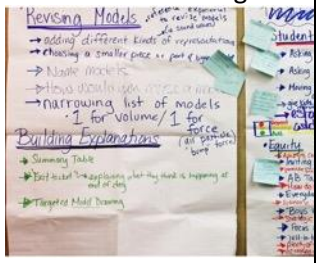
AST Annotated Studio Agenda - [School] - [Date]

Purpose:

1) Network goal: Collaboratively investigate student learning in order to make instructional decisions, particularly about improving all students' (including EL and special needs students') construction and revision of scientific explanations and/or models.
2) School goal (choose one): *Structured talk for how and why reasoning, Sequenced share-out of models, Peer feedback to deepen written explanations, Revising lists of student generated hypotheses with evidence, Using language functions as lens for reading, writing, and modeling*
3) Studio goal for student learning: NGSS 3-D standards
4) Studio goal for teacher learning:



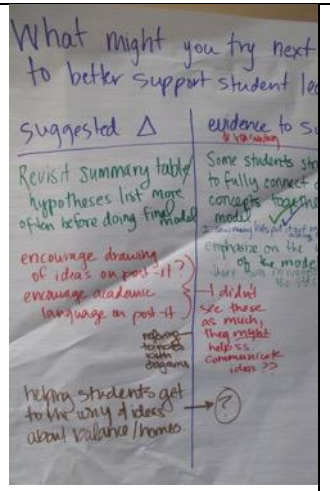
Time	Agenda	Point People/Resources	Purpose
~15-30 min	**Set the frame for the day** Notes to self: ❑ Studios focus on AST practices, data about student learning, & collaboration ❑ There is not a perfect studio -- studios should help teams develop a common language about practice and vision of ambitious and equitable instruction, schools will want to define progress for themselves. Assign roles (suggested roles below) ❑ Facilitator (Coach and/or Lead Teacher)- focus the work on AST practices, data and collaboration. Watch time and adjust plan as needed. ❑ Lead Teacher- is responsible for describing how they are enacting AST practices and attending to student learning, they talk openly about and question "why are we doing particular teaching practices" ❑ Metalevel AST and teacher learning (Coach/UW support person), reflects to the group how they are supporting teacher learning. During classroom visits they identify teacher and/or facilitator time-outs.	**Facilitator** **Resources:** PPT, focus on board, participant agenda, google log Video: overview video of the studio model	*To launch and reorient to joint collaborative work on science teaching practice*

	❑ Note-taker/historian (complete the google log) Review group norms (start on time, be flexible, be engaged, be prepared, have an action item for each meeting, equity of voices) Orient team to practice focus and emphasis/flow of studio ❑ Overarching focus: Continued refinement of focal practice, i.e. peer feedback to deepen written explanations ❑ Specific focus on identified problem of practice: i.e. How to help students ask each other connected, meaningful questions that deepen reasoning? ❑ Quick review of relevant data and teachers' aims for studio ❑ Quick review of anticipated agenda for studio day		
~45-60 min	**Review focal lesson and anticipated measures** ❑ Have focal teacher describe lesson, how situated in unit, and any relevant student ideas that have come up Decision-point: Teachers may need time to grapple with the content of the lesson themselves. You will need to consider the team's familiarity with the content and whether you want to engage them in some sense-making (e.g., drawing the model themselves, discussing results from the activity, writing a what/how/why rubric). ❑ Identify EL students in the class and their level. Come to consensus on any minor edits to plans and/or modifications for specific student populations. [Specify parts of the lesson you want to focus conversation on, and/or populations you want to explicitly consider based on the class you're going into.] ❑ Identify and record instructional decisions your team made prior to the lesson, or during the studio based on the driver diagram. ❑ Revising models with evidence ❑ Using evidence to construct and revise explanations ❑ Supporting equitable talk for how/why explanations ❑ Supporting language development and making the language of science explicit	**Focal teacher, facilitator** **Resources:** Lesson plan Lesson materials What/How/Why rubric Model Scaffold for the unit Relevant artifacts from previous lessons Measures/observation tools Network Driver Diagram 	*To understand the content and plan in order to anticipate how students may respond; to build shared instructional ownership through collaborative planning; to prepare for data collection*

	 Decision-point: Decide how you would like to use the four quadrants of the driver diagram and the wisdom from other studios done in years past. You could focus on 1 or all 4 quadrants. You could highlight drivers at play in this particular lesson on the network driver or use chart paper with four empty quadrants (then add to the driver later).  Does anyone have any changes they would like to propose? How do these relate to our drivers? Why might that change be beneficial? Are there any adaptations that might enhance ELs' access and learning? ❑ Review roles for classroom observation and measures/observation tools; make any minor edits necessary. [Describe the measures/observation tools you plan to use.]  Decision-point: There may be multiple measures that your team is considering, and you will want to decide which are necessary to discuss prior to going into the classroom. For instance, we use W/H/Y as a consistent measure on studios, but sometimes teams define and use this as part of their observation and sometimes they wait until after class and define it in conjunction with student work.		
~5-10 min	**Prepare to move to classroom** ❑ Make any agreed-upon edits to materials ❑ Transport materials and observation tools to classroom	**Resources**: Lesson materials Observation tools Cameras	*To update materials and help set up and prepare for students*
	Visit first class period & Coteaching ❑ Introduce the team to the students and frame the purpose of the studio to the students in terms of teachers learning from one another about how best to support students. ❑ Each participant observes [1 student, 1 pair of students, 1 group of students]	**Resources**: See above	*To gather data to assess how the focal practice is supporting student*

	❑ Complete observation protocols or script parts of the lesson ❑ Take photos of classroom walls and student work ***Why the observer role in classrooms?*** *When we are trying out a particular instructional practice, we want to collect data on how that practice functions. Studios provide unique opportunities for close observation of many students at once. And if we want to know how the practice functions, we need to maintain the integrity of the practice (rather than making our own independent adaptations in the moment).*		*learning/participation*
~30 min	**Debrief using observations and student work** ❑ Optional Pause-Reflect-Capture ❑ Private time to assess student work and record on W-H-Y rubric  ❑ If W-H-Y for lesson not already determined, have group turn and talk about possible indicators for W-H-Y. Chart responses on W-H-Y chart ❑ Each participant analyzes student work for W-H-Y and indicates level on chart (sticky note or x). ❑ Process W-H-Y chart by having participants turn and talk to a neighbor about trends and inferences in the data.  Why is that important? What evidence are you using to support that claim? Did you notice this for a particular subset of students?	**Facilitator** **Resources:** student work and observation notes, W/H/Y on board, chart paper/markers for recording noticings and changes, P-R-C sheet  	*To review evidence of student learning/participation in relation to practice and to make principled decisions about changes to instruction and focal practice.*
~30 min	**Tweak lesson** ❑ Nomination of tweaks to lesson, focusing primarily focal practice  Decision point: You will need to decide on 1-2 high leverage changes to the lesson. Try to gain group consensus around changes that they can generalize to future implementation of the practice.	**Facilitator**	*To make data-driven edits to lesson*

	*Make changes to the lesson and materials.  ❑ Include a chance for teachers to verbalize/explain each change to lesson and why we made that change. ❑ Invite teachers to record any personal learnings on Pause-Reflect-Capture sheet		
	Lunch		*To gain sustenance ;-)*
	Visit second class period ● Be sure each participant understands the instructional change being made. ● Remind participants to be observers and hold back on asking students' questions. The goal is to test the instructional change. ● Each participant observes [1 student, 1 pair of students, 1 group of students]	**Resources**: Lesson materials Observation tools Cameras	*To gather data to assess how the focal practice is supporting student learning/participation* *To build a common experience of an instructional change with a team*
~45 min	**Debrief and identify key instructional ideas** ❑ Identification of key instructional ideas that were tested  ❑ Private time to assess student work and record on W-H-Y rubric and make comparisons with learning from the first lesson. ❑ Chart responses on W-H-Y chart ❑ Each participant analyzes student work for W-H-Y and indicates level on chart (sticky note or x). ❑ Process W-H-Y chart by having participants turn and talk to a neighbor about trends and inferences in the data.	**Facilitator** **Resources:** PPT, student work and observation notes, W/H/Y on board, chart paper/markers for recording key instructional ideas, P-R-C sheet	*To review evidence of student learning/participation in relation to practice and identify key aspects of instruction that were effective (for*

	❑ Group discussion of important noticings/trends  ❑ Engage in "chalk talk" reflection - posters with the following five questions are posted around the room. Each participant silently visits each poster and records responses to the question. Each participant should circulate at least 3 times to read and respond to previous posts. 1. What did you learn from the data (CER, exit ticket, classroom discourse)? 2. What part of the practice seemed to be working well for students? What did not? Which students? 3. What is still puzzling you about this practice? 4. What might you try next time to better support student learning (t-chart with suggested change and evidence to support change). 5. What did you notice about how ELL students participated in the lessons? ❑ After 10 minutes, each person selects one idea from the posters to elevate to the whole group and which might inform next steps or changes to make to the practice. Each person shares out the idea they selected and explains why it is an important idea to think about. ❑ Invite teachers to record any personal learnings on P-R-C sheet ❑ Note-taker/historian guide the group in completing the google log		*selves and network)*
~30 min	**Planning time**  Decision Point - Select one of the following options (or a hybrid or alternative) for the group planning time. Option 1: Whole-group planning to revise protocol/practice and/or tools Option 2: Team planning time to implement focal practice in the next week in their own classrooms	**Facilitator:** **Resources: planning materials, calendars,**	*To plan for implementation in their own classes, in their current units of instruction; to develop concrete next steps*
~15 min	**Appreciations and evaluation**  ❑ Each participant shares something they appreciated about the day and/or the host teacher's class. Share out in a "Whip" format	**Facilitator** **Resources**: Evaluation forms	*To articulate appreciation for the host teacher and others who*

	❑ Teachers fill out evaluation forms		*made a particular impact; to provide feedback on the studio*
After Studio (Network Lead)	Fill out weekly log and a studio Complete the Take Away and upload to your school folder in the google drive	**Network lead**	*To keep a historical record of teacher and student learning and to request support.*

Facilitating Teacher Learning within Studios: Learning Opportunities

Decision Point- As a facilitator you will need to assess student learning and teacher learning and decide how much time to spend on a particular conversation.

Discourse opportunity/ chance for participants to engage in sharing ideas. Consider how you will support teacher dialogue, assess equity of participation

Data Display and Discussions. Direct teachers to talk from the data and ask “Where do you see that in the student work?”

Back Pocket Questions. Plan questions and help focus the conversation on inquiry, data, practice, theories of how students learn, and team collaboration.

AST Network Driver Diagram

This diagram represents change ideas the network has found support for on studio days or during small inquiry cycles in support of the network goal. Change ideas are color-coded by where they initially gained support, and asterisks indicate additional support for the idea from other locations in the network.

We are generally using the following logic model to guide our work: "If I want to improve all students' science explanations, arguments & models, then I need to focus on ____, and a way to do this is to ____ by ____." We can then test our model with data at numerous levels.

Revising models with evidence

- o Prepare for the work of modeling
  Prepare a causal, evidence-based explanation of the central phenomenon, go through the modeling process yourself before you ask students to do so
- o Press students toward "how" and "why"
  Give examples/exemplars of solid explanations, provide space and conventions on the model for incorporating explanatory (how and why) ideas and evidence as well as questions and tasks that prompt how/why writing, develop back-pocket questions to push students towards comprehensive how and why explanations, create strong connections between the entry task and the lesson (frame the lesson in the why or focus students on analyzing or comparing and contrasting parts of their models), encourage students to move back and forth between the what and how/why during model revision, give students "the what"***, ask students to consider each level of explanation directly*
- o Engage students in connecting ideas
  Provide access to materials from previous activities and prompts to help students remember science ideas, ask students to use evidence in their models, return to the specific phenomenon under consideration*, use different representations of a phenomenon to bring observables and unobservables together, provide students with opportunities to juxtapose ideas*, ask students to apply ideas to a new scenario*, use observation charts (GLAD strategy) to activate students' prior knowledge*
- o Focus students on key science ideas

Using evidence to construct and revise explanations

- o Help students recognize evidence, hypotheses, and distinguish among them
  Identify and elevate different student-generated hypotheses through focused discussion, provide evidence for students to use in brief written form (what we've called "evidence cards"), clarify what counts as evidence*
- o Use structures that help students evaluate evidence in relation to hypotheses and use evidence in explanations
  Use a writing format that emphasizes evidence (e.g., CER structure, TIED, etc.), provide explanation sentence frames as starting points, use worksheets that help students organize how hypotheses and pieces of evidence relate to each other, use a summary table for the phenomenon***
- o Frame hypotheses and explanations as changeable in the face of evidence
  Give students explicit permission to change their hypotheses or to edit/merge hypotheses based on evidence*
- o Provide access to evaluating/using evidence for all students

*Create an explanation checklist*****, clarify important ideas through targeted just-in-time instruction, have students engage with science texts and use ideas from readings* o Have students track how their thinking has changed over time *Highlight revised explanations on their models, ask students to provide an explanation as an entry task, then revisit it and add to or change ideas for an exit ticket* o Provide access to modeling for all students *Create shared experiences for the model, make drawing and writing conventions for models explicit (arrows, zoom-ins, labeling molecules, etc.)*, ensure the model has multiple access points and paths to completion (e.g., some students may take on the whole model, whereas others may focus on a particular part), engage in science theater for "unobservables," give students time to talk before writing, make students experts on particular parts of the model, use a "story" format to make writing an explanation more accessible, include different levels of questions on the model as a source of natural differentiation*	*Let students choose which hypotheses to investigate, have students work together on small chunks (e.g., a single evidence card at a time), display evidence and hypotheses publicly, give students manipulatives when weighing hypotheses* and visual supports for evidence and hypotheses, invite students to include experiences from past activities and their own lives* o Structure argumentation discussions across students around developing explanations, involving opportunities for questioning and rebuttal *Have students create group explanations on white boards and rotate them to provide each other with feedback*
Supporting equitable talk for how/why explanations o Scaffold talk norms in the classroom *Provide and engage students in using sentence stems for different kinds of science talk (e.g., asking questions, agreeing or disagreeing – post on wall, hand out laminated cards, etc.), develop class norms for students listening to each other's ideas*, model the kind of conversation you expect* and distribute newer or more challenging forms of talk across multiple students, use structured talk to practice certain kinds of talk, allow students to leverage debate-oriented discourse, frame the specific purpose of the talk with students and engage them in thinking about how their contributions are serving that purpose* o Create accessible, meaningful science contexts for students to work together *Create and root conversation in shared experiences, ask open-ended questions, have students work on a joint model, launch with multiple choice questions* or stepping stones toward the main work, keep the talk anchored in authentic science, limit talk time for less meaty questions* o Provide adequate processing/sharing time	**Supporting language development and making the language of science explicit** o Scaffold academic reading and writing *Support phenomenon-related vocabulary development (e.g., living word wall), include visualizations and manipulatives with explanations and complex tasks, model how to build sentences with sentence fragments/words, create sentence frames for particular tasks, provide some written pieces so students focus their writing on the most important cognitive work, use text cards with photos and parallel structure to help students find relevant information in text* o Identify and plan support for EL students *Differentiate questions for different levels, intentionally pair students to support language use and development, allow students to confer with*

Group students according to processing time, give students private think/write time prior to talking, chunk work into manageable segments, check in with students to see if they need more time, use a timer to moderate turns*, have options for "fast finishers"* o Structure participation in partner talk, small groups, and whole-class share-out PARTNER/GROUP: *When students work in pairs, have one student talk and the other record, then switch, share directions and engage students in a structured talk protocol and explain why you're using it*, organize talk protocols according to natural progressions of thinking, use a written template to engage partners in peer feedback "conversations" (e.g., asking questions about each other's models and responding)* SHARE-OUT: *Have students share their partner's idea*, have students share and discuss their drawings with the class*, create a public record of shared ideas using students' names** (and without evaluating the ideas), require students to write their initial ideas and how their ideas changed in preparation for sharing, intentionally sequence the share-out, have one group share and limit other groups to agreeing/disagreeing* o Have students reflect on their engagement in talk *Analyze good videotaped conversations together, engage students in self-monitoring or providing feedback*	*partners before sharing, pre-select students to share and let them know so they can practice/prepare* o Encourage multiple language use *Provide or have students write materials in their language*, use 1st and 2nd languages with partners**

Learnings from ACE Learnings from Highline Learnings from Cascade Learnings from Mount Rainier Learnings from Chinook Learnings from Pacific Learnings from College Place Learnings from Renton Learnings from Evergreen campus

Student Learning: Standards-based rubrics for written scientific explanations

Dimension	Beginning (1)	Approaching (2)	Meeting (3)	Exceeding (4)
Depth of explanation	*"What" explanation* Describes what happens. Focuses on observations without suggesting cause.	*"How" explanation* In addition to describing what happens, focuses on processes – how something happens. Starts to include cause-effect relationships and unobservables.	*"Why" explanation* In addition to describing what happens and how, explains why something happens or works the way it does. Includes chains of causes and effects and unobservable or theoretical ideas.	*"Why+" explanation* "Why" explanation plus: · Application to related phenomena or situations
Integration of evidence	*Refers to data, observations, activities* Cites observables or activities without reasoning that connects them to aspects of the explanation. May be part of a description of what happens.	*Connects to evidence* Uses specific evidence as support for specific aspects of the explanation, but reasoning connecting evidence and explanation is limited or unclear.	*Justifies with evidence* Uses specific evidence as support for specific aspects of the explanation, with clear connective reasoning that draws on scientific principles.	*Justifies+* Justifies with evidence plus: · Triangulates evidence from multiple sources to support a claim · Use of evidence to compare multiple possibilities and/or refute alternate ideas

	What	How	Why
Criteria	"What" explanation Describes what happens. Focuses on observations without suggesting cause.	"How" Explanation In addition to describing what happens, start to explain how or why something happens. Focuses on causal (cause & effect) relationships between observable events.	"Why" explanation In addition to describing what happens, explains why something happens or works the way it does. Uses unobservable process to construct full causal (cause & effect) explanations

Indicators	"What" explanation ❑ Description of what happens to the responding variable	"How" explanation ❑ Cause and effect relationship between manipulated and responding variables ❑ Description of rearrangement	"Why" explanation ❑ Movement of molecules ❑ What's happening with bonds ❑ Interaction between molecules

CCSS.ELA-Literacy.W.9-10.1: Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. NGSS Practice 6: Constructing Explanation NGSS Practice 7: Engaging in Argument from Evidence

Teacher Learning: Pause - Reflect - Capture

Teacher Initials	What am I learning?	What prompted my learning?	Specifically, how might what I am learning generalize to my teaching practice? That is, how will my work as a teacher be different because of my learning today?	Which "Driver" for supporting ambitious and equitable instruction does this align with?
				❑ Revising models with evidence ❑ Using evidence to construct and revise explanations ❑ Supporting equitable talk for how/why explanations ❑ Supporting language development and making the language of science explicit
				❑ Revising models with evidence ❑ Using evidence to construct and revise explanations ❑ Supporting equitable talk for how/why explanations

				❑ Supporting language development and making the language of science explicit
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Adapted from Cascade MS, 2015.

Facilitation Practices for Orchestrating Discussions with Teachers (Jackson, 2016)

Facilitation Practice 1: Sustaining an Inquiry Stance

Move	Description	Example
Highlighting	Direct attention to noteworthy student ideas	"So it seems like we're all pretty interested in what Tyrone did here. What did he mean by the molecules move fast?"
Lifting up	Identify an important idea that a participant raised in the discussion for further discussion	"I think you were bringing up the idea that maybe they understood what met goal exactly meant, but they had this way of thinking that was more about a collective than individual understanding."
Pressing on teachers' ideas	Prompt participants to explain their reasoning and/or elaborate on their ideas	"You said there was a lot she had to do there, can you piece apart for me all the things you think she had to do?"
Offering an explanation	Provide an interpretation of an event, interaction, or mathematical idea, from a stance of inquiry	"I was thinking that he might have looked at his partner's cards and added the numbers on their two together. That might be why he said 51."
Countering	Offer an alternative point of view	"You could be right but I was thinking that the sticks and dots weren't really helping Dante. He doesn't arrive at the correct answer . . ."
Clarifying	Restate and revoice to ensure common understanding of an idea	"So you're saying no, she doesn't really think it's ten?"

Facilitation Practice 2: Maintaining the Focus on Practice, Data and Learning

Move	Description	Example
Redirecting	Shift the discussion to maintain focus on the task of analyzing the enactment (e.g., classroom visit, video, etc.)	"Can I just bring us back to the launch for a second?"

Pointing to evidence	Contribute substantively to the conversation, using evidence to reason about teaching and learning	"Well, what did Jerome say earlier? . . . because I'm wondering if maybe she's using what he said earlier to help her try to figure this out. So, if we look on the page before . . ."
Connecting Ideas	Make connections between ideas raised in the discussion	"So it's similar to what Tom was doing." "Do you have any predictions about what your students would do if they were given this problem?"
Orienting to instructional practice	Shift the discussion to focus on supporting students' learning of mathematics	
Focusing the discussion	Posing prompts to help focus the activity or discussion	

Practice: Supporting Group Collaboration

Move	Description	Example
Introducing an activity	Describe what the group is going to do. May include: · Providing rationale for engaging in the collective work · Connecting to previous work · Providing context for a representation of practice (e.g., classroom visit, video, etc.) · Explaining how the group will engage in the collective work · Introducing/providing a focus for the discussion/activity.	
Eliciting teacher thinking/participation	Inviting participation from teachers.	
Standing back	Allow the group members time to discuss an	Not interjecting when the group is exploring an idea

	issue	
Distributing participation	Invite participants to share different ideas based on who is (and is not) participating	"Lisa, it looked like you wanted to say something . . ." "What do others think about that idea?"
Validating participants' ideas	Confirm and support participant contributions	"That's really hard." "That could make sense too. That could be another interpretation."

Adapted from van Es et al. (2014) and Jackson et al. (2015).

STUDIO DAY PREPARATION CHECKLIST

4-Weeks Prior Coach/Lead

- Asks for a teacher to volunteer to host a studio day.
- Update Studio Day location and time.
- Communicate with possible participants and see if they are available to attend the studio day.

2-Weeks Prior Coach/Lead

- Initial Check In With Teacher
  a. What unit/topic will the teacher be covering?
  b. When in the unit will the studio day occur?
  c. Explain to the teacher what type of lesson will be most beneficial for the studio day.

- HOST TEACHER et al.: Connect with School Principal and make sure that there is a debrief/planning space during the studio day.

- Host Teacher: Prepare a "gapless explanation" for the lesson/unit.

- Email Unit Topic/Content and teacher's "gapless explanation" to school team and others attending the studio.

1-Week Prior Coach/Lead

- Co-plan initial ideas for the studio day lesson with school team and others attending the studio.
- Send an update to facilitators

2-Days Prior Coach/Lead

- Co-plan initial ideas for the studio day lesson with school team and others attending the studio.
- Send an update to facilitators

1-Day Prior Coach/Lead

- Email host teacher…final check-in (they might be nervous…help calm their nerves!).

**Please CC facilitators on all communication so that they are kept in the loop!!*

THEORTICAL BACKGROUND

Professional Development Models that Support Systems-Level Instructional Improvement

Currently educational systems are not designed to adapt or improve instruction. Systems are designed to adopt and distribute "best practices." The process of dissemination positions educational researchers or other proclaimed instructional experts as knowledge-holders and practitioners as knowledge-receivers. In such systems impact on classroom practice is slow and inequitable (Horn, 2014) and some might argue non-existent. Cuban (2013) describes efforts to improve instruction within the U.S. education system as largely unsuccessful; he argues that what is at the core of teaching—instructional expertise—has remained fundamentally unchanged for more than a century. Most efforts to improve instruction are top-down approaches in which teachers are given little time to interpret new instructional practices, PD takes place outside of the classroom walls and there is no focus on local adaptation or innovation. Bryk et al. (2011) argue that, while innovations abound in education, "there are no extant mechanisms to test, refine and transform practitioner knowledge into a professional knowledge base in education…the field suffers from a lack of purposeful *collective* action" (p. 5). They suggest that a diverse colleagueship of expertise is necessary to make progress (Bryk & Gomez, 2008) and forward the work of teaching, not just individual teachers.

Professional development that is embedded in the work of teaching—also known as job-embedded professional development—can function as a mechanism for localizing and improving teaching practices and as a part of a system that learns from classroom adaptions. In our model school teams of teachers, coaches, principals and educational researchers, collectively make sense of new teaching practices by engaging in principled experimentation in classrooms (Kazemi & Hubbard, 2008) multiple times during an academic year. We adapted a model that from the Teacher Development Group (TDG, 2010) which makes use of "Studio Days"; these are full day professional development days in which teams co-plan, co-teach and co-debrief lessons multiple times during a day. Important to our Studio Day Model is an underlying set of research-based science teaching practices which orient teaching and learning toward the development of students' scientific practices of models and explanations and making student thinking explicit (Windschitl, Thompson Bratten & Stroupe, 2012). The aim of our ongoing professional development is to collect practice-based evidence for *which teaching strategies work best, under which conditions* and *for whom*. This work differs from that of a typical Lesson Study model, which typically focuses on demonstration of high-quality lesson in the context of a design experiment in a focal classroom (Lewis, 2006; Lewis, Perry & Murata, 2006). In lesson study the unit of analysis is a particular lesson and in the studio day model the unit of analysis is a specified teaching practice that can be iterated on over the course of a year, not Similarly, the Studio Day model also aims to show a different version of what is possible in the classroom but through collaborative inquiry (Crocran-Smith & Little, 1999) and explicit conversations about teaching practice, theories of student learning and the use of practical measures. In this model the work of translating the Next Generation Science Standards into high-leverage teaching practices is not left up to individual teachers; instructional teams address implementation challenges and negotiate competing messages, norms,

and practices by reinterpreting policy in a locally relevant ways, and working on the problems of implementation (Coburn, 2006; Rigby, 2014).

Key Principles of the Studio Model

Principle	What It Looks Like, in Practice
1. Joint activity is focused on student learning and its relationship to teaching practice.	We collect evidence of student learning (observations, artifacts) and to consider it together *before* discussing instructional implications. We establish a norm around grounding discussions of instruction in what we saw and heard from students.
2. Teaching is explicitly framed and treated as a collaborative endeavor.	It is not the host teacher's lesson. It is **our** lesson, which we conceptualize and plan together. We aim to learn from everybody's experiences and backgrounds and to come to overall consensus on instructional decisions.
3. The work is localized in teachers' specific contexts.	Studio Days look different in each school we work with because they take into account schools' initiatives, professional norms, student populations, etc. We grapple with how science instruction that emphasizes sense-making about phenomena can be realized in varied contexts, and support generative adaptations and variations.
4. Joint activity is supported by routines and tools that facilitate generative conversations over time.	We have developed shared routines and tools that let us get right into the work together, press for important connections (e.g., between student data and practice decisions), and document our learning over time so we can build from where we left off.

Networked Improvement Community Article & Videos
Article here: https://education.uw.edu/news/all-it-together
http://stemforall2016.videohall.com/presentations/649
https://education.uw.edu/news/aera-highlight-creating-hybrid-practices-english-learners-and-science-teaching

Studio Day PD Model videos
Overview of StudioDay Model: http://www.youtube.com/watch?v=Fc_kQXYG5pY
Briefing stage: http://www.youtube.com/watch?v=WIeDPcKTEFM
Coteaching stage:http://www.youtube.com/watch?v=ePLBVibdnAg
Debriefing stage: http://www.youtube.com/watch?v=e6PXKOmRfwk